

# University of St Andrews

## Annual Sustainability Report 2019/2020

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### Executive Summary

The University continues its excellent performance in sustainability this year, even against a context dramatically reshaped by Covid-19. Increasing the reporting boundaries has added procurement and travel carbon to our footprint. As a result of long-standing strategic commitments, the University's total<sup>1</sup> carbon footprint is down 6% on the previous year, at 73,809 tCO<sub>2</sub>e for 2019-20.

To build our position as a sector leader further we launched the Environmental Sustainability Board in February 2020. The first task of this advisory board is to deliver a new Environmental Strategy for the University, and it has brought together expertise from the

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<sup>1</sup> Our total footprint is our entire institutional footprint including procurement, construction, commuting and student home travel carbon

academic, student and professional communities to develop a strategy that will transition us to a net zero organisation.

### 2019-2020 highlights include:

- Our Smart Campus project successfully delivered £4.98M of energy reduction measures, including a district heating system to connect University buildings in the historic town centre. These measures are forecast to mitigate in excess of 1,000 tCO<sub>2e</sub> every year.
- Our ambitious programmes to reduce waste saw an over 3,000 kg decrease of food waste in catered halls. This equals to approximately a 5% reduction and was recognised by becoming a finalist in the Green Gown Awards. The introduction of 19 British Heart Foundation (BHF) donation banks around residences has diverted 15 tonnes of clothing and other student donations from landfill, whilst raising £80,000 for the BHF, an effort for which the University received a Heart Hero award.
- The University was awarded £1.13M of Scottish Government-supported funding through the Advancing Manufacturing Challenge Fund to develop a world-class test space at the Eden Campus for academics, technicians, and small and medium-sized companies to work together on projects in energy storage and conversion. We also received £300,000 to invest in a new hydrogen accelerator which will be located at the Eden Campus.
- Over the last 10 years, £1.2 million of funding has been won by Transition UStA to promote low carbon lifestyles within the St Andrews community, including a new biodiversity project to enhance green corridors in town.
- A practical training course on sustainability for students, TESA, was developed in time to be launched for all student year groups at the start of the 2020-21 academic year.
- A new Sustainable Investments Policy was launched to guide how University Endowment funds are managed
- A coordinated effort saw over 1,200 students, staff, school children, activists and local residents stand side-by-side at Line in the Sand 2019, as part of the international climate strikes.

To become a net zero organisation, the University will set ever tougher carbon targets, these supporting us to deliver our core business in more innovative and technology-enabled ways. On behalf of the University, the ESB has begun the process of evaluating sustainability in our research, education, operations, and estate, and will work with the University community and leadership to support sustainable solutions.

*The sustainability work currently being carried out at St Andrews links closely to many of the UNs 17 Sustainable Development Goals (SDGs) – we have highlighted how our work relates to the appropriate SDGs at the end of each section.*

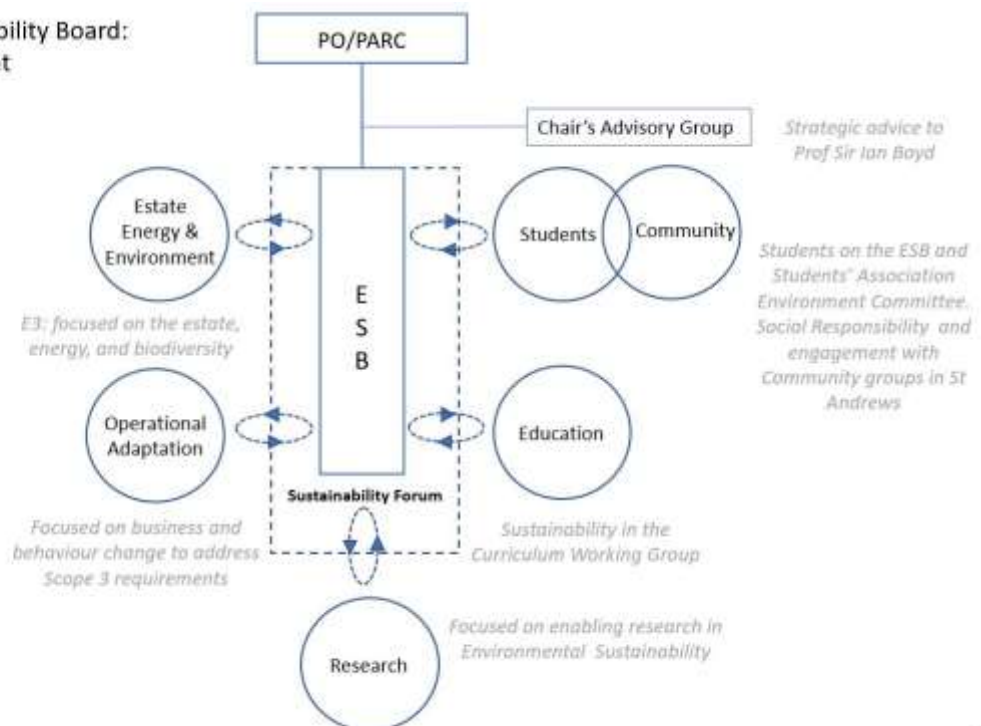
## The Environmental Sustainability Board

The Environmental Sustainability Board (ESB) enhances the scope and ambition of the University in sustainability by bringing key actors from across the institution together to develop a new Environmental Strategy that will transition us towards net zero. The ESB also provides a platform to increase cross-institutional collaboration on sustainability. It establishes governance mechanisms by which we can be held accountable for our environmental performance, as well as provided with sector-leading advice on how to enhance it.

