Department
for Environment
Food & Rural Affairs

Greening Government ICT

Annual report 2021 to 2022

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Foreword

In Defra we have a leadership role on sustainability. In my role, I do this in four main ways:

- Delivering our ambition on digital and data to provide systems and services that help citizens and companies do the right thing. Our services protect the planet from people through helping comply with regulation and advice on emissions etc. But we also protect people from the planet – and prevent the spread of food or animal borne diseases across our borders. Helping mitigate the impacts of climate change by providing flood warnings, providing data to support investment on flood alleviation and helping people take action to prepare and respond
- We've committed in our own Defra Sustainable Tech Strategy to measuring, reporting, and reducing the negative impacts associated with our technology, not just on climate change but also encouraging a circular economy and social sustainability.
- We ensure those good practices are repeated across government too, building sustainability into governance and technology spending decisions; we produce an annual report and we've got ICT reporting included in Greening Government Commitments, and ensuring sustainability is in the Technology Codes of Practice, procurement policies etc.
- We've been proactive in working with our suppliers, and the broader technology industry, to collaborate on best practice and create a dialogue around technology for climate action and the circular economy. We were one of first departments to make SD part of the supplier selection and evaluation process, for example.

How technology is playing its part

Technology and tech teams have a massive role to play in supporting the sustainability objectives of the organisations they support. We've been publishing information on emissions from government technology for over 10 years now. And we've seen steady

reductions in emissions through things like the move to cloud, enabling us to leverage hyperscale level datacentres and cutting-edge technology.

More widely you can see the role that technology is playing in the rapid acceleration of tech such as electric vehicles in reducing our reliance on fossil fuels for transportation. It's not just the electric motors that enable that, it's the interaction between the vehicle, the availability of charging points, having that data on our mobile phones or dashboards, allowing us to plan our journeys more effectively and so on.

Technology won't solve everything though. Minimising climate change will require massive behavioural and societal changes. So, we need a greater focus on how technology and data can help drive that.

My thanks must go to many industrious thought leaders on sustainable ICT that formed and pushed this group and its work into the mainstream. We have been proud to be at the vanguard of this increasingly crucial topic and look forward to engaging internationally to ensure that ICT and Digital services are part of the solution, and not part of the problem.

Chris Howes

Defra CDIO

Executive summary

As the lead government department for sustainable information and communications technology (ICT), Defra recognises that the carbon footprint of ICT worldwide is on par with the aviation industry and is expected to increase. ICT waste is also a growing worldwide issue and supply chains are under increased scrutiny for their use of modern slavery, conflict minerals and rare earth elements, as well as their contribution to, and impacts from, climate change.

The HMG Sustainable Technology Advice and Reporting (STAR) team ensures that government ICT services are designed, delivered and operated with sustainable principles at their core. This includes our procurement choices (which cover not just the origin of the kit we buy but how it's transported, the packaging in which it's delivered and whether it can be reused or recycled when no longer required), how our ICT is used (ranging from kit which uses less energy to technology which reduces the need for travel) and disposal (including repair, reuse and recycling).

These sustainable practices help to improve business resilience and end user experience. They also help guarantee that ICT services deliver real and tangible benefits which support delivery of the wider government strategies and commitments such as the 25 Year Environment Plan (25YEP), Net Zero and the UN Sustainable Development Goals (UN SDG's).

The ICT estate on government property has become more energy efficient as departments have moved into service provisions driven by Cloud First and Digital Policies. Therefore, the energy impact of government ICT has moved from not just government estates, but to those of our service providers. This is also true when you consider the ICT waste and social impacts from the service provisions.

The Greening Government: ICT and Digital Services Strategy 2020-2025 was published in September 2020 to meet the challenge of measuring governments ICT impacts and benefits in a services world. It provides best practices and guidance to support the delivery of Sustainable ICT within government spend control processes. Furthermore, it challenges departments to focus on areas for improvement through the delivery of a departmental sustainable technology strategy statement.

Performance highlights:

- **Progress towards net zero ICT and digital services**: Increased availability of data about footprint, cloud hosting, and green energy mix.

- **Increasing participation**: More departments agencies and bodies provided data than ever before with 34 returns, an increase of 9 from the previous year. The vast majority also set strategy statements and provided policy progress data.
- **Global leading action to identify our carbon footprint in the cloud**. We asked data centre and cloud hosting suppliers formally for energy consumption data relating to the services we have consumed with data provided for the vast majority of departments.
- **Focussing on the circular economy**: 1.58% of ICT resources are recorded as going to landfill in 2021. +0.78% from 18/19. With the exception of two, every department reported zero to landfill. The number of items being reused (+43%) or recycled (+30%) have both increased significantly showing improved end of life management.
- **Generating income:** A total of £1,930,942 from commercial sale. An increase of almost 100% from 2019/20.
- **Digital first travel policies**: 38 million e-conferences are recorded an increase from 18.3 million from 2020 directly supporting the ability to work from home. In 2018/29 the figure was just 3.5 million so this represents a 10 fold increase.
- **Setting direction**: Strategy statements setting out proactive sustainable ICT projects and programmes received from majority of contributors and signed by departmental CDIO's.
- **Evidence towards a net gain provided by digital services**. The ICT and digital services carbon footprint has increased but has enabled much larger reductions in carbon from business travel and estates.

Introduction

During 2021/22 departments continued their journey towards using more sustainable digital services, technologies and best practices, in line with the 2020 - 2025 Greening Government: ICT and Digital Services Strategy.

Challenge 1:

To describe how government best procures and exploits ICT services for sustainability through the provision of published guidance setting minimum sustainability standards for our service providers.

Progress:

Using reporting data from the current strategy our new Greening Government: ICT and Digital Services Strategy 2020-2025 sets out six key tech industry endorsed business rules aligned to key policy goals such as net zero, circular economy, modern slavery and social value. The business rules are designed to be placed into new and existing contracts.

Challenge 2:

To provide evidence that delivery of Sustainable ICT is a key enabler to government transformation programmes, plans and commitments and wider government imperatives supporting the transparency agenda

Progress:

Our reporting has improved through increased engagement and transparency with our delivery partners across government. From 2021-2025 Sustainable ICT are embedded for the first time, within the Greening Government Commitments (GGC) to show how digitisations has helped enable reductions in travel, energy use and waste. GGC data is also shown as a comparison in this report. We have updated Cabinet Office Policy through the new Technology Code of Practice pt12 and included Sustainability in the new Government Digital and Data Roadmap.

Challenge 3:

To provide a guiding view of how government can meet the sustainability challenges and opportunities provided by digital technologies and digitalisation

Progress:

The GGC: ICT and Digital Services strategy defines what is required from Digital, Data and Technology (DDaT) professionals, as well as the wider procurement community to meet sustainable ICT challenges and opportunities. In addition, we are producing a number of guides on circular ICT, modern slavery and cloud.

All the materials are published on gov.uk through the Technology Code of Practice (TCoP) and/or a government wide collaborative shared working area.

This change in approach to contracting ICT services requires the STAR to shift its focus from aiding departmental procurements to also working with Crown Commercial Services (CCS) and centralising controls processes such as those managed by GDS/CDDO to deliver more sustainable ICT services.

This report:

- Conveys department's assessments of progress against the strategy for the sustainability benefits and impacts of their digital services and technologies
- Details the work done by the STAR throughout 2021/2022 and since our work began in 2010
- Identifies areas where departments remained challenged in adopting best practices to reduce the sustainability impacts of their technology services

In total 34 Departments/Agencies have been engaged in this process up from 25 in the previous year and 21 the year before. All contributors provided returns for ICT energy footprints and ICT waste figures. A majority were also able to provide a strategy statement signed by their CDIO's and progress reports against the GGC ICT and Digital Services Strategy. The variation can be accounted for by the number of different stakeholders across departments that need to be contacted in order to complete returns. In some organisations this can be a single point of contact, while in other larger departments this can be more of a challenge across multiple tiers, industry providers and agencies.

A summary of the results is provided in the infographic figure 1. The following results are presented.

- **34 departments/agencies/bodies** provided returns – an increase of 9 from last year showing improved collaboration across 603,000 members of staff, an increase from 474,550 in 2019/20
- A minimum of **38 million e-conferences** were held across government helping minimise the need to travel. Up from 3.5 million in 2018/19
- Only **1.26% ICT Waste to landfill** a slight increase from 0.8% in 18/19 and lower than 2.09% in 17/18 and moving towards our zero to landfill target and a more circular model of consumption
- Generated in excess of **£1.9m income** from improved end of life resource management
- A **more accurate ICT energy consumption** figure was achieved through amending and simplifying reporting processes
- **All hosting suppliers, including cloud, formally asked to provide** energy consumption/carbon data relating to the services we are consuming
- **Strategy Statements endorsed by CDIO's,** setting out proactive sustainable ICT projects and programmes received from majority of departments

2021/22 Greening Government ICT Annual Report

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Generated in excess of **£1.9m income** from improved end of life resource management

Strategy Statements endorsed by CDIO's, setting out proactive sustainable ICT projects and programmes received from 19 departments.

All hosting suppliers, including cloud, formally asked to provide energy consumption/carbon data relating to the services we are consuming.

ICT and digital services footprint

This is the 11th year that the STAR has gathered figures for the IT operational energy footprint. This is the assessment, if not measurement, of the energy and carbon taken to run our IT and digital services. The STAR again used the tool developed with the Joint Information Systems Committee for Higher Education (JISC) but this was supplemented with single data requests from building management systems, and hosting providers, where possible, to achieve more accurate hosting data. We asked that returns also included data from externally hosted data and cloud providers in order to gain as true a picture as possible. Finally, where known, we asked for energy mix breakdown data. The results as presented are based on the individual departmental returns.

