



National Galleries of Scotland

Environmental Sustainability Report 2016 - 17



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Owner: Brian Troddyn, Sustainability Officer

Approval route: Audit & Risk Committee and Senior Management Team

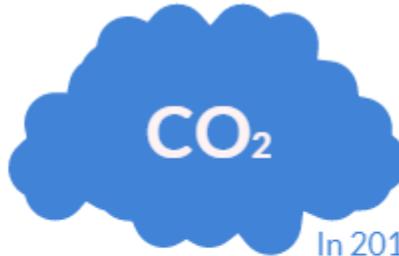
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2016-17 at a Glance



17,860 Miles cycled
to work by NGS Staff



In 2016-17, the reduction in our carbon footprint was enough to **power 40 homes for one year**



Continued to upgrade our Building Management System allowing us to **run our buildings more efficiently**

32% of our waste was converted to Bio-fuel



100% of our exhibition lighting switched over to **Low Energy LED**

Upgrade to our heating at the Scottish National Galleries has led to **reducing emissions equivalent to a car circling the globe 12 times**



Introduction

Background

This report follows on from what was previously known as the Public Sector Sustainability Report. This new version reports on the same information but aims to give a more holistic view of current environmental activities and performance taking place within the organisation.

The National Galleries has three main long term aims as set out in our corporate plan, one of which is to be a sustainable and efficient organisation. This report outlines how efforts to reduce our environmental impact is helping us to achieve this aim.

This report details our performance in key areas such as energy use, water use, waste management, travel, biodiversity and sustainable procurement.

Our Sustainability Journey

In 2010 we produced our first Carbon Management Plan using resource use data from 2008/09 as our baseline year. We set our first target to 20% reduction in emissions by 2014 from the baseline year. We successfully managed to surpass this target and achieved a 30% reduction by this time.

A new target was set of 42% reduction by the end of financial year 2019/20. This target has now been successfully reached over two years early as of June this year, bringing us 11% ahead of predicted reduction levels for 2016-17.

A lot of work has been done to achieve this target such as upgrading of plant equipment, water reduction measures, making our buildings smarter and improving building fabric where possible



Electric Vehicle Charging Point

This is against a back drop of increasing demands on our buildings and facilities with larger visitor numbers than ever before.

A lot more work needs to be done if we have a long-term plan to reduce emissions by 80% from baseline year levels by 2050, keeping in line with Scottish Government targets.

We are currently developing a new Carbon Management Plan for the next five years which will outline a new intermittent reduction target and how we are going to achieve it.

Overall Performance

2016-17 Overview

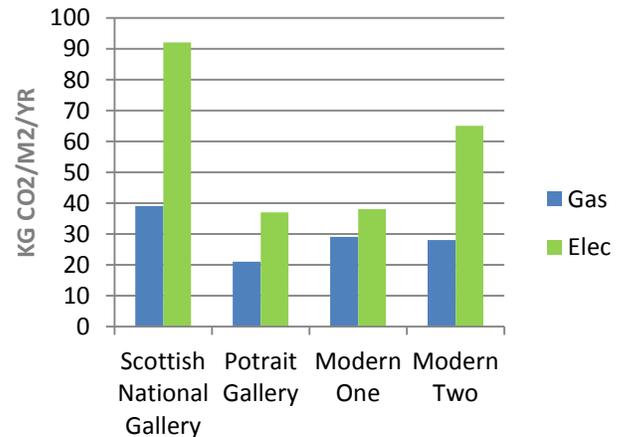
Performance overall shows continuing reductions in carbon emissions with a 10.7% reduction in last year's levels.

Transport is showing below target performance with both carbon emissions and costs rising steadily. This will be partly due to the increase in fleet size.

Water emissions, while reducing overall have been slower and more difficult to reduce over time than expected.

Looking at our gallery buildings individually we can see that the Scottish National Gallery are our most energy intensive buildings, followed closely by the Modern Two. Our Portrait Gallery is the best performing building; this is probably the result of major refurbishment and plant upgrades that took place in 2011.

Carbon Intensity of our Galleries



The following table provides a summary of the progress we have made since the financial year 2008/09 (1st April to 31st March)

Area	2008/09	2016/17 Performance	Change from Baseline Year	Change from last year
Carbon from Energy ¹	3690	2217	-40%	-10.8%
Total Energy Expenditure	£645,939	£406,191	-37.9%	-2%
Carbon from Transport ¹	8.45	14.56	+52.5%	+1.4%
Total Transport Expenditure	£10,205	£20,551	+109%	+2.2%
Carbon from Waste ¹	28.38	3.87	-92%	+39.7%
Total Waste Expenditure	£18,553	£26,738	+44.1%	+20%
Carbon from Water ¹	18.09	15.39	-18.8%	-9%
Total Water Expenditure	£86,157	£57,238	-33.6%	-2.5%
Total Carbon Emissions ¹	3745	2251	-40%	-10.7%

¹: Carbon is measured in tonnes of carbon dioxide (CO₂) equivalent.