Professor Sir Ian Boyd, previously Chief Scientific Advisor to the UK Department for Environment, Food and Rural Affairs (DEFRA), was appointed by the Principal to Chair the ESB. The Quaestor and Factor, Derek Watson, serves as Deputy Chair. Nine ESB Members were selected in a competitive process from the University community to serve on the ESB, and it is supported by key officials from Units central to delivering sustainability. The ESB held its first meeting in March 2020 and eight board meetings have been held in 2020.

In complement to the main committee, the ESB coordinates five working groups which address the areas of education, research, operations, the estate, and student and community engagement.

Environmental Sustainability Board:  
operational environment



*The ESB has addressed the 17th SDG (Partnership for the Goals) and in particular 17.14*

*(Enhance policy coherence for sustainable development) by establishing and approving sustainability policy at the highest levels of University governance. The ESB will continue this role within the University, to monitor and improve the levels of sustainability at the University.*

The ESB builds on, and has absorbed within it, the work of the Sustainable Development Working Group (SDWG). The research remit of the St Andrews Sustainability Institute (SASI) has also become part of the ESB. The already existing Sustainability in the Curriculum (SitC) group has joined the ESB, and the Chair of SitC is on the ESB. The Chair of the Students' Association Environmental Subcommittee is an Advisor to the ESB and three further students are ESB Members.

It is the goal of the ESB to submit a final draft of the environmental strategy to the Principal's Office (PO) in December 2020, following a period of active community consultation. Once agreed by the PO, this draft will go to Court and PARC for approval in early 2021.

### Climate Change Adaptation

We continue work to evaluate and mitigate the impact of climate change on the University and have participated in the Adaptation Scotland Learning Exchange, making use of the Adaptation Capability Framework benchmarking tool to highlight governance and adaptation issues. The tool clearly outlines actions for improvement in the operation of the University to increase its resilience to climate change. These include:

- Organisational Culture and Resources – identifying opportunities to include climate adaptation in future plans
- Understanding the challenge – undertaking strategic climate risk assessments
- Planning and Implementation – Identifying potential adaptation measures
- Working together – develop communication and engagement with partners such as Fife Council / Fife Environment Forum

After completion of the Environmental Sustainability Strategy a Climate Adaption Plan will be drafted. We continue to manages the impacts of climate change within the University's risk register.

*By preparing for the effects of climate change on our organisation we are addressing the 13th SDG (Climate Action) and in particular targets 13.1 (Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries) and 13.2 (Integrate climate change measures into national policies, strategies and planning) although on an institutional scale rather than national.*

### Carbon Footprint

This year the boundary of carbon reporting has been increased to reflect more fully the wider impact of the University. This includes carbon reporting on staff and student commuting, student travel from home at the beginning and end of semesters, construction and residual procurement. Without the additional reporting the 2019/20 carbon footprint was 17,268 tCO<sub>2</sub>e, a 22% reduction on the previous year.

The University’s total carbon footprint for 2019-20 with the wider boundaries is 73,809 tCO<sub>2</sub>e. Compared with the target set last year (78,198 tCO<sub>2</sub>e) this represents a 6% reduction, continuing our downward trajectory.

**Measured Carbon Performance at St Andrews 2019/20:**

		Greenhouse Gas (GHG) Emissions (CO <sub>2</sub> e tonnes)	2017/18	2018/19	2019/20
Gross Emissions (tonnes CO <sub>2</sub> e)	Scope 1	Fossil fuels: Non-residential (tCO <sub>2</sub> e)	3,243	3,224	2,967
		Residential (tCO <sub>2</sub> e)	2,445	4,451	1,842
		Fleet Vehicles (tCO <sub>2</sub> e)	127	125	123
		Refrigerant losses (tCO <sub>2</sub> e)			187
	Scope 2	Non Residential Electricity Purchased (tCO <sub>2</sub> e)	6,135	5,090	4,373
		Residential Electricity Purchased (tCO <sub>2</sub> e)	1,709	1,631	1,324
		Non Residential Heat Purchased (tCO <sub>2</sub> e)	348	130	346
		Residential Heat Purchased (tCO <sub>2</sub> e)	304	306	359
	Scope 3	Water & Sewerage (tCO <sub>2</sub> e)	268	288	227
		Waste sent to landfill (tCO <sub>2</sub> e)	388	381	728
		Waste recycled (tCO <sub>2</sub> e)	42	37	16
		Non Residential Electricity Transmission	523	432	376
		Residential Electricity Transmission	146	138	114
		Business Travel (tCO <sub>2</sub> e)	7,109	5,877	4,418
	Sub-total Scope 1 to 3 Emissions (excluding Procurement & Commuting)		22,788	22,113	17,268
	Scope 3 (extended)	Construction (tCO <sub>2</sub> e) *	7,859	13,023	10,000
		Procurement (tCO <sub>2</sub> e) *	23,777	20,725	25,000
		Staff daily commuting (tCO <sub>2</sub> e)	2,145	2,103	1,240
		Student daily commuting (tCO <sub>2</sub> e)	728	720	450
		Student semester commuting (tCO <sub>2</sub> e)	19,744	19,531	19,851
Total institutional Scope 1 to 3 Emissions		77,036	78,198	73,809	

\*Based on DEFRA 2013 emission factors for associated construction & procurement spend

Sub-total emissions reflects our previous reporting standard and have been included for reference, total institutional Scope 1 to 3 includes our full operational footprint which will be taken forward as our emissions scope as part of a science-based net zero target.