Key highlights

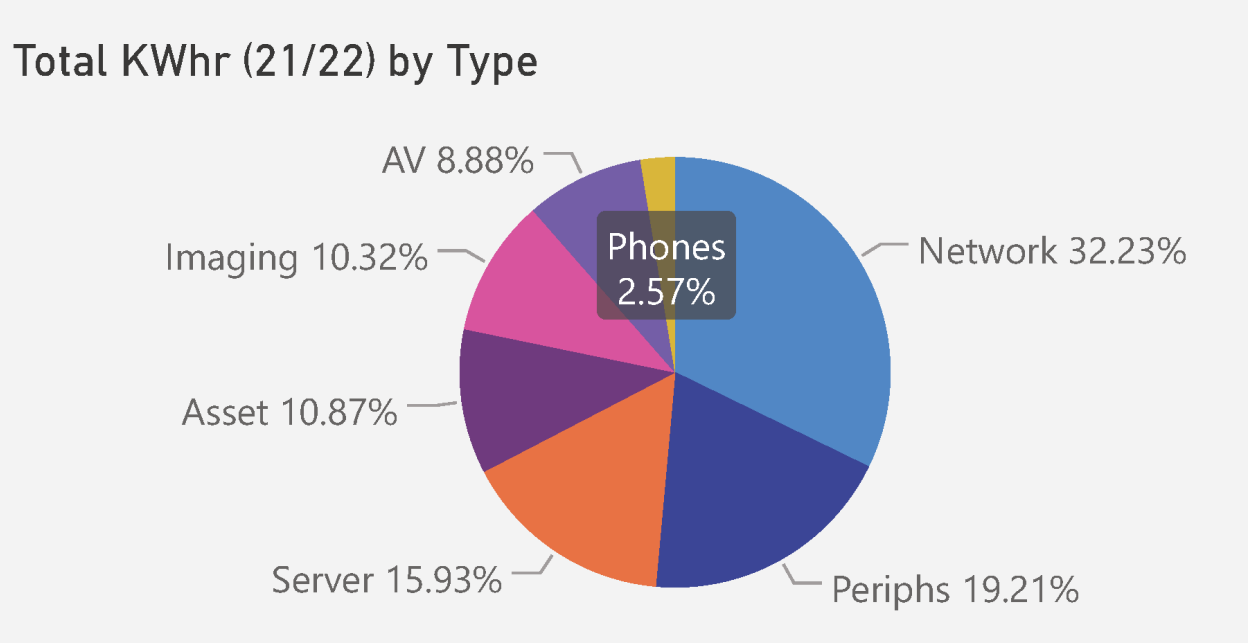
- 34 departments/organisations refreshed their footprint figures, an increase of 9 from last year.
- The assessment covered 603,000 employees which is +128,000 more than last year.
- The individual staff energy consumption is estimated to be 1,546 kWh/year. This is 181 kWh lower than last year (1,727 kWh/y). This can be explained by the decrease in energy consumption of the servers as we have migrated to the cloud (-264 MWh between 2021 and 2020) and the increase in number of staff covered by the report. **Some departments mentioned their difficulties in accessing the hosting data from providers. We are working with hosting suppliers to gain more visibility on energy consumption/CO2e emissions of the servers.**
- Power consumption of on and off-premises server rooms represent 16% of the total footprint figures. If you also add in the network equipment, the figure is 48%. This figure is higher when Cloud data is included, but the details and methodologies from our providers are not yet available to verify the data in most cases.
- Returns from three departments and one ALB (FCDO, DCMS, HMT and DLUHC) have been carried forward to provide a comparable assessment to last years.
- Carbon conversion factors have been updated to the latest figures.

A view often levied at Sustainable ICT work is that we are “getting greener by default” and while the statement does hold some truth it certainly does not tell the entire picture. “Cloud first” and digital agendas, policies and strategies have led to the closure of legacy and

often inefficient, on-premise data centres and into often more efficient cloud, private cloud or co-located datacentres. Prior to 2018, our reports showed energy from server rooms dropping significantly as a proportion of the energy use per member of staff across the civil service from over 50% to around 30%. The push this year for more accurate returns has yielded a combined figure of 48% power use for server rooms and network equipment. This leaves 52% for end user devices, peripherals, printers, AV and telephony.

Our 2021 returns show us that network equipment consumes the most energy with 32.23% of the total energy followed by peripherals 19.21% and servers 15.93%. However, some departments mentioned difficulties in accessing the server's data which could partly explain the 14% drop on server's energy consumption from last year.

Nonetheless, opportunities remain in the infrastructure arena. As displayed in figure 2, Network and Server represents 48% of the total emissions.



By understanding their digital footprints departments are able to base transformation decisions on this data and link departmental sustainability objectives to this. DHSC provide the following example.

Case Study 1 – Department for Health and Social Care

“Through completion of this year's STAR reporting, we have now identified routes through which to retrieve energy consumption and carbon data for some of our key digital services (data centres and cloud services), as well as some gaps. This will allow us to better track our carbon footprint here in future and has highlighted some areas for transparency improvements”. In addition, organisations such as the HRA have stated aims to adopt technology to reduce wider impacts with an "Aim to reduce travel by 60% on pre-pandemic levels for 2022/23”.

Figure 3 demonstrates how digitisation has increased total energy consumption. However, despite a jump in the energy consumption of +136% between 2016 and 2021, the carbon emissions only increased by about 10% for this same period. This can be explained by the “greening of the grid” from a vastly increased percentage of renewable energy produced by the UK, coupled with the efforts to decarbonise the data centre industry.

The greening of the grid is reflected in the difference between the 2016 and the 2021 conversion factors (respectively 0.41205 vs 0.21233). This represents roughly 50% reduction in CO2e emissions. Indeed, if the 2021 conversion factor was the same as in 2016, we would have 384,351,040 kgCO2e in 2021 instead of the 201,386,000 kgCO2e reported.

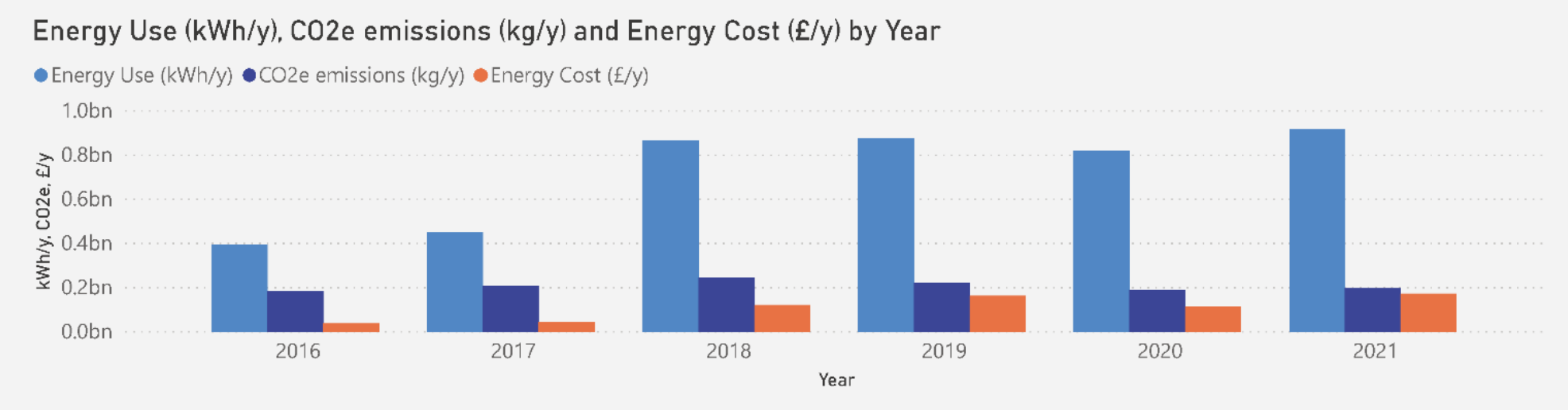


Figure 3 - Digitisation and Consumption

Service based carbon data availability for Cloud hosting has been variable. In many cases a carbon figure has been supplied to departments rather than a consumption figure. Furthermore, the workings behind that carbon figure are not clear, or available. Figure 4 represents the makeup of our hosting estates and services. We note the important representation of on-premise datacentres in the total energy consumption. Therefore, switching from on-premise to a more efficient off-premise, colocation or cloud datacentre constitute an opportunity for further decarbonisation of the government digital footprint.

In 2021/22 we have continued migration from on-premise to other data centres which has lowered our Scope 1 and 2 energy footprint. However, as shown in Figure 4 our off-premise, and cloud footprints are growing and consuming more than previous years. This means that the importance of quality carbon data based on consumption, workloads and transactions are more vital from our suppliers.

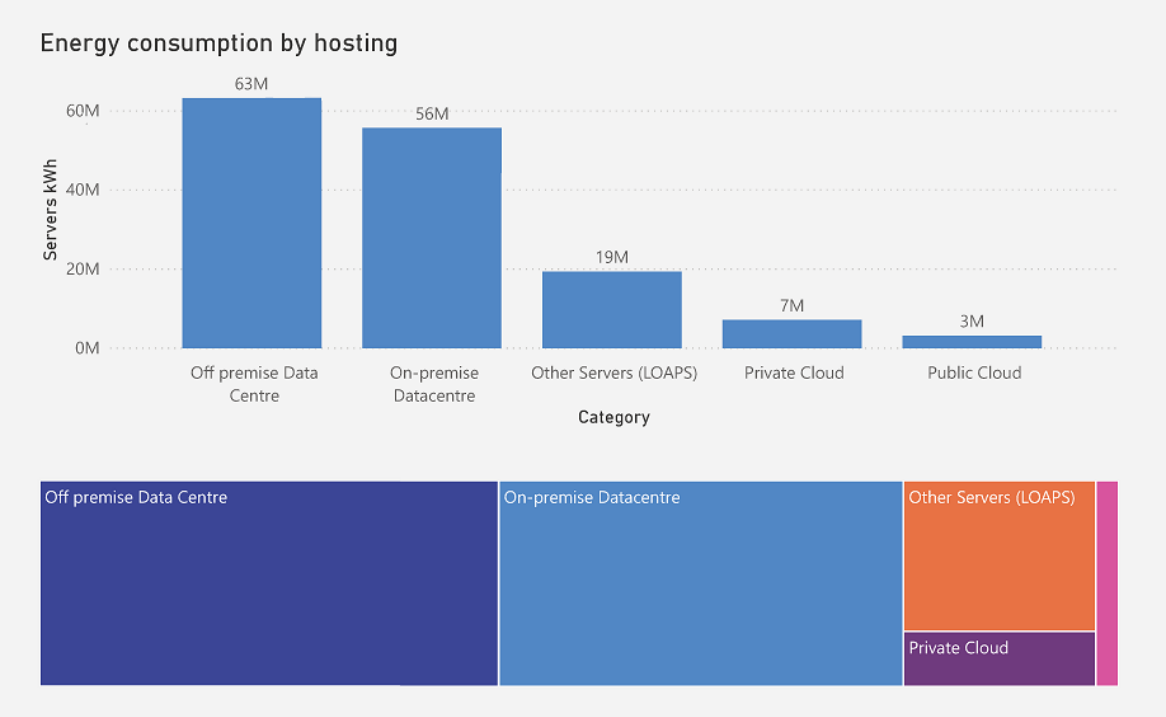


Figure 4 - Hosting kWh Consumption Data

Footprint data summary

There are some large disparities in data quality from departments. We altered the reporting in 2018 to try and improve accuracy but the results are ultimately reliant on departments providing accurate and complete returns. The importance of this data in informing government Policy requires a more formal approach and we will be seeking

independent auditing of the returns from 2023 as we bake the data into the service design processes of UK Gov.