Top five carbon savings projects in period included:

- the installation of a district heating system in the historic town and associated mechanical plant upgrades
- the installation of LEDs in University buildings and sports centre floodlights
- the installation of energy efficient fume hoods in labs and upgrade to low energy drying cabinets
- mechanical plant and BEMS investments under the UCRF funded Smart Campus programme
- programme of draft proofing windows across a number of schools and residences

The biomass plant also had a significantly improved year (versus 2018/19) with no unplanned outages, further enhanced by University decision-making to continue to run the plant and provide heat to residencies and core buildings during the lockdown period.

Up until the global pandemic restricted international travel and encouraged us to adapt to new ways of communicating business travel was aligned with 2018/19 levels. These adaptations have created a range of positive consequences, from reduced travel emissions to better opportunities for those with caring responsibilities to maintain their international networks of excellence. Going forwards it is important we drawn on these improvements as part of our green recovery, most simply this could be achieved by control of travel budgets and encouraging continued use of remote working technologies.

Externally the University is reporting on the above total institutional scope of emissions, which including the Scope 3 carbon of construction embodied carbon, procurement and commuting (daily staff, students and students travel from home to St Andrews at the beginning and end of each semester). This sets our overall carbon footprint to 73,809 tCO<sub>2</sub>e.

### Carbon Targets

Our carbon targets are managed within the University's Carbon Management Plan, and in response to the Climate Emergency declared by Scottish Government in 2019 the University has stated a target this year to be net carbon zero for all carbon emissions, wherever they arise, by 2035.

Our targets in the Scottish Funding Council (SFC) Outcome Agreement are:

3 year period ending	Performance			Targets		
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23

Gross carbon footprint - tonnes CO <sub>2</sub> e	77,036	78,198	73,809	73,880	71,872	68,867
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Last academic year delivered an reduction in carbon above forecast, resulting from the pandemic building closures and impact on business travel. Future Targets, include the re-energising of buildings, and increased heat demand from higher ventilation requirement and temporary spaces, such as can-do, with business travel expected to remain low. However, the forecast 10% increase in heat requirement are expected to be largely offset by the realisation of a full year of energy savings from investments this year in the UCRF funded Smart Campus Programme, with continued improvement thereafter through our rolling Campus to Climate fund, plus plans to implement larger-scale projects proposed through the ESB.

We are working through EAUC Scotland with the FE/HE sector in Scotland to have agreed scopes and standard calculation methodologies. The carbon performance by scope tables will be re-benchmarked in future years after the full breadth of carbon reporting is agreed.

This year will see us publish our most ambitious carbon targets to date, both pushing the boundaries on what we will report and setting net zero carbon targets for 2035. The next 5 years will be critical for setting us on the path to deliver against these targets, improving data, challenging our supply chains and fundamentally rethinking how we manage our estate; land, spaces and assets.

*By taking extensive measures to reduce the University’s carbon footprint, we are working towards addressing various targets of the 7th SDG (Affordable and Clean Energy). The Eden Campus biomass plant contributes to target 7.2 (By 2030, increase substantially the share of renewable energy in the global energy mix) by diversifying the University’s energy mix. The energy efficiency projects that have been undertaken using the SALIX fund and the UCRF funding programme has allowed for the University to contribute to target 7.3 (By 2030, double the global rate of improvement in energy efficiency).*

### Utilities management

To enhance utilities reductions and clean energy production, the Estate, Energy and Environment (E3) group of the ESB has commenced work on strategy modules which build on our previous Carbon Management Strategy and current Carbon Management Vision.

This year has seen the delivery of the UCRF funded Smart Campus project, despite the technical challenges presented by the national lockdown. The £4.98M investment is forecast to mitigate over 1,000 tCO<sub>2</sub>e per annum, which will be verified by an independent assessment over the coming 12 months. Much of the project’s survey data and energy saving methods we will look to extend in further energy savings projects through our Campus to Climate fund. The most significant project investment was the Old Town district heating scheme, which connects an energy centre at the Arts and Library building with Irvine, United Colleges and has removed the requirement for temporary, oil-fired boilers St Salvators. This provides a pivotal shift in how we heat our buildings in this historic part of our estate, the

design is such that it offers the potential to grow this network and remove gas boilers from buildings as part of planned refurbishment projects.

The Eden Campus Energy Centre is a significant component of our ambitions for carbon neutrality, saving approximately 4,000 tCO<sub>2</sub>e in period. The scope of the project includes investment intended to future-proof our capabilities, with large scale installations designed and specified to have a 40 year lifespan, and to open up opportunities for additional carbon savings. This year we have added and planned the addition of new buildings onto the network. The University has committed to five key objectives for the project that reflect its vision and continues to be a theme for our development:

- Achieve a 'step change' in carbon emissions
- Control energy costs and protect against volatility in energy prices
- Establish a green supply chain with local economic benefit
- Offer a low carbon exemplar and demonstrate the learning journey
- Implement the 'Guardbridge Guarantee'

Since 2007 the University is has spent circa £4.8M through our energy investment fund (SALIX), which is delivering lifetime carbon savings of over 83,000 tonnes CO<sub>2</sub> across almost 250 individual projects. This period of investment has equated to an overall reduction of 6,300 tCO<sub>2</sub>e from our 'business as usual' annual energy carbon footprint, through these incremental improvement projects. The University continues to demonstrate its commitment by extending this scheme internally with our Campus to Climate initiative, which also includes water savings and to invest over and above Salix applicable projects. This ensures that £400k of funding is available each year for energy reduction investments; energy savings are reinvested back internally and externally to the SALIX 'pot' to enable continued improvement.

### **Waste management**

The University has addressed waste management through a series of initiatives.

Food waste was tackled at catered halls through:

- the introduction of new bins which allowed students to scrape their own plate waste so that they can see how much food they were discarding.
- tray free dining was also implemented (more details in the food section)
- food waste levels were measured and reported back to students.

As part of our aims to reduce overall residual waste, the University has introduced a scheme called 'bin the bin'. The objective of this project is to remove individual office desk bins and introduce centralised bin facilities, where individuals are required to take their waste items to a set of bins in a corridor and segregate their waste.

To increase the ease of use and to up the level of recycling, dry mixed recycling bins have been introduced, in line with Fife Council's commercial recycling scheme, where plastic



bottles, cans, tins, cardboard and drinks cartons can all be collected in one bin. Office paper is collected separately this is a valuable resource in the recycling stream and is used in the remanufacture of paper products. In some areas food waste bins have also been added to this bin system to help us separate organic waste from landfill, in line with Scottish Government requirements in 2025. The style of bin Estates have opted for is the Glasdon Evolution style bin, which means all waste materials can be collected separately in one single bin, reducing the chances of contamination or recyclables ending up in landfill. This scheme has currently been rolled out in the new part of the Scottish Oceans Institute, Willie Russell Laboratories, Medical School and the new Laidlaw Music Centre.

For all major events this year, we have introduced compostable recycling for items such as Vegware. Vegware needs to go to in-vessel composting over anaerobic digestion. This year Fashion Show (FS), DRA Ball, Don't Walk Ball as well as Graduation have all seen this introduction.

FS worked with the Environment Team on creating a panel discussion event recognising the impacts of fast fashion. This event was to raise awareness of unsustainable fashion and how the University could promote the waste hierarchy within the student community in the context of purchasing new clothes. This event had guest speakers including Wendy Chamberlain MP and Fashion Revolution, a charity who campaign on the impact of fast fashion, over consumption and mass manufacturing.

The end of term reuse campaign has achieved great results with a further 15 tonnes of clothing and student donations donated in our 19 British Heart Foundation donation banks this summer. This, along with our achievements in the previous year have reached over £100,000 worth of donations to the charity and over 50 tonnes of items being diverted from landfill won us the British Heart Foundation Heart Hero award this year for retail partner.

Due to the pandemic the University was forced to take decisions that have caused an increase in waste, such as reverting back to trays in catered halls and disposable packaging as well as many single use items. This has had a negative effect on waste figures in period and is likely to continue into 2021.

The Sustainable Resources Plan has been developed this year, which focusses on the circular economy and waste hierarchy in line with the Scottish Government's agenda and will issued for wider consultation in the coming year as part of the E3 modules.

*The waste management strategy used by the University is addressing the 11th (Sustainable Cities and Communities) and 12th (Responsible Consumption and Production) SDGs. The University's dedication to the sustainable reduction, recycling, and reuse of materials reflects targets 11.6 (By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management) and 12.5 (By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse). The reduction in food waste in our residential catering is linked to target 12.3 (By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses).*

### Environmental management and compliance

The University has embraced the task of environmental management, and there have been no compliance issues during the year (e.g. no infringements of environmental legislation and no enforcement notices). The University fully complies with the terms of the Zero Waste (Scotland) Regulations which require us to segregate and manage recovery of our food waste.

### Sustainable food

In September 2019 we introduced three behaviour changing interventions to reduce food waste. During semester one, 3,316 kg less food was wasted in the catered halls<sup>2</sup> compared to the same period in the previous year. The 5.4% decrease counts for both front and back house food waste, and indicate that our strategies of tray-free service, letting the students scrape their plates, and running campaigns aimed to reduce food waste during the interhall competition, have had a positive impact. These strategies are easy to implement and show that several small changes have big impact on the University's food waste. Thus, we aim to use more likewise strategies to reduce our carbon footprint even more.

We estimate that over 1,000 food supply vehicles have been removed from the roads by "piggybacking" strategies. We have cancelled some supply services and maximised the use of remaining vehicles, which have saved us 22 lorry journeys every week. With logistical rearrangements, our suppliers from Glasgow are now picking up food from our local suppliers Fisher & Donaldson's and Balgove Larder when heading to St Andrews.

The University has received a two-star accreditation for its Fairtrade work with Fairtrade 2018-2020. From having a narrow perspective on Fairtrade, the Environment Team and RBS have started to collaborate with external organisations and student societies to widen the perception of Fairtrade. In addition to teaching students about Fairtrade ingredients, we have run clothes swaps with the British Heart Foundation and panel discussions with the Sustainable Development Society focusing on equality and social justice.