Industry hosting

A formal request to all government hosting/cloud service providers was issued this year for carbon data for the service consumed and not the organisation figures many would already be reporting. In previous years we had run this as a best endeavours exercise only. This “carbon in the cloud” data has been provided for the fourth time, but due to non-disclosure agreements we have amalgamated all government cloud data. We hope in future reports to extract out departmental and hosting provider footprints. We are continuing to work with suppliers, industry, academia and professional bodies to develop advice and guidance on how best to account for our footprint in the services we consume. It is vital that we can accurately demonstrate how ICT is enabling wider sustainability goals and in order to do that we need an accurate service-based footprint.

Home workers

To better calculate an accurate footprint for civil servants wherever they are working, we asked all contributors to provide data relating to the number of full time equivalent (FTE) homeworkers. We noticed a significant improvement this year as we received more returns on the number of FTE as shown in Figure 5.

This explains the jump in FTE between 2020 and 2021 (+128K).

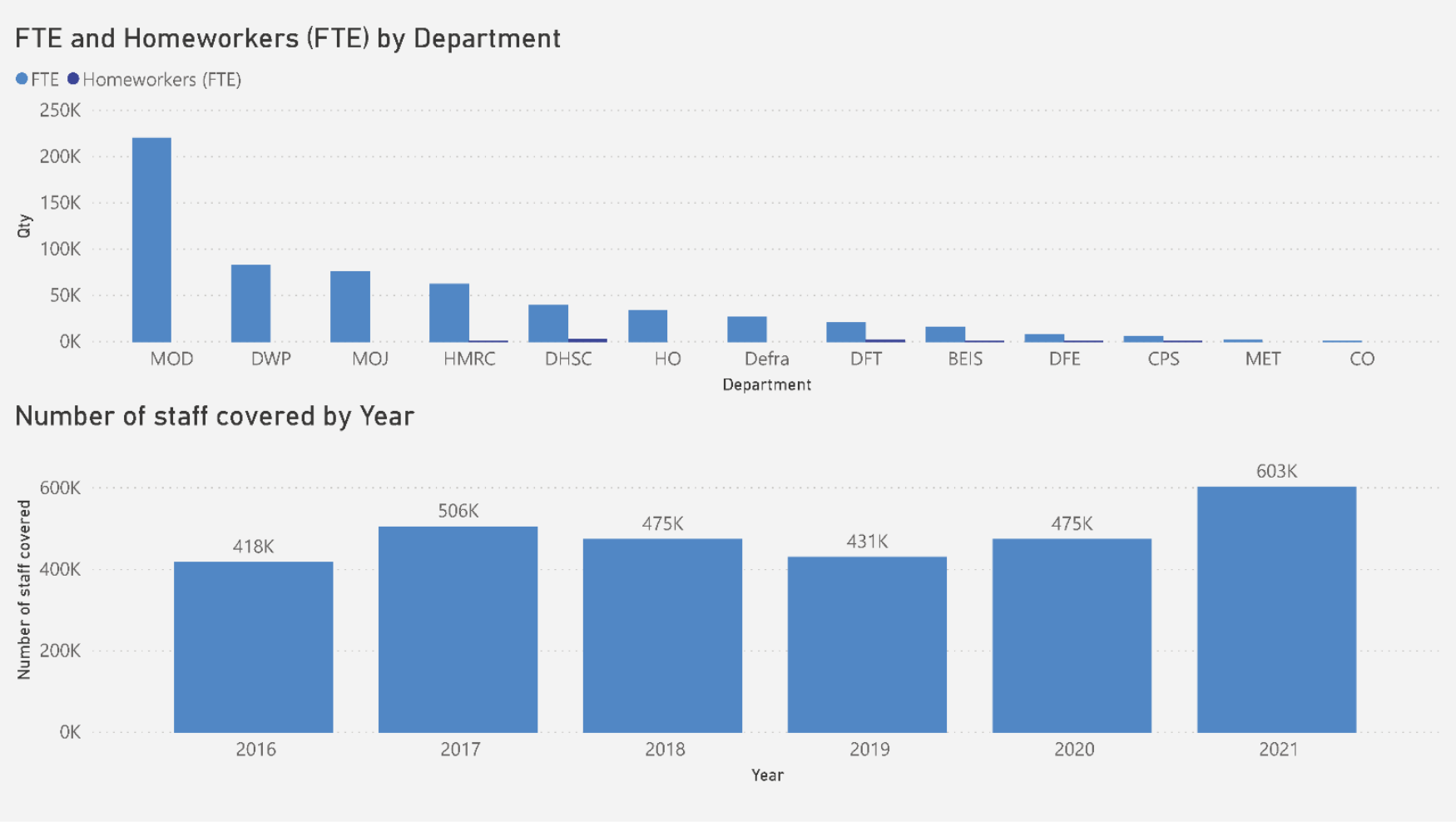


Figure 5 - FTE Figures and Homeworkers

The legacy estate

Several departments have reported an increased energy/carbon footprint this year. These results highlight the size of the legacy footprint that exists in addition to our cloud and industry hosting footprint. This data is now being fed to Cabinet Office to enable better decision making and prioritisation of legacy transformation work.

Case Study 2 from MoD

MOD have made the following commitment in their Sustainable Digital Technology and Services Strategic Approach 2021–2025, with a clear nod towards moving to lower impact digital services.

Reduced Environmental Footprint Delivery and operation of digital capabilities must be non-polluting, require less energy, and reduce raw material demand, lowering MOD's overall resource consumption. Device numbers must be managed effectively to avoid unnecessary proliferation, and hardware reused within a circular economy.

This has already yielded results through proactively transforming MOD's data centre estate they have achieved a reduction of 38% in 2021/22 since 2018 with further migrations planned for 2023, saving ½ Million kWh or 128475.527 kgCO2e which is about 850,000 km in a diesel car! The same as going to the moon and back with fuel still in the tank.

Legacy transformation and technical debt

Case Study 3 from HM Land Registry

We recognise that in carrying out our business functions, we need to minimise the negative effect of our business on the environment. We therefore make the following environmental commitments covering our offices and data centres: 1) We will comply with all relevant environmental legislation and key Government objectives, with emphasis on the Greening Government Commitment. 2) Prevent pollution from our activities. 3) Continuously review and improve our environmental performance. 4) Consider the impact of business decisions, projects and changes to working practices on sustainability.

Data from this report, and its predecessors has fed into policy decisions of legacy transformation and technical debt such as the cloud first policy led by Cabinet Office. Many departments utilise this data to make their own decisions on legacy transformation, demonstrated in case studies 1-3.

Waste (resources)

The STAR conducts annual reporting on the ICT waste collected across government and how it is handled and ultimately disposed.

Key highlights for 21/22 are:

- Overall end of life resource treatment increased by 35% from last year. There is a 43% increase in reuse and a 30% increase in recycled items. However, recovery decreased by 14%.
- 2,323,426 kg of assets have been disposed in 2021. This is 601,070 kg more than last year.

The approach by departments to dealing with its end-of-life ICT varies across government. All departments contract out the responsibility. Many pay for recycling services then receive a rebate on value reclaimed from the raw materials and rare earth elements, some allow the waste to be taken for free leaving the contractor to reclaim any costs through resale, and some others offer a mixture of the two. What is clear is that there isn't a consistent view, or process, or guidance/policy and with the amount of waste approaching two million kilograms there is an opportunity for government to adopt a smarter, coordinated, ethical and perhaps more lucrative approach to managing its ICT lifecycle.

Examining the data a little further, Figure 6 reveals the largest amount of ICT waste recorded to date in 2021/22. This reflects government ICT transformation programmes towards smarter working and cloud provision for data hosting as we move to mobile devices and hosting services, removing our legacy infrastructure. The reuse figures for sale/charity are from 14 departments, an increase from 6 last year. We will continue sharing this best practice across the remaining departments. A circular model of ownership would reduce waste figures from a government estates perspective. We are rapidly moving towards our zero to landfill target and simultaneously increasing the amounts we recycle and more importantly reuse. Only 1.26% ended up in landfill a slight increase from 0.8% in 18/19 but down on the 2.09% in 17/18 and a figure close to 6 percent when reporting began in 2011. The amount of e-waste continues to increase from a figure of 1.8 million kg in 2019/20 to 2.3 million kg today.

Year	Reuse (kg)	Recycle (kg)	Recover (kg)	Landfill (kg)	Total (kg)
2015	228,433	717,236	2,088	39,109	986,866
2016	159,979	443,087	16,278	9,350	628,694
2017	488,190	685,900	24,708	25,738	1,224,536
2018	623,323	1,132,798	25,754	15,702	1,797,577
2019	393,697	1,405,327	50,004	426	1,849,454
2020	875,958	697,656	143,181	5,561	1,722,356
2021	1,254,423	908,637	123,590	36,776	2,323,426

Figure 6 - Disposal Type and Weight

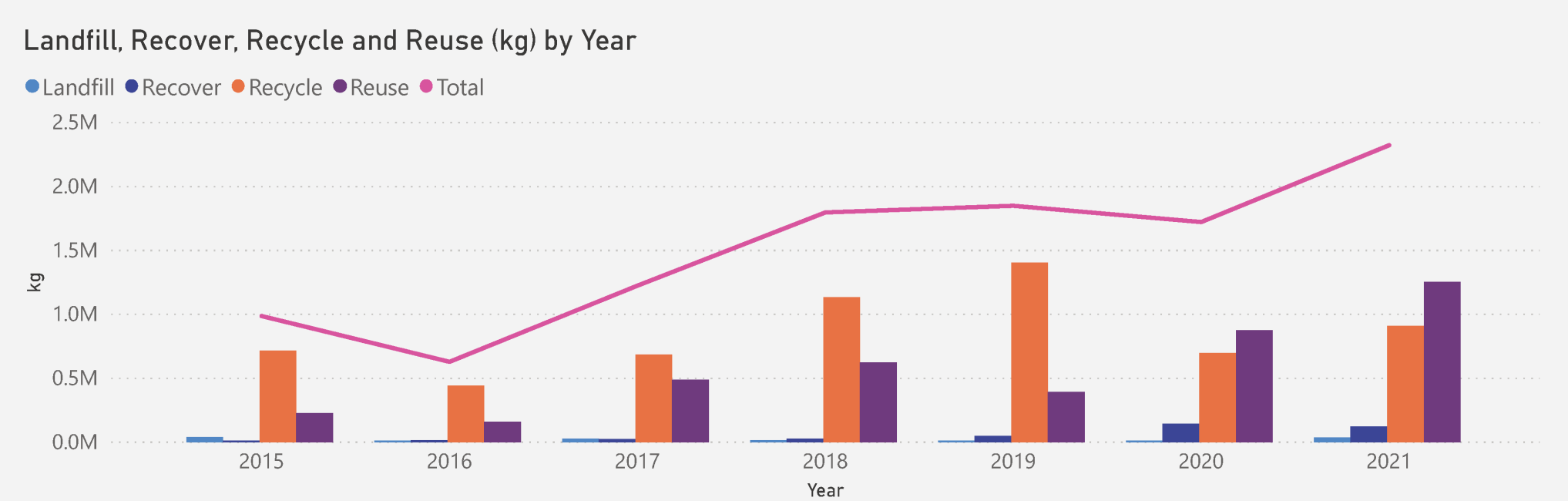


Figure 7 - E-Waste Results and Progression

Case Study 4 - Defra

“In addition to maintaining our Zero to landfill target we have raised £200,000 by selling redundant assets an increase of 426% from £38,000 in 2020 and donated 1,800 assets to citizens' advice and computer Aid (our assets are now being used for those impacted by the war in Ukraine).”