*The reduction in food waste in our residential catering is linked to target 12.3 (By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses) and 12.5 (By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse). The success with Fairtrade through collaboration is linked to target 17.6 (Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries)*

### Biodiversity

In autumn 2019, the University formed a Biodiversity Working Group and launched a Biodiversity Action Plan. The working group meet quarterly and is responsible for habitat

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<sup>2</sup> Agnes Blackladder, Andrew Melville, John Burnet, McIntosh, St Salvators, St Regulus and University Hall

infrastructure, planting, and management to improve the conditions for species living on our grounds.

Projects supporting the Biodiversity Action Plan include the Green Corridors project and BioBlitz. The Green Corridors project is a collaboration between St Andrews Botanic Garden, Fife Council, and the University and was externally funded of over £160k by Nature Scotland. It works top-down to restore habitats and manage invasive species along habitat corridors such as the Kinness Burn and the North Haugh. BioBlitz works bottom-up to encourage people in St Andrews to engage with biodiversity. Students, locals, and scientists gather to survey biodiversity in designated areas. The data they collect help establishing a baseline of invasive species and give an understanding of species shifting their ranges north due to climate change.

*Our Biodiversity Action Plan is linked to target 15.5 (Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species), 15.8 (By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species)*

### Eden Campus

By 2027, Eden Campus will be a net zero carbon zone, supporting the University's wider carbon reduction targets. As the Campus buildings are renovated it will become a key location for industry to work alongside the University's academic community.

Eden Campus is a central component in the University of St Andrews' strategy to become the UK's first energy carbon neutral university. The campus will contribute to national and international ambitions for carbon reduction, while simultaneously supporting jobs growth in low-carbon technologies, and supporting University spin-outs to establish and grow.

### Biomass Energy Centre

The Energy Centre is in its third year of operation. It delivers heat and hot water to over 40 university buildings in St Andrews, reducing the University's carbon footprint by some 20%. During 2021, the district heating network will be extended to include buildings at Eden Campus. There is scope to look beyond heat generation to create high value by products from the energy centre such as the conversion of CO<sub>2</sub> into synthetic fuels.

### Solar PV

The University is building a 1.5MW ground-mounted solar PV facility at Eden Campus. The electricity generated will support a private network that will in turn be utilised by all the buildings on the Campus. As with the energy centre, there is scope with the solar PV to look beyond the primary purpose and to utilise any surplus renewable electricity converted into higher-value products such as hydrogen.

### Low Carbon Innovation

In 2021-22, the GENESIS Centre will become a new facility for R&D activity in the storage and conversion of energy. It will provide a space where companies can access University and industrial expertise, engage with other companies, build business-to-business collaborations, and develop and experimentally test new approaches to the development of low-carbon energy systems. These low-carbon systems would include energy based on 3 key areas of research expertise:

- a) New battery technologies, and their application in static power (e.g. Sodium-ion, a new Electrochemistry with a huge potential for Battery Energy Storage Systems), and the use of new batteries in hybrid fuel cell-battery systems for transport and mobility;
- b) The development of Hydrogen-based energy systems, and its use in storage and propulsion systems including land and marine. This will include new generations of fuel cells for static power and transport, and Ammonia production and its use in energy storage;
- c) The conversion of CO<sub>2</sub> into useful synthetic fuels and higher-value chemicals, building on our research expertise in Electrolysis, and demonstrating a 'power to X' concept whereby surplus renewable electricity can be converted into high-value products.

The proposed Centre is therefore unique in a UK and Scottish context: there is no other centre which focuses specifically upon energy storage and conversion, and which uses some of the UK's top research in this area to create economic opportunities for companies in energy storage and its applications (including sustainable mobility).

### Hydrogen

Eden Campus is home to the Hydrogen Accelerator Team who are facilitating Scotland's hydrogen future by stimulating innovation in SME's. The Team provides access to product test and development space, expert academic advice and signposting to funding opportunities.

The project will also support companies who wish to transition or diversify into the hydrogen related sector, including companies from the oil and gas sector.

### Advanced Manufacturing

This initiative enables the University to engage with companies working in energy storage and conversion. The University will provide scale-up facilities for translation of research and development into early prototyping and through proving technology before moving to large scale manufacture.

It will do this by developing a range of processing capabilities of relevance to battery, fuel cell and catalyst manufacture. This will be supported by test and development space where companies operating in the energy storage and conversion sectors can have access to high quality equipment and facilities and university know-how and expertise.

The Advanced Manufacturing Challenge Fund provided a significant step change opportunity to target SME's. The manufacture, test and development space at Eden campus will be open to all companies, large and small, with a recognition of the nurturing and networking obligations among the wider network of larger companies in our support of SME's. Examples of work that drive our sustainability goals include:

- Conversion of renewable electricity to hydrogen and ammonia through manufacture of catalysts;
- Manufacture and Development of new generation batteries;
- Fuel cell development & construction.

### Electric Vehicle Charging Points

There are 12 EV charging points installed at Eden Campus and funding for a further 20 has been secured for 2021.

### Research at St Andrews

The Research Working Group of the ESB was established in March 2020 to advise on how to position the University as a global leader on environmental sustainability research, in line with the University Strategy 2018-23. Drawing on the expertise of a wide & interdisciplinary group of researchers through its Steering Group, the Working Group has built an ambitious strategy to bring the University to the forefront of cutting-edge environmental sustainability research.

The Research Working Group is contributing two modules to University's new Environmental Sustainability Strategy. Module #1 aims to boost the volume, visibility and impact of the University's research on climate change and environmental sustainability. Module #2 aims to minimise the environmental impacts of University research activities. To begin implementing these modules, the Research Working Group will soon establish the 'St Andrews Network for Climate, Energy, Environment and Sustainability' (StA-CEES). StA-CEES is a truly interdisciplinary initiative co-led by academics across three Schools, with seed funding of £86,000 secured through SARIRF. StA-CEES's vision is for the University to be at the centre of international conversations on environmental sustainability, thus putting St Andrews in a position to strongly target large-scale funding opportunities as they arise (e.g. NERC's £20M 'Changing the Environment' call) as well as providing research insight to support the University to achieve its sector-leading vision of 'Net Zero by 2035'. With an active St Andrews presence at COP26 being planned for November 2021, and the relaunch of the 'St Andrews Prize for the Environment' in October 2021, the establishment of StA-CEES is well timed to support these defining University initiatives. Our research successes in sustainability are numerous and highlights include:

- A share of £12M from the NERC and ESRC funded programme 'Sustainable Management of UK Marine Resources' to improve understanding of societal perspectives, behaviours and management of the UK marine environment

- A share of £1.8M from NERC to tackle the modelling of clouds in projections of future climate change
- £300,000 from the Leverhulme Trust to develop a new framework of biodiversity changes that addresses how ecosystems are being reconfigured today
- £200,000 from the Arts and Humanities Research Council to address new and sustainable opportunities for food production in northern Peru.
- £1.13M of Scottish Government-supported funding through the Advancing Manufacturing Challenge Fund to develop a world-class test space at the Eden Campus for academics, technicians, and small and medium-sized companies to work together on projects in energy storage and conversion.
- £300,000 for a new hydrogen accelerator located at the Eden Campus to draw on the expertise of the University, and in partnership with institutions across Scotland, to propel innovations in hydrogen technology and encourage knowledge-sharing to support transport applications and sustainable mobility.

*Our research supports SDGs 4 (Quality Education) and 17 (Partnership for the Goals) by increasing and sharing knowledge of climate change and mitigation efforts, as well as collaborating with other research partners across the globe.*

### **Sustainability in the Curriculum**

The Sustainability in the Curriculum Committee has led the formulation of the Education strategy module as a component of University's new Environmental Sustainability Strategy. This includes an expansion of its remit and membership to include the promotion of environmentally sustainable careers. The Committee has also welcomed as new members and supported the two student co-creators of the compulsory Moodle practical course for all students on Training in Environmental and Sustainable Action (TESA). The Committee has introduced a prize for the best designed new module proposal submitted to the Curriculum Approvals Group (CAG) in 2019-2020 to address environmental sustainability. The prize was awarded to Dr Derek Ball from the Department of Philosophy for his, "The Philosophy of the Climate Crisis". It is sponsored by the Environmental Sustainability Board, with the winner being selected from 11 candidate modules by a judging panel drawn from members of CAG and the Sustainability in the Curriculum Committee.

*The actions taken by the University support SDGs 4 (Quality Education) and 13 (Climate Action). The University's dedication to incorporating sustainability into all aspects of education will address targets 13.3 (Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning) and 4.7 (By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development).*

### Students and Community

The year started with the Line in the Sand climate event gathering over 1,200 people on West Sands Beach to join the global climate action call. This sparked a whole range of new environmental commitments and awareness through the St Andrews community and town. The Environment Subcommittee of the Student Association launched the first purely environmental-based St Andrews online magazine UnEarth to highlight environmental issues, awareness, and tools for climate action. An increased listenership was seen of the weekly environmental radio show Eco-Activist Journeys on St Andrews Radio engaging listeners in topics such as climate activism, plastic reduction, fast fashion, faith and the environment, corporate sustainability, environmental economics, human, planetary and soil health as well as arts and activism. The University-wide Green Week was organised by the Environment Subcommittee in collaboration with Transition St Andrews. It gathered students and community members for a week full of events encouraging paradigm shifts and lifestyle changes.



*Figure 1: Line in the Sand 2019 Photo credits to Ben Markey*

An increase in environmental events and discussions was seen at all levels of the University from the University Chaplaincy to the Students Association and societies across the board launching environmental fundraisers and looking to reduce their carbon footprint. This includes a shift in the St Andrews fashion shows towards ethical fashion.

A new student initiative to support the University in its aim to build Kenly windfarm was kickstarted by Amnesty St Andrews and gathered signatures and support for the windfarm. On the 29th of November 2019 the fourth St Andrews climate strike of the year took place gathering hundreds of school children from around Fife, community members and students. This event called on the “winds of change” as participants and local politicians signed the four windmill structures on West Sands Beach.