Travel

With most of the staff working on a hybrid work basis, online communication tools are more important than ever. 38 million online meetings were reported in 2021/22 – a 20 million increase that can be partly explained by the likely underreporting of 2020. This is presented in figure 8. Online meetings allow us to limit travel emissions and ensures the communication is maintained in special circumstances such as heat waves or strikes. We should note however that the quality of the returns varies in 2021/22 with no data available from Google Meet. We will therefore work with suppliers on improving the access to data on calls and online meetings.

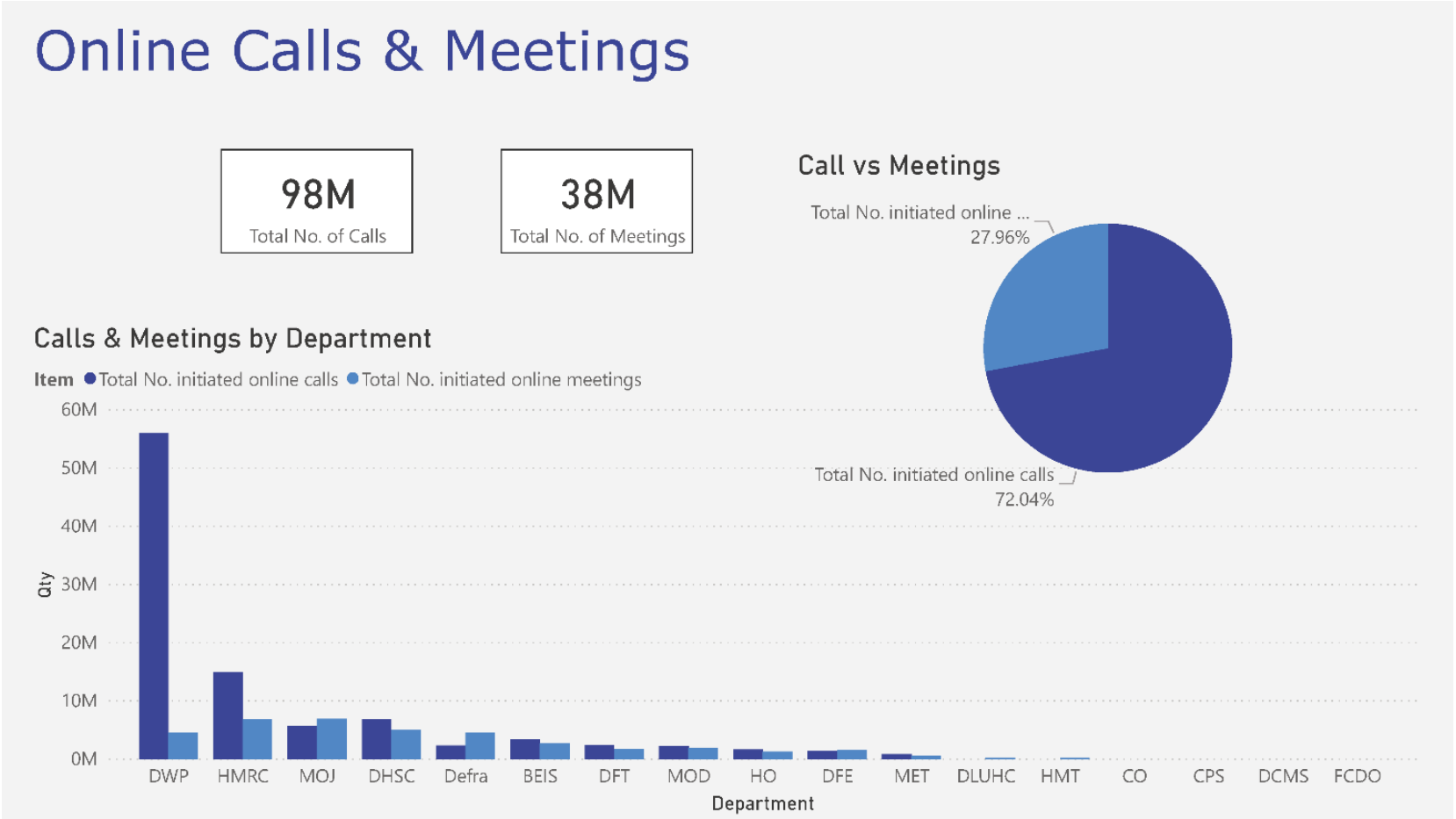


Figure 8 - Online Calls and Meetings

Departmental strategy statements

This is our fourth year of producing strategy statements and responses have been received from most departments (some departments share ICT resource). Signed off by departments CDIO's or CTO's they set out proactive departmental intentions for delivering ICT in line with sustainable outcomes. Progress against these aims and objectives have been included in the case studies scattered throughout this report. Furthermore, the statements will be used as part of the GDS Spend Controls Process to monitor progress. The statements are presented in full in Annex B. Figure 13 presents an increase from 8 to 19 between 2018/19 and 2021/22.

Figure 9 - Strategy Statement Completion

Supporting government agendas and commitments

The GGC data is presented below in terms of key reductions since 2010. This was enabled through the digitisation of government operations. IT and Digital services produced 201,386 t CO2e this year but arguably saved many multiples of this amount annually and makes up less than 15% of current estates total. In addition, this doesn't take account of carbon savings from business travel.

GGC Topic	Baseline	Current	Change	Enabling ICT Best Practice
Domestic flights	171000 flights	106,824 flights	-38%	Digital First Travel Policy E-conferencing
Estates Carbon Footprint	3,052,553 t CO2e	1,520,606 t CO2e	-50%	Closure of on-premise data centres and introduction of more energy efficient and mobile end user devices.
Paper consumption	8.2 million reams	3.0 million reams	-63%	Digitisation, automation, better suited end user devices, collaboration tools etc
ICT Footprint (inc services)	182,923 t CO2e	201,386 t CO2e	+10%	Working with all hosting/cloud suppliers to share service-based data.

Departments, agencies and bodies are committing to Net Zero objectives in advance of the 2050 date enshrined in law. Here is how the Met Office are taking forward their work for Net Zero by 2030 with the role of ICT clearly vital in meeting that target.

Year 1-2 (2021/22)

- Net Zero target and strategy agreed
- Main site and supercomputer electricity supply moved to zero carbon
- Business travel targets set and travel emissions offset

Year 2-5 (2022/23 – 2024/25)

- New supercomputing capability comes online with 100% renewable electricity
- CO2e emissions from procurement are progressively reduced to 70% by 2030
- Monitoring of commuting and working from home/home-working emissions incorporated into targets
- Yearly reductions in business travel related emissions to achieve at least a 40% reduction by 2030

By 2030

- Residual emissions from operationally critical work and remaining procurement emissions offset
- Carbon neutrality achieved by 2030
- Overall Met Office CO2e emissions reduced by 81% by March 2030
- Building management emissions further reduced including removal of main gas heating systems

Figure 10 - Met Office Case Study

Policy progress

If the Strategy Statements set out the intent, Policy Progress returns record what has been delivered. This is the third year of this section and the response levels have been high as we continue to improve maturity across all government departments and build capability to deliver sustainable ICT.

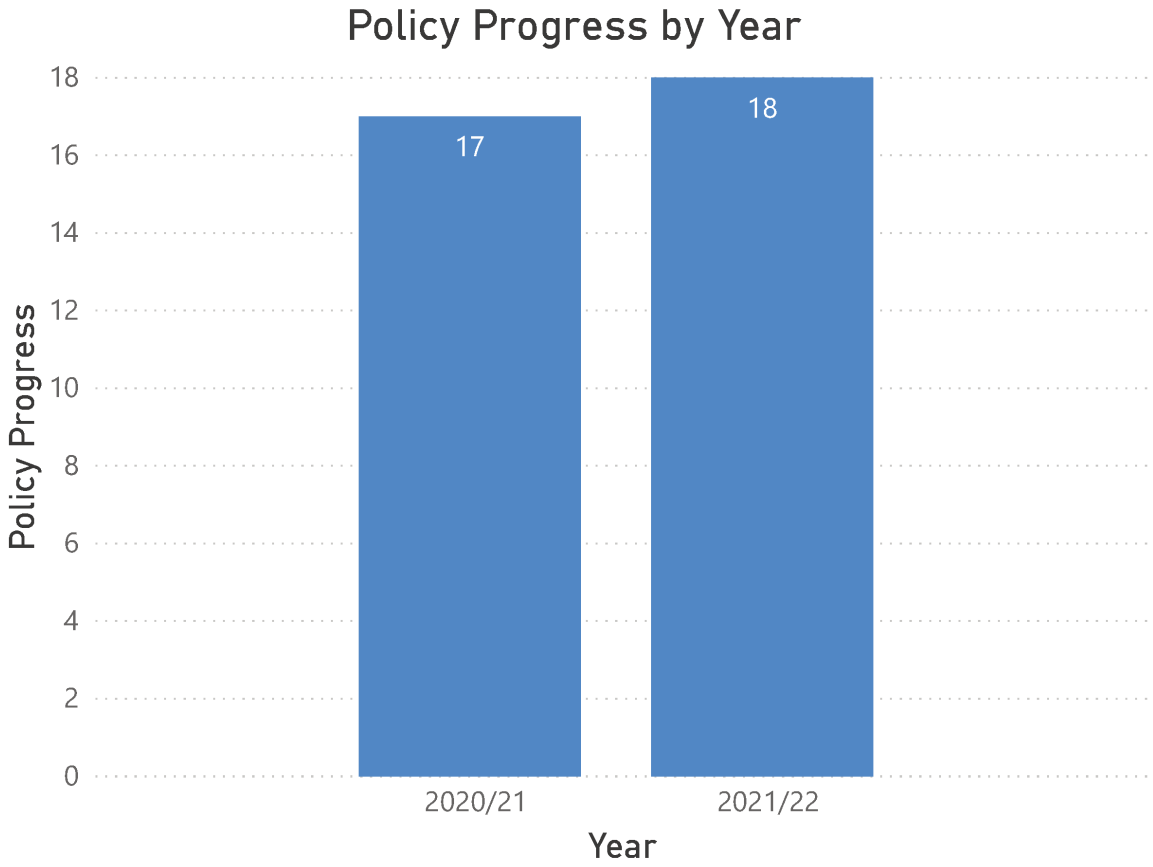


Figure 11 – Participation graphic

Our metrics for success

The following list details our success targets.