Local climate action was taken at the collaborative tree-planting initiative between SVS, Climate Action St Andrews, and the Environment Subcommittee to plant over 200 trees in Cambo Gardens on Saturday the 30th of November 2019. The second semester started with increased awareness and panel discussions around the topic of fair fashion and sustainability. For the first time the student-run St Andrews fashion show engaged with the topic openly, setting environmental targets for their events, as well as raising awareness and money for environmental charities. In addition, this increased recognition and commitment to taking climate action in the student community was also seen in the influx of the highest number of applicants for the new Environment Subcommittee that formed in May 2020 to champion and raise awareness for climate action in the new academic year. The last major in person event that took place in March before the Covid-19 lockdown was the book launch of the not-for profit “Dear Earth” poetry book by Léa Weimann which was launched with

Stephen Gethins and the Principal Professor Sally Mapstone in Parliament Hall on Wednesday the 11th of March 2020.

### **Engagement and behaviour change**

We have launched two new initiatives to engage students in our sustainability work. Training in Environmental Sustainability Action (TESA) is an online module in green literacy that will be compulsory for all students by September 2020. We have worked together with the students Millicent Sutton and Charlotte Evans to create the TESA, and through round-table discussions with students, staff, and experts decided to include practical tips of action relating to energy, water, food, biodiversity, waste minimisation, and travel.

In addition, 32 Student Sustainability Representatives (SSR) have been recruited from 17 of the University's academic schools. The SSR is a voluntary position for both undergraduates and postgraduates. The key responsibilities of the SSRs are to;

- 1) increase environmental awareness by running sustainability-themed events at the academic schools,
- 2) be an agent of change by organising audits and leading campaigns that make the school into a more environmentally-friendly place,
- 3) liaise between the Environment Team, the Environmental Sustainability Board and the school to map and promote sustainability in the curriculum.

To these two new initiatives, we continue working with previous successful strategies. The Environment Team has had a presence at every student fayre to inform students and promote the sustainability efforts of the University. Through staff training programmes, other student representative roles, and student interhall energy competitions, we raise awareness of energy, waste minimisation, and sustainable travel. In the first 6 months of last year, the interhall energy competition saved an estimate of 105 tonnes CO<sub>2</sub>e. This demonstrates the impact of our work to engage students and staff and motivate us to continue developing projects promoting behaviour change.

Transition University of St Andrews (Transition UStA) is a student led Community Interest Company and Constituted group that is linked to the Estates Environment Team. It currently has 5 staff employed by the university and manages Community and University programmes in the region of £200,000 per annum, using a mixture of funds from the University and external sources. It is a member of the Transition Town movement and works with national and local networks such as the Scottish Communities Climate Action Network and Fife Communities Climate Action Network to ensure our communities voice is heard and support wider community action.

It has been a challenging year for the group with 4 staff being lost due to the loss of Climate Challenge funding in August, following the summer on furlough. The group has struggled to deliver the same volume of activity as previous years, as much of their work focuses on face to face engagement and events. Nevertheless, the group has remained positive and has adapted through linking to the CAN DO initiative in order to keep successful programmes including:



**StAndReuse:** This project aims to reduce student waste by collecting, storing, and re-using the items left behind at the end of term within the incoming student population. This period it served 1532 people and re-used over 5.1 tonnes of goods worth an estimated £44,000. The large volunteer team recorded 662 hours in helping to move, sort and giveaway equipment tirelessly collecting food, clothes, kitchen items, and furniture for reuse. Instead of hosting group events, we have been operating by bookable slots for students to browse through our items. We have also set up re-use centres within most halls of residents that reduce the need for moving goods whilst creating more community feel. New projects included the creation of Shared Kitchen Packs in 45 hall kitchen and partnerships with Student Fashion groups to increase clothing re-use.

**Edible Campus** is one of the largest University based foods growing programmes in the UK with 14 growing spaces and annual harvest of over 1 tonne. Activities includes garden tours for student classes and the community, cooking workshops, online recipes, pedal powered smoothies, apple pressing, tool maintenance workshops, raised bed workshop, bat/bird box making sessions, Good Food workshops alongside weekly training and garden sessions. Over 300 garden sessions were held this period with attendance at 756 people.

A highlight for this year was that one of our Garden Leaders, William Sproxton-Miller, winning the principals medal in recognition, partly, of his contribution to community relations through gardening. On winning the prize he donated all the funds to the continuing development of the Community Gardens and in particular “his” garden at St Marys.



Figure 2: William at work

During the Covid response our garden leaders have been managing access to the spaces to allow households or groups of 2 to meet, socialise and garden. Many comment that it is important that we keep these sessions going, as they break isolation and support mental well-being. Being outdoors around plants and vegetables is something we *can do* despite Covid-19.

**The Tree Food COOP** Transition facilitates a student run Food Coop called “the Tree” that was initiated in 2015 and still continues to provide a route for engaging people on the local food network whilst supporting local producers. It has been the busiest year yet for the team with weekly sales reaching £500 as they switched from pick-ups at the Union Building to delivery by cargo bike in response to Covid lockdown. For students and local residents shielding it was an important service which the Estates team supported through continuing access to the Woodburn base. It provides real life business experience for students with a number going on to set up or work with similar projects when they leave St Andrews.

### Travel and transport

Staff business travel emissions are monitored through liaison with travel providers and staff travel expense claims and these are reported in the Public Sector Climate Change Duties Report for Scottish Government

Travel is Transitions largest programme of work covering cycling, smarter travel, Electric Vehicles, University strategy and the PSR to Eden Campus. The main outcome is to support the Universities KPI to keep single person car use below 40% and meet the Scottish governments target of 10% of journeys by bike. With car use expected to spike in response to COVID 19 there is potential for pressure on car parking to increase as the reduction in use of our Liftshare.com use has demonstrated.