- **ICT Waste – Zero to Landfill and an increase in re-use**. A target we have arguably met, with reuse is on the increase with tangible benefits with a return income to HMG of almost £2million.
- **A reduction in our on-premise ICT carbon footprint from moving to more efficient products and services.** We have increased buy-in and simplified reporting to allow for a more accurate footprint. ICT will have a footprint and we are working with our suppliers to establish just how best to record and report that.

- **E-conferencing services adopted as preferred meeting technique working towards 40% of government meetings conducted without attendee travel required –** We have reported 35 million e-conferences in this year's report, an increase from 3.5 million two years before. It is fairly clear that a large proportion of meetings are now virtual saving travel, time, costs and carbon.

- **All services risk assessed** at procurement and through life for climate, geopolitical and sustainability risks, including social such as modern slavery. Sustainable Procurement is underutilised and needs maturing. This has been addressed in the 2020-2025 strategy with the establishment of new business rules.

- **Aligned to the Greening Government Commitments** The 2021-2025 now include a requirement for departments to report on progress against the GGC: ICT and Digital Services Strategy 2020-25. This report and results are aligned directly to the GGC's to show how ICT is enabling the meeting of these government commitments.

Other key non-monetised benefits which have been tackled in the 2020-2025 strategy include

- Increased user satisfaction from cleaner, greener products and services

- Increased resilience through using renewable energy and removing waste from the system/resources

- Opportunities provided by new and existing digital and technology services, including data, are fully exploited to achieve a net gain for the environment and society.

Report conclusions and recommendations

There are some key themes that emerge throughout this report.

1. **Increased consumption** – ICT carbon, energy consumption and waste totals have increased, recognising the digitisation of our operations. This trend is shown over 6 years.

2. **Increased supplier engagement** – We have increased our knowledge of our digital footprint. There is a need for closer engagement with our suppliers and upskilling in the procurement area to ensure we reduce waste from the system and maximise our assets, especially in areas such as cloud data and resource management. We are launching a new Government Digital Sustainability Alliance to tackle the key issues and opportunities.

3. **Improved resource management** – Our zero to landfill target is on track, and we continue to improve reuse and recycling figures. However, there is an opportunity for government to adopt a smarter, coordinated and potentially more lucrative approach to managing its ICT lifecycle especially at end of life

4. **Data gaps** – The importance of the STAR data to drive and inform government policy has been recognised by Cabinet Office who are now receiving the data from STAR and using it to inform Policy decisions and focus areas for departmental action. There is a need to focus the approach and target information gaps such as cloud data, waste “recycling” data and yearly variations in returns. We need this data to be as “live” and accessible by every government department.

5. **Sustainable procurement** - Sustainable procurement is not well adopted and requires urgent focus across government to best manage risks, ensure business resilience and deliver sustainable outcomes. We are actively working across government to improve this through an update to the Government Buying Standards for ICT.

Moving forwards

The STAR will continue to support departments in improving the sustainability of their technology through to 2025 and beyond. As well as sharing assessments and case studies, the group has met four times during the year and has progressed a number of proof of values in sustainable software design, scope 3 calculations and sustainability tooling in the cloud. This supports central government programmes providing clear guidance and tools to departments on how to reduce the sustainability impacts of their digital services and technologies

With the efficiency agenda impacting the whole public sector, the STAR will continue to reach out to engage with the wider public sector to enable other organisations to reduce their sustainability impacts and achieve improved efficiency through use of ICT and digital services. It will look to pass on its skills and experience to help other public sector staff improve their awareness of the sustainability and efficiency opportunities from using Technology and Digital services – exploiting further their legacy estate as well as moving to use new digital, more sustainable services.

Our new strategy aligns directly with the work the GGC’s 2021-2025. This is how it works:

1. We have set clear targets and KPIs relating to our key sustainability Policy objectives and commitments across government.

- For Net Zero by 2050 (or earlier)

- For the resources and waste strategy (circular economy) and the 25 year environment plan (YEP)

- For the modern slavery commitments and wider social value pillar obligations

2. We are increasing accountability and visibility

- To ensure this strategy does not become shelf ware we have included the principles within the update of the greening government commitments, and the annual reports and accounting process.

- In addition, all ICT and digital projects and programmes subject to the spend controls process will be obligated to include sustainable ICT, as part of an updated Technology Code of Conduct measured in order to progress with the Government Digital Service (GDS).

- To allow departments to meet these wider targets balanced against their own policy objectives, we promote flexibility through the production of Chief Digital Information Officer (CDIO) signed strategy statements. Each department will commit to actions and measured aligned to the strategy and will report on progress through the annual reporting run by the STAR. Furthermore, the data will be made public and open.

3. We are building partnerships and expertise across government

- We can only achieve these goals through partnership and collaboration with our main and SME suppliers and teams across government. The STAR will continue to support all government departments, the wider public sector and industry on the delivery of this strategy.

We thank government departments, agencies and bodies for their insight and endorsement of this report, in particular:

Departments and ALBs:

- Cabinet Office
- Care Quality Commission
- CDIO
- Crown Commercial Service
- Crown Prosecution Service
- Department for Levelling Up, Housing and Communities
- Department for Transport

- Department for Work and Pensions
- Department Health and Social Care
- Department of Business, Energy and Industrial Strategy
- Department of Education
- Department of Environment Food and Rural Affairs
- Driver and Vehicle Licensing Agency
- Driver and Vehicle Standards Agency
- Government Digital Service
- Health Education England
- Health Research Authority
- Highways England
- HM Revenue and Customs
- HM Treasury
- Home Office
- Land Registry
- Low Carbon Contracts Compnat
- Marine Management Organisation
- Met Office
- Ministry of Defence
- Ministry of Justice
- National Highways
- Natural England
- NHS Digital
- NHS England and NHS Improvement
- NHS Resolution
- North Sea Transition Authority
- Northern Lighthouse Board
- Nuclear Decommissioning Authority
- Ofgem
- The Climate Change Committee
- The Coal Authority
- The Environment Agnecy
- The Insolvency Service
- Trinity House
- Vehicle Certification Agency

And many other agencies, bodies and organisations within each department

With support from:

- IEMA
- BCS
- Carbon Trust
- TCO
- Universities of East London, Kings College London and Oxford
- Tech UK

Annex A – strategy statements

Department Name: HMRC

Number FTE: 62008

Signed: Anthony Collard TDLN Member

Outcome (Vision statement from your departmental sustainability Strategy):

By 2025 we will have the working environment and experiences that support our ambitions to be a world class organisation. We will deploy ICT that enables alternative ways of working which will reduce the need for travel, minimise paper use and lower our energy consumption. We will seek digital solutions to the environmental, social and economic sustainability challenges that the department faces.

Scope and Rationale

The scope covers core HMRC and sustainable technology work is managed by the Chief Operating Office for CDIO.

This strategy will help HMRC comply with the Greening Government Commitments, Government Buying Standards, the Government's Cloud First policy and the WEEE Directive. We have highlighted through our annual reporting that we would benefit from further focus on our sustainable procurement activities, printing activities and further embedding into our business as usual processes. We are leading this work from our Chief Digital Information Office working closely with stakeholders across the department.

Objective	CSF	Action	KPI	Target
By 2022 improved IT contributes to HMRC's target to reduce their office's energy consumption by 38%	Energy efficient IT Regional centres open on schedule	Removal of old redundant kit Rollout of modern IT equipment Move onsite datacentres to Cloud Implement IT energy efficiency comms to staff	% of staff using PullPrint No. of HMRC datacentres No. of comms messages issued	100% of staff using PullPrint by spring 2022 when the last of the regional centres opens 100% HMRC datacentres close by 2022 x 2 comms messages issued annually
All new IT procured meets or exceeds the current Government Buying Standards (GBSs)	Government Buying Standards published	Review IT products procured in 2020-21 to check compliance with current GBSs Ensure all new IT procured meets or exceeds current GBSs	% of IT products procured in 2020-21 meets or exceeds current GBSs % of new IT procured meets or exceeds current GBSs	100% of IT products procured in 2020-21 meets or exceeds current GBSs 100% of new IT procured meets or exceeds current GBSs

Objective	CSF	Action	KPI	Target
Deploy new IT to support HMRC's commitment to reduce the need for travel in line with the Greening Government Commitments	New Greening Government Commitments published Regional centres open on schedule	Rollout of online meeting options to all users Training provided to all users on utilising online meeting software Data to meet KPIs is built into contracts	% of staff able to use online meetings No. of training opportunities available each month % of contracts, relevant to online meetings, that include robust data reporting on usage	Reduction in miles travelled, which supports Greening Government Commitments
Reduce Consumption of Paper in line with Greening Government Commitments	New Greening Government Commitments published Regional centres open on schedule	Rollout of PullPrint Rollout of Office 365 to allow use of digital storage instead of printing	% of staff using PullPrint	Reduction in sheets printed, which supports Greening Government Commitments

Objective	CSF	Action	KPI	Target
No IT waste sent to landfill and increase reuse in line with the waste hierarchy	IT can be reused	Compliance with contract with EOL	Volume (tonnes) of IT waste sent to landfill Volume (tonnes) of IT waste reused/recycled	No IT waste sent to landfill Increase % of IT waste reused/recycled in line with the waste hierarchy

Department Name: MOJ

Number FTE: 77000

Outcome (Vision statement from your departmental sustainability Strategy):

By the end of 2021 our aim in MOJ Digital And Technology is to build on our existing strategic goal of fixing the basics, by adding an explicit layer of sustainable reporting. We will ensure that our technology programs, our hosting platforms and our service design build in the ability to report on their sustainability impact and to use this to increase transparency and drive best practises.

Scope and Rationale

Sustainability work is handled in a number of places within DandT. Firstly we have our technology services team, responsible for end user compute, printing and private data centres. We have a separate hosting team that is focused on cloud hosting. Finally we have teams focused on service design, and digital transformation.

The rationale for the measures below is to embed the measures, reporting and behaviours into our department. There is good practise already in a number of areas, the focus in these set of objectives is to surface these and to build the processes so that we can have a consistent view across a set of sustainability objectives.

Objective	CSF	Action	KPI	Target
Establish clear ownership for the differing areas of sustainability we focus on.	Named individuals for cloud, technology, procurement who are responsible for delivering on a sustainability agenda.	Assign these responsibilites within the department	N/A	Clear ownership model for next years report
Engage with hosting suppliers to ensure we have an understanding of the power consumption consumed and sources used by our digital services.	Regular updates from suppliers to enable us to understand the impact. The measure may supplier dependant.	Start engagement with suppliers	100% of suppliers can provide a power consumption update	All hosting providers can provide an report on power consumption.