Cycling: Transition administers the University Bike User Group which coordinates activity on cycle infrastructure, activities, and development. It works to the University Cycling Strategy and action plan in order to maintain the University Cycle Friendly Campus Status whilst undertaking monitoring that includes counts of bike usage, bike storage use, light usage and bike quality to inform decision making.

Transition delivered 45 Bike Pool fix it sessions in St Andrews serving 559 people with the support of 144 volunteer hours. Over 1200 engaged without our cycling events including 59 school children trained in Bikability and 270 school children on cycle safety at Leuchars base. Our strategy is to train students and locals to help fix bikes and deliver cycle training across the community. Four volunteers gained Velotech silver qualifications and 12 attended 1 day bike maintenance training. We ran Cycle ride leader training and led rides whilst sending 6 locals on the Sustrans Making Cycling Mainstream course to learn about path development. The staff Go E-bike scheme started well with 99 staff trained in E-Bike use bringing the total trained to over 150 people and the annual mileage for all bikes to over 11,000 miles. However, the scheme was mothballed at the start of Covid and funding is now being sourced to re-open the service.

The Bike Pool loan scheme ran over 120 rentals which generated an income of nearly £5000 to support further cycling activities, reduced the need for students to buy bikes they don't need and recycled a further 26 bikes into the fleet. We ran bike light fitting sessions, sold secure D-locks and managed the bike tagging scheme in response to concerns on cycle safety and increasing rates of cycle theft.

**Skillshares:** This programme was very busy up to the Covid response hosting 106 skillshares attended by 608 people with the support of 873 volunteer hours. Funding cuts and Covid has reduced its output to around 1 event per week. Its Facebook page now has 1,657 members including students, staff and members of the local community. Skillshare builds stronger communities by bringing people together from all walks of life to give them confidence and new skills. Its attendees are a 60/40 split of students and residents. Most of the outcomes from the programme are Community focused but it also saved a total of 1.3 tCO<sub>2</sub>e through repair and repurposing of materials that would otherwise be landfilled. Since starting in 2016 it has offered an incredible 140 different types of skillshares.

**Toolshare:** Based at the Kernel workshop in the Botanic Gardens this library of tools enables many community and individual projects to be carried out. It made 237 loans were made over this period covering 1662 loan days with the main category being DIY followed by garden and Kitchen. The library holds over 120 tools from small router blades to gazebos and even a pizza oven for community events. Again, this programme lost its worker in August and has been mothballed due to access restrictions to the Kernel site from Covid response. Discussions with the Library and Students Association have taken place to consider how access to the scheme can be returned and enhanced.

**Town Cleans:** Transition facilitates and leads on community litter picking by providing expertise and kit to groups and individuals as well running events. The importance of these events has become clearer during the pandemic – while we are supporting the environment; we are also supporting the community's well-being. The cleans are made with groups of maximum six people at beaches, rivers, parks, and streets of the town. Many have reached out to us about the importance of these events to break social isolation.

**The St Andrews Green Film Festival** continues to be hosted by Transition and organised by a sub-group of students and local residents. The Festival showcases the latest, most inspiring films about climate change and sustainability, connecting audiences and the natural environment with its main event taking place at the Byre with supplemental screenings and discussion throughout the year.

*The large range of behaviour change activities with which members of the University engage and promote address various aspects of SDGs 2 (Zero Hunger) and 12 (Responsible Consumption and Production). Edible Campus and The Tree contribute to target 2.3 (By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment) by increasing the knowledge and practice of growing in the local community and providing opportunities for local farmers to reach a wider market for their products. The StAndRe-Use project addresses target 12.5 (By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse) as thousands of kg of goods are diverted from landfill. The Kernel, and in particular the Toolshare, provides resources that also address target 12.5 as it allows tools to be re-used by a whole community. The other various behaviour change activities undertaken at the University work towards target 12.8 (By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature) as students, staff, and the wider community are educated about sustainability and the environment.*

*The University's strives to provide various forms of safe and environmentally- friendly transportation contribute to achieving SDG 11 (Sustainable Cities and Communities) and in particular target 11.2 (By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons).*

### Conclusion

The year will be most remembered for the Covid response that has provided both opportunity for carbon reduction as well as unavoidable increases. Home working and video conferencing dramatically reduced the need to travel whilst the lockdown of buildings initially reduced energy consumption. As buildings re-opened, with increased air flows and hygiene requirements, we have seen increases to heat demand and associated waste. Changes to travel behaviour could also lead to increases in carbon emissions as more staff and students move to single person vehicles and avoid public transport or shared vehicles.

Business travel remains low with extremely limited local or international events, however the reopening following Covid may see a spike in demand for attendance and air travel.

Similar to how this reporting period of activity started though, with our Students and Staff joining the global Climate Strikes in September 2019, which instilled a renewed drive for change and formation of the Environmental Sustainability Board. The influence of this structure on the direction of the University is still to be fully felt but its ambitions and leadership are in no doubt that the 2035 net zero target will be met.

A green bounce forward is expected and required.