Objective	CSF	Action	KPI	Target
Rationalise the hosting footprint, reducing the power usage of our combined estate.	Migrate services to public cloud, as per the MOJ digital strategy, and in doing so reduce the number of servers, and the associated power consumption. Additionally look to manage the cloud estate efficiently driving greater power savings.	Baseline the existing power usage so that comparisons can be made as migrations are delivered.	No specified KPI here.	Reduction in overall power usage
Ensure old kit is recycled, repurposed or sold	As we transition to a new EUCS program, we will ensure that older devices are recovered, and disposed of in a sustainable way	Continue with the great programs will already have in flight, for example our work with https://www.tier1.com/services/it-recycling-social-value/. Looking to see where they can be expanded if appropriate.	Still in baselining phase here.	Established programs for the dealing with older devices

Objective	CSF	Action	KPI	Target
Paper management metrics	Provision of usage metrics to agencies to drive reduction. MOJ DandT does not own business processes, but we can drive efficiency through transparency of use.	Continued sharing of metrics, baseline the existing usage	In baselining phase	Clear picture of current usage.
Video conferencing for meetings	Rollout of video conferencing kit to reduce need for in person meetings	Post COVID working patterns to be worked out and ensure offices support remote working, reducing travel.	TBD post COVID	TBD post COVID
Ensure settings on all kit conform to best practise	We are commencing a roll out of new tech across our estate. We will ensure these new devices	Define device spec.	100% of devices rolled out from the new program have best practise	All devices in the new rollout have best practise power saving settings.

Objective	CSF	Action	KPI	Target
	conform to best practise.		power settings.	

Department Name: Home Office

Number FTE: 34000

Scope and Rationale:

The Home Office has an End User Compute and Collaboration (EUCandC) Department within DDaT that works closely with a variety of internal technical teams, ensuring the solutions and services we provide are in alignment with the needs of the various departments within the Business. The team is also responsible for the day to day management of several key supplier contracts to ensure the continual development, management and support the variety of services we offer in order to sustain the various day to day operations.

In order to reduce waste the Home Office have established key metrics to ensure it tracks how many End User Devices (Laptops, Smartphones, Tablets and Desktops) are being repaired and repurposed in preference to consistently buying new. There is also an IT Policy in place that only permits a single type of device per user, reporting has recently been introduced to track the device per user ratio within each area of the business and a project is planned to take place before the end of the Financial year to recover and repurpose any surplus devices. Lastly, accelerated by the pandemic, the Home Office has recognised a need to work with the various departments to establish their specific device requirements and as a result of this exercise new measures have been implemented to help prevent deploying devices that are surplus to requirement e.g. Field Based Teams are only being issued smartphones due to the nature of their roles and unless there is a specific Assisted Technology (AT) or Operational requirement the remaining office or home userbase are now expected to utilise Skype for Business or Teams (once fully deployed) as their primary method of communication with other staff.

Objective	CSF	Action	KPI	Target
Reducing Dependency on Smartphones	Reducing the amount of Smartphones out on the estate.	Due to the huge increase in using SKYPE for business to communicate within the Home Office, efforts will be made to return devices not needed	Smartphone Usage	Reduce Smartphone Estate by recovering handsets and distributing to users with a critical need or disposing EOL if not needed.
Reducing the Device per User ratio on the estate back in alignment with the Home Office IT Policy (due to COVID-19 BCP requirements).	Reduce the amount of Desktops out on the estate	Due to the pandemic 95% of HO staff are now using Laptop's to carry out their work from home, this has seen a increase in excess desktops that will no longer be needed. Activity will be put in place to recover and recycle or dispose of excess devices	Desktop Usage	Recovering and recycling 95% of Desktops on our fleet by next FY. Ensuring Critical areas with genuine need for desktops, remain in place.

Department Name: HM Treasury

Number FTE: 2208

Signed: Dan Tippell - Head of IT Service Management

Objective	CSF	Action	KPI	Target
Reduce paper consumption	Reduce paper purchased and increase digital working	Manage a closed loop paper contract; introduction of system default options (BandW/A4 instead of Colour/A3); encourage behavioural change to reduce printing volumes through targeted comms	Paper usage	33% lower printing volumes by March 2021
Increased digital working	Microsoft Teams routinely used for internal and external meetings	Run a campaign on the use of MS Teams	Number of internal meetings using Skype for Business and Measuring travel figures	100% availability by 2020 and 40% reduction in travel costs for internal meetings and events

Objective	CSF	Action	KPI	Target
Increased digital working	Exploring an option to move to a Mobile First policy for staff	Remove desk phones and providing mobiles for all or a Unified Comms solution	Reduction in PoE desk phones	80% reduction in desk phones

Department Name: Met Office

Number FTE: 1946

Signed: Alan Mackay

Scope and Rationale:

Sustainable technology work is managed through all areas of our business, in particular Service Design Architecture, ICT Strategy, Sustainable Business and Property Management

We have highlighted through our annual reporting that we would benefit from further more detailed focus on a number of sustainable activities. We are leading this work from our Senior Management Team, working closely with our AD Governance Risk and Assurance, Environmental Adviser and Property Management. This work is being taken forward by a Net Zero project.

Objective	CSF	Action	KPI	Target
Sustain digital ways of working	Detailed reporting of on-line tools	Promote the use of the opportunities that on-line tools provide	Measured by month by month reporting on usage of Teams and Skype for Business	When there is a return to on-site working continue to set challenging targets and not return to previous levels
Increased knowledge and training on digital working	Detailed reporting of on-line tools and look at other ways of gathering reports on usage	Run training courses and produce helpful guides	Continue to measure usage and review the variety of reporting available with the on-line tools.	Check staff have completed the relevant training in order to exploit the on-line capabilities
Sustain the reduction in consumption of paper	Detailed reporting of paper usage	The current working from home has significantly reduced printing and staff have became used to on-line working	Measured by month by month reporting on paper usage	When there is a return to on-site working continue to set challenging targets and not return to previous levels

Department Name: CDIO Technology

Number FTE: 231

Signed: Paul Collman

Outcome (Vision statement from your departmental sustainability Strategy):

Through 2020-2025 (subject to Comprehensive Spending Review 2020) the OFFICIAL IT platforms managed by the CDIO Technology Pillar for approximately 12,000 staff across the Cabinet Office will be migrated to modernised efficient infrastructure using hyperscale cloud technologies. CDIO Technology will minimise on-premise technical facilities (such as in-building and data centre facilities), reduce on-site services such as printing /telephony, and issue more efficient end-user compute devices over time (such as laptops and smartphones). Through a Technology Refresh Programme, the CDIO Technology Pillar will deliver a cloud-first architecture that will reduce consumptions even further, and enable new dynamic ways of working for staff.

Scope and Rationale

Cabinet Office Enterprise Technology Strategy 2020-2025; Technical Architects; formal "Technology Refresh" programme (platform re-design).

Our Cabinet Office Enterprise Technology Strategy 2020-2025 has reset our approach to technology in a transformational way. To date we have had inflexible and outdated technology and have been tied to lengthy, inflexible contract with single IT providers. The Strategy standardises and champions dynamic flexible systems, including coherency over end-user device refresh models to reduce waste. The Strategy also aims to bring the best technology services to the department, taking advantage of the improvements and cost savings which come from using commodity cloud-delivered services. We are also creating a simpler operating model to control IT spending and re-designing the technology platform so it is simpler to manage and support.

Objective	CSF	Action	KPI	Target
Migrate the physical Data Centres utilisation that underpin the OFFICIAL IT platforms to the public cloud	All physical data centres decommissioned and shut down by December 2021	Migrate all technology infrastructure services and components to the public cloud, utilising modern efficient practices and methods where applicable	Closure of current data centre infrastructure contracts and migration from physical appliances	Reduction of >90% against the baseline by December 2021
Refresh the OFFICIAL IT platforms away from consolidated infrastructure service reliance	Re-design of the technology platform to make large-scale use of commodity services from the public cloud without consolidated infrastructure requirements	Re-architecture of OFFICIAL IT platform	Decentralised architecture for end-user devices connecting to cloud services and tools	>75% of end-user device network activity is not reliant on an Always-on VPN by December 2025
Reduced complexity to manage and support the technology platform	Reduced complexity and effort to manage and support the technology platform	Large-scale automation of high repetition/low value tasks	Number of routine support and management tasks automated	>50% of routine support and management tasks automated by December 2025

Department Name: MOD

Number FTE: 217,611

Signed: Ranuka Jagpal

Outcome (Vision statement from your departmental sustainability Strategy):

The environmental footprint of MOD’s digital technology is continually reduced, and its digital services promote beneficial sustainability outcomes.

Scope and Rationale:

The Sustainable Digital Technology and Services Strategy and programme are managed from the Strategy branch of MOD CIO's Directorate for Miltary Digitisation.

MOD’s energy footprint for office ICT alone makes up 36% of total ICT energy consumption across Government. In order to meet the Greening Government Commitments and Net Zero 2050 mandate, a new approach is required. MOD must mitigate the environmental and socio-economic risks in its digital estate whilst seizing opportunities to improve sustainability through new digital services. This will be achieved through the Sustainable Digital Technology and Services (SDTS) Strategy and its companion Delivery Plan.

3 principles:

- Lowest environmental footprint
- Technology used to adapt and evolve
- Responsible and assured procurement

6 goals:

- A net zero department
- An embedded circular economy in digital technology
- Digital services that promote sustainable outcomes
- Resilient operations and supply chains
- Ethical, traceable and assured supply chains
- An educated and responsible workforce

Objectives and tasks:

- 18 objectives
- 47 tasks

A net zero department:

- The MOD’s digital estate minimises embodied and emitted carbon
- Digital services are operated in the most energy-efficient environments

- Digital technology and services are provided exclusively by carbon neutral suppliers

An embedded circular economy in digital technology:

- All digital technology and services are designed to meet stringent sustainability standards
- Procurement of remanufactured and upgraded hardware is increased
- Device re-use is increased
- Landfill from digital technology is reduced to zero

Digital services that promote sustainable outcomes:

- Sustainability is promoted within all CADMID(T) cycle stages and processes
- Measures to reduce the MOD's energy consumption are enabled by digital services
- Digital services are developed to reduce MOD's emissions from its business activities

Resilient operations and supply chains:

- Digital technology and services are designed and operated to be resilient to climate change
- Risks associated with supply of digital technology are identified and mitigated

Ethical, traceable and assured supply chains:

- Unethical practices are removed from MOD ICT supply chains
- Digital procurement makes a positive contribution to social value
- MOD digital suppliers are transparent and held accountable for the services they provide

An educated and responsible workforce:

- Senior leadership understand the digital sustainability imperative and goals
- Project and Commercial teams are empowered and know how to apply sustainability requirements in contracts
- End users are sustainability-aware in their behaviours

The Delivery Plan tasks, measures and timescales are currently under development.

Department Name: Insolvency Service

Number FTE: 1697

Signed: Ranuka Jagpal

Scope and Rationale:

Digital Technology Services Directorate leads sustainable technology work within the Insolvency Service. This encompasses Service Governance, Architecture and ICT Strategy. Estates and Commercial teams also feed into the sustainable technology work.

We are keen to ensure that Government standards around sustainable technology usage are embedded within our ways of working. Any areas highlighted through our annual reporting that would benefit from further focus around sustainability are logged and progressed, with a cross-Agency effort to ensure all key stakeholders are engaged, involved and working collaboratively to maximum effect.

Objective	CSF	Action	KPI	Target
Reduce paper consumption	Reduce paper purchased and increase digital working	Increased availability and capability of digital services, making information more readily available online to citizens.	Paper usage	Reduction of 50% against the 2010 baseline by 2020
Increased digital working	Reduce paper purchased and increase efficiency	Increase use and capability of technology / automation internally	Paper usage	100% availability by 2020 and 40% reduction in travel costs for internal meetings and events
Smarter Working	Reduce number of devices per user and amount of time and money spent on travelling	Introduce Teams and Zoom across the organisation. Asset review and new user-centric guidance on device management/usage. User education around VFM and best use of tech.	Reduced TandS spend, Asset management/inventory and	Under development

Department Name: BEIS

Number FTE: approx. 5000

Signed: Ahad Nujurally

Objective	CSF	Action	KPI	Target
Example - Reduce paper consumption	Reduce paper purchased and increase digital working	Raise staff and directorates awareness of their printing habits.	Reduction in colour printing as well as printing as a whole.	Reduction of 30% against the 2017 baseline by 2021
Increased digital working	Use of unified comms tools	Promote usage of these tools. Provide workshops on how to use these tools to reduce travel.	Number of internal meetings using unified comms tools	Current figure for 2019/2020 is 10,558 hosted meetings using unified comms tools. We aim to increase this figure by 50% using the recent introduction of MS Teams.

Department Name: Defra

Number FTE: 24478

Outcome (Vision statement from your departmental sustainability Strategy):

By 2025, we will deliver approaches to reducing ICT waste through the waste hierarchy and product hierarchy by ensuring that materials are kept in productive use for longer, design and purchase sustainable products and services and reduce consumption of resources. We will innovate to promote sustainable and efficient use of resources. We will continue to achieve zero to landfill annually like we have for the past 3 years.

Scope and Rationale:

Right across Defra Group.

We would like to show departments and the world that this can be achieved through innovative solutions and partnership with industry.

Objective	CSF	Action	KPI	Target
100% reuse through (reuse internally, donations and remarketing) and recycling for reuse build new components	Increased reuse annually until we achieve 100%	Strong measurable KPI's for suppliers	100% reuse (internal, donations, dismantle for rebuilding (articulating all materials in KG's	100% reuse through (reuse internally, donations and remarketing) and recycling for reuse build new components

Department Name: Department for Education

Number FTE: 7006

Scope and Rationale:

Scope - From a DDaT perspective, the work on sustainable technology is led by Technology, Digital and EdTech Directorate. Our Technology Services division which includes End User Compute (including all technology hardware - laptops, mobiles, printers etc.) and our Cloud Infrastructure division which includes hosting are the areas leading on this vital initiative. Our DDaT teams work closely with Estates team to provision the right technology on desks (screens, keyboards etc.) and in meeting rooms.

Rationale - Presently, we align with the wider Govt. vision on sustainability. Therefore, we want to contribute towards lower carbon economy by encouraging our staff to adopt more digital ways of working and reduce travel. We want to become 'cloud first' organisation so that we can reduce the energy consumption that results from on-premise data centres and servers.

Objective	CSF	Action	KPI	Target
Increased digital working	Microsoft Teams routinely used for meetings in readiness for 'switching off skype for business' in October 2020.	Delivered Microsoft Teams training recorded and virtual in April/May 2020. Delivered series of comms to staff and bespoke intranet page for promoting MS teams and bespoke SCS training and focussed on increasing capability of teams lives.	Number of internal meetings using MS teams and measuring travel figures	100% availability by 2020 and 40% reduction in travel costs for internal meetings and events
Reduce on premise data centre KWhr energy consumption	Reduced on premise data centre foot print	Reduce number of servers in on premise data centres	Number of servers in on premise data centres	Reduce servers from 50 to 30 in 2020/2021. Target 100%.

Department Name: Coal Authority

Number FTE: 265

Signed: Peter Thorn

Scope and Rationale:

Sustainable technology is managed within the ICT department, with support on sustainable procurement from our procurement team and on general sustainability issues by our sustainability manager. Our sustainability manager works across the whole organisation ensuring sustainability is embedded in all we do, including technology.

Our sustainability strategy is currently being developed, taking into account previous work carried out on sustainability in the organisation and the commitments of and to government as a whole. Our sustainability strategy focusses on four main areas: Climate Change; Nature; Waste and Resources; and People. We have a target of net zero carbon by 2030, which these initial objectives are focussed on. We are also developing plans for further reduction of waste and better use of natural resources. These objectives are preliminary as we enhance our baseline and strategy, but in line with GGC for ICT.

Objective	CSF	Action	KPI	Target
Reduce our greenhouse gas emissions in line with 2030 net zero target	Reduced carbon footprint for organisation as a whole through ICT supported behavioural change.	a) Use technology/digital first as the key policy driver to reduce travel/energy and waste	Annual carbon reporting against baseline	Carbon Net Zero by 2030 for organisation

Objective	CSF	Action	KPI	Target
	Reduced ICT carbon footprint on services and products	b)Work with supply chain and procurement to reduce Scope 3 carbon on all new services and products		
Continued zero ICT waste to landfill	Monitoring and annual reporting of ICT waste disposal route	Continue to monitor and plan for ICT waste removal and re-purposingto ensure zero waste to landfill	Zero ICT waste to landfill Waste plan for ICT department to be reviewed annually	Zero ICT waste to landfill with majority re-purposed in line with waste hierarchy - ongoing as target achieved but review by end 2021 as part of sustainability strategy work as part of continuous improvement.
Sustainability included as metric in all ICT procurement	Annual reporting of sustainability metrics in ICT procurement, lessons learned and impact made.	Develop process to embed sustainability metrics into ICT procurement and lessons learned from process.	Recording in procurement process how sustainable procurement principles have been included and influenced process	All ICT procurement includes sustainable procurement embedded in process with lessons learned to fed into future procurement - Review by end of 2021 as part of continuous improvement.

Department Name: NHS Digital

Number FTE: 2568 + 420 Temps

Signed: M. S. Edwards

Scope and Rationale:

Sustainability and associated workloads/strategies are discussed across all areas of NHS Digital (ICT Sustainability Strategy, Commercial, Estates, Finance etc.). A wide-ranging group of sustainability champion/volunteers (Green Digits) from across the organisation help run regular events and raise awareness of environmental/sustainability issues. A steering group comprising of ley stakeholders across the organisation meets on a quarterly basis, chaired by a Director of NHS Digital as initiatives and strategies are formulated (including technology requests which feed into the Green ICT Strategy)

Objective	CSF	Action	KPI	Target
Increase digital and hybrid working	Microsoft Teams routinely used in internal meetings and available for use	Work with Sustainability team to attempt to measure the carbon and energy footprints for different types of meeting, including the GHG emission comparison between Face to Face and e-conference meetings. Promote Teams, Zoom and Convene (for bridging) for all external and internal meetings at NHS Digital Put on dedicated training and upskilling courses on new cloud technologies, to understand benefits and support infrastructure including reminding staff of the Travel and Subsistence policy for SMART meetings first.	Number of internal meetings using Teams and Zoom	Aim to increase baseline figure of 8,000 Skype for Business meetings per month using Teams instead of Skype for Business.

Objective	CSF	Action	KPI	Target
Increased digital working	Teams routinely used in internal meetings and available for use	Run a campaign on the best practice of Teams	Number of internal meetings using Teams for Business and Measuring travel figures	100% availability by 2020 and 40% reduction in travel costs for internal meetings and events
Refreshed Devices	Lower refresh rate with newer, more energy efficient devices	End user device procurement / commercial exercise included weighted scores for sustainability with ethical considerations to be included next time	Monitor new numbers of virtual desktops hosted in the cloud via a new service to provide nationwide service to GP's	Consider implementing a balanced /reviewed refresh process

Objective	CSF	Action	KPI	Target
Commercial Review of Green Procurement Contracts	A partnership between the Procurement and Commercial teams	Engage with the Knowledge Hub Commercial Groups and other Central Government Agencies to share best practices, recommendations and initiatives Consider producing criteria for end user device procurements to lower environmental footprint (not just power kind component kind for full modular repair or as high a recycle rate possible)	Adopt clearer green procurement processes	Aim to adopt the most appropriate accreditation schemes to require supplier compliance. Engage with suppliers in partnership with the Commercial Team to explore green initiatives and establish supplier accreditation requirements.

Objective	CSF	Action	KPI	Target
Building footprint consolidation by co-locating with HMRC at a new government Hub	Reduction in printing, network/server footprint and access to shared services	Fewer buildings result in fewer printers and less physical equipment/power consumption via consolidation. Shared services e.g. room booking result in a single supplier/solution across multiple organisations. Removal of physical telephony handsets and considerable infrastructure which results in a reduction of power to devices and consolidation of switches which were used to power VOIP	Promoting collaborative technologies and remote working practices to see a reduction in paper consumption Report on shared capability of infrastructure requirements Ensure supplier reports on printing monthly and senior management engage with organisation campaign to further reduce volumes. Review managed service contract for efficiencies and savings	Aim to Reduce printing by 10% corporately and run fewer MFD's on the estate across the year Implement and report on any recommendations Invest in further resilience/redundancy

Objective	CSF	Action	KPI	Target
Promotion of Green ICT	Collaborative working between Sustainability, IT, Green Digits, Smart Working, and Training Teams	Production of Green ICT Strategy document, supporting the Corporate Sustainability/Smart Working overarching Strategy. Run TechHub (supported by live Teams meeting/view on demand) sessions on collaborative working IT technology with best practice.	Monthly campaigns/Engagement/Success Reviews Review trends for travel vs printing vs Skype for Business Meetings	Production of (and reporting against) Green ICT Strategy Aims Regular attendance (increasing) at TechHub sessions/viewing of on demand video material

Objective	CSF	Action	KPI	Target
Migration to Cloud	Plan to migrate all remaining ICT systems, services and infrastructure into hosted data centre or cloud (cloud preference) unless not possible	Review and promote Crown Hosting and HMLR monthly power usage reports and printing usage to show reductions and efficiencies realized. Decommission on premise servers supporting old/redundant infrastructure. Review IT Services to identify which can be migrated to the cloud. Work with commercial/procurement to consider future cloud platform selection process in light of carbon footprints when at large/full scale (identify low carbon clud providers)	Power reduction, increased resilience, reduced infrastructure and physical server hosts	Migration of ICT away from two remaining data centre presences (aimed for Dec 2021) Ensure 50% of End User Compute (Internal) Services are cloud hosted by 2020, 75% by 2021 and 100% by 2022

Objective	CSF	Action	KPI	Target
Toolset Review	Define Collaboration Strategy and End User Support services	Review and recommend rationalised collaboration tools Replace ZenWorks infrastructure with Intune and Autopilot Replace QUMU with Microsoft Stream	Ensure collaboration tools are appropriate to use cases with valid business cases, all cloud based and integrated wherever possible Remove Physical ZenWorks and QUMU Infrastructure and use cloud hosted solutions	New Collaboration Toolset strategy by 2021 Removal of ZenWorks/Migration to Intune and Autopilot 2020 Removal of QUMU Infrastructure, migration of content to Stream/Teams Live Broadcasts (and Integration with other Office Applications/managed service elements) by 2021 Ensure solutions are Accessible

Objective	CSF	Action	KPI	Target
Buyback Service	Enable staff to buy back devices at a fair price instead of returning to O2 for recycling	Review Mobile Device Buy Back Pilot Move into BAU if successful Consider expansion of service to include tablet/laptop devices	Ensure recycling/disposal processes are adhered to where staff do not want to buy back or the devices are not usable Consider other options prior to recycling/disposal where appropriate e.g. selling device to other staff or donating to charity Review depreciation of assets with Finance and communicate 'depreciation of assets' across the organisation	Offer sale all mobile devices across the origination by 2021 Offer sale of all tablet/laptop devices by 2022

Department Name: CPS

Number FTE: 6500

Scope and Rationale:

We are looking to introduce digital trial bundles for CPS staff in court, meaning that CPS staff no longer require printouts of case information in court. We are also looking to introduce Digital Jury bundles sometime in 2021. This will mean that we no longer need 12 x copies of all case information for trials with a jury, although this aspect may not deliver in 2020/21.
We are also looking to make further use of the HMCTS Court Video systems for remote courtrooms, meaning we will be able to reduce the number of temporary videoconferencing installations made for court staff and witnesses to attend court remotely.

Objective	CSF	Action	KPI	Target
Reduce paper consumption in court-rooms	Reduce paper purchased and increase digital working	Introduce Digital Jury Bundles, to reduce printout of court packs	Paper usage	Reduction of 50% against the 2010 baseline by 2020
Increased digital working	Microsoft Teams routinely used in internal meetings and availble for use	Run a campaign on the use of Microsoft Teams, having decommissioned VOIP phones	Number of internal meetings using Skype for Business and Measuring travel figues	100% availability by 2020 and 40% reduction in travel costs for internal meetings and events
Reduce number of specific temporary Videoconferencing	Use Court Video where possible, as	CVP currently cannot adequately	Number of temporary	Reduction against the 2020 baseline.

Objective	CSF	Action	KPI	Target
installations, using standard technology where possible	long as it is of sufficient quality for witnesses attending court	stream pre-recorded video/audio to witnesses. As this improves, stop using alternative methods of delivery	videoconferencing installations away from regular sites	

Department Name: DfT - National Highways

Number FTE: 6035

Signed: V. Higgin

Outcome (Vision statement from your departmental sustainability Strategy):

National Highways corporate emissions of greenhouse gases, including those from our digital, data and technology services and assets will be net zero by 2030. Our maintenance and construction activities will be net zero by 2040 and we will support zero carbon travel on our roads by 2050. We will drive a strong focus on all aspects of sustainability across our digital, data and technology services and assets, creating a sustainability by-default culture in everything we do and seeking opportunities where technology itself can reduce our environmental impact.

Scope and Rationale:

National Highways has its 'Net zero highways: our 2030 / 2040 / 2050 plan that support UK Government's Transport Decarbonisation Plan and Industrial Decarbonisation Strategy. This provides an opportunity for National Highways' Digital Services directorate to review our sustainable technology strategy and objectives and drive forward a stronger evidence based approach with a stronger focus on embedding a directorate wide sustainable technology culture.

Objective	CSF	Action	KPI	Target
Robust baseline and regular reporting and monitoring rhythm embedded	Robust baseline and regular reporting in place	Review current data and best practice and embed refreshed processes	Carbon reporting	Baseline and regular reporting in place
Embed sustainability within our culture	Our people (within the IT directorate) understand and champion sustainability in everything we do	Develop and deliver a training and awareness strategy for our people and create a Community of Interest to develop our culture	% of staff receiving training	100% of staff trained by 31 December 2022.
Increase use of carbon neutral public cloud-based data centres	On premise data centre usage decreased	Review on premise data centre usage	Carbon from on-premise data centres	Insert key target dates for migration. Amar Maqsood
Ensure carbon impacts are actively considering in our procurement alongside other key factors.	Sustainability considered in IT contracts	Develop a sourcing strategy that considers supplier sustainability in all contracts and how we influence our supply chain to use / develop / exploit low carbon technologies	As part of ITCF and performance monitoring of the suppliers.	2030

Objective	CSF	Action	KPI	Target
Encourage a net zero mentality and commitment throughout the supply chain	building net zero commitments into all IT contracts	Working with Procurement colleagues to ensure it is a pre-requisite in all IT contracts	Annually so it can be reported in the STAR report	All IT contracts - during renewal or replacement of said contracts
Increased digital working and improved information management reducing un-structured data storage	Our people understand and use the features of technology to work effectively	Develop ways of working good practice including data retention and deliver training and awareness activities to support adoption	Number of emails sent versus number of instant messages Number of attachments sent via email	To be defined
Increased efficient use of end user devices	Reduction in number of devices (laptops / tablets / smartphones) and device reuse, recycle and donate strategy implemented	Develop and implement end user device strategy	Number of devices/ devices per employee	On average no more than 2 devices per employee
Carbon reduction technology innovation to reduce operational carbon impacts	Operational Technology Strategy includes net zero carbon activities and targets	Publish Operational Technology Strategy Wider supplier stakeholder engagement.	As defined in our Net Zero Strategy	Make Digital Roads an integral part of RP2 and build this into RP3 strategy and beyond from 2023.

Annex B – Px3 scope 3 data

Table I. Information and communication technology supply chain scope 3 emissions (kgC02e) and feasible abatement (%)

Hardware	Units	Scope 3 Per Device (kgC02e)	Scope 3 Total (kgC02e)	Car Miles Equivalent	Supply Chain Emissions Contribution	5-year Annualised Supply Chain (kgC02e)	8-year Annualised Supply Chain CFP (kgC02e)	Lowest Available Scope 3 (kgC02e)	Selection CFP Type Reduction (kgC02e)
All devices	3,196,146	225	718,701,267	2,604,367,542	100%	143,740,253	89,837,658		
Computers	1,226,722	237	290,465,724	1,052,564,589	40%	58,093,145	36,308,216		
Displays	995,216	335	332,948,004	1,206,508,204	46%	66,589,60 I	41,618,501		
Cotnmunications	710,510	71	50,795,309	184,067,651	**7%**	10,159,062	6,349,414		
Networking	123,101	176	21,639,807	78,416,463	3%	4,327,961	2,704,976		
Image and Print	117,624	177	20,8I 1,352	75,414,379	3%	4,162,270	2,601,419		
Audio Visual	22,973	89	2,041,071	7,396,257	0%	408,214	255,I34		
Computers									
Desktops	383,466	221	84,745,986	307,095,180		16,949,197	10,593,248	153	31%
Notebooh	724,750	266	192,783,500	698,592,187		38,556,700	24,097,938	124	53%
Tablets	68,795	110	7,567,450	27,422,271		1,513,490	945,93 I	65	41%
Thin clients	49,71 I	108	5,368,788	19,454,950		1,073,758	671,099	106	2%
Displays									
Monitors	983,009	324	318,494,916	I,154,134,353		63,698,983	39,811,865	169	48%
Screens	12,207	1,184	14,453,088	52,373,851		2,890,618	I,806,636	970	8%
Cotnmunications									
Smar/ phones	253,381	64.5	16,343,075	59,222,621		3,268,615	2,042,884	53.7	17%
Mobile phones	53,767	22.5	1,209,758	4,383,815		241,952	I 51,220	NA	NA
?ABX	122,462	219	26,819,178	97,185,020		5,363,836	3,352,397	NA	NA
Video conf	3,129	231	722,799	2,619,217		144,560	90,350	211	9%
VOiP phones	276,655	20	5,533,100	20,050,370		1,106,620	691,638	NA	NA
Fax	I,116	150	167,400	606,610		33,480	20,925	NA	NA
Networking									
10/100 swilch	15,540	219	3,403,260	12,332,439		680,652	425,408	NA	NA
10-1000 switch	21,004	219	4,599,876	16,668,633		919,975	574,985	NA	NA
Core switch	8,214	869	7,137,966	25,865,944		1,427,593	892,246	NA	NA
POE class I	761	30	22,830	82,729		4,566	2,854	NA	NA
POE class 2	1,191	30	35,730	129,475		7,146	4,466	NA	NA
POE class 3	1,307	30	39,210	142,086		7,842	4,901	NA	NA
POE class./	3,593	30	107,790	390,600		21,558	13,474	NA	NA
POE01her	13,651	30	409,530	1,484,019		81,906	51,191	NA	NA
Room hubs	1,601	158	252,958	916,647		50,592	31,620	NA	NA
Edf!,e switches	18,824	158	2,974,192	10,777,620		594,838	371,774	NA	NA
W. access points	37,415	71	2,656,465	9,626,268		531,293	332,058	NA	NA
Image and Print									
Copier	638	928	592,064	2,145,470		118,413	74,008	NA	NA
Ink jet printer	4,391	75	329,325	I,193,379		65,865	41,166	NA	NA
Laser printer	87,662	65	5,698,030	20,648,029		1,139,606	712,254	NA	NA
MFD (b/w)	7,329	670	4,910,430	17,793,992		982,086	613,804	NA	NA
MFD (colour)	5,441	670	3,645,470	13,210,139		729,094	455,684	NA	NA
Prod. MFD (col)	2,297	1,178	2,705,866	9,805,283		541,173	338,233	NA	NA
Prod. MFD (mo)	1,789	1,178	2,107,442	7,636,766		421,488	263,430	NA	NA
Scanner	5,672	70	397,040	1,438,759		79,408	49,630	NA	NA
01her imaf!,inf!.	2,405	177	425,685	1,542,561		85,137	53,211	NA	NA
Audio Visual									
Projectors	4,107	118	484,626	1,756,146		96,925	60,578	NA	NA
Other AV	18,866	82.5	1,556,445	5,640,111		311,289	194,556	NA	NA