Energy Use

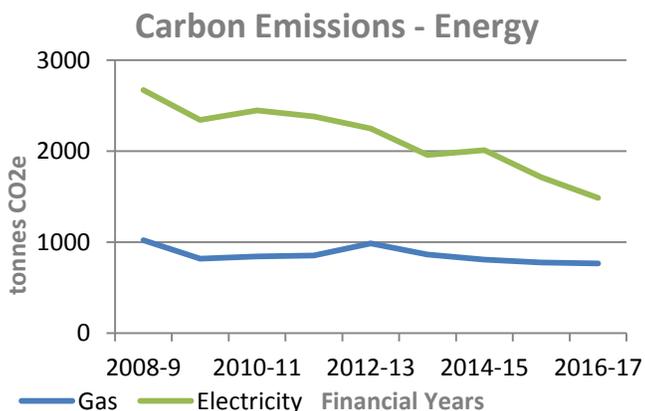
Progress and Initiatives

Carbon emissions for gas and electricity are reducing steadily with 14.3% reduction observed in electricity use compared to 14.6% the previous year. Reduction in gas use was lower, reducing by only 2.9% in the previous twelve months. Energy reduction has now reached a plateau where it is getting harder to achieve the rate of savings from projects than before. A lot of work has taken place over the last eight years to reach our current 42% from the 2008 baseline.

Work continues on our Building Management System and we are adding more sub meters to the network, allowing us to see and react quicker to unusual energy use activities across the estate.

We have successfully switched over all our exhibition lighting to LED reducing energy consumption of these lights by 80%. Building on the success of this we are now pursuing a programme of switching all office and back of house lighting to efficient LED

We took part in our fourth WWF Earth Hour this year switching off lights in our gallery buildings and raising awareness to staff and the public on the importance of reducing our impact on the environment.



Challenges

- Our galleries are Grade A listed buildings and so consideration and care must be taken into account when applying new technologies to them.
- Environmental control of our exhibition spaces can be energy intensive.



Future Goals

- Continue to reduce our energy use through the adoption of new technologies or processes as appropriate.
- Make our buildings smarter so we can control the environment more efficiently.
- Make our buildings more sustainable through more efficient building fabric improvements.
- Reduce the impact of our IT equipment by moving our server's offsite and moving to more efficient desktop equipment.
- Engage with staff to adopt more sustainable energy use practise at work.

Transport & Travel

Progress and Initiatives

Emissions from our fleet increased slightly over last year but seem to have stabilised from the steady increase of previous years.

The Energy Saving Trust undertook a Sustainable Transport Review on NGS and from the recommendations we recently added a fully electric van to our fleet. Additionally we installed an electric vehicle charging point at our Modern Two which is used both by our own electric van as well as staff and the public.

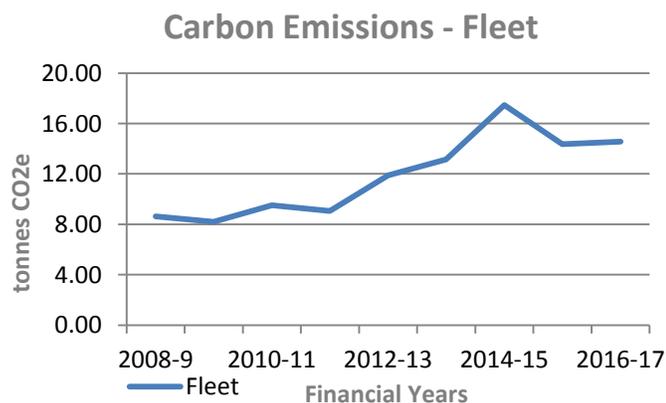
We undertook a staff travel survey and found that 41% of our employees use sustainable commuting modes of travel such as bus and rail. 36% use active travel means when commuting such as cycling and walking.

Staff took part in the Scottish Workplace Journey Challenge earlier this year run by Sustrans. This was an initiative whereby staff used sustainable methods of transport such as cycling, walking, lift share and buses to commute. Staff also took part in the Edinburgh Cycle Challenge 2017 where they were successful in winning prizes, with one member of the team winning first prize in the male category for the whole competition.

We are currently working with Workplace Travel Planning Edinburgh to update our workplace travel plan. which will outline our plans to encourage staff to

Challenges

- Increase in size of fleet is increasing transport emissions.
- Increase the use of active travel to work by employees.



Future Goals

- Replace more of our fleet with electric vehicles where possible.
- Encourage and increase the use of active travel to work by employees.
- Achieve Bike Friendly employer status from Cycle Scotland within the next twelve months.
- Include carbon emissions from our business travel activities from next year onwards.

Waste Management

Progress and Initiatives

Due to large office moves, waste produced across the estate has increased by 50% compared to last year which increased carbon emissions by 39.7%. 55% of this was recycled, 13% was sent to an Anaerobic Digester to produce energy and 32% was converted to bio-fuels. Despite the recent increase carbon emissions from our waste has now dropped by 92% from our baseline

We sent no waste to landfill for 2016/17 as our general waste was sent to an anaerobic digester to produce energy. However as we changed our waste management contract to Changeworks this is no longer the case and small amounts of waste is now going to landfill since April 2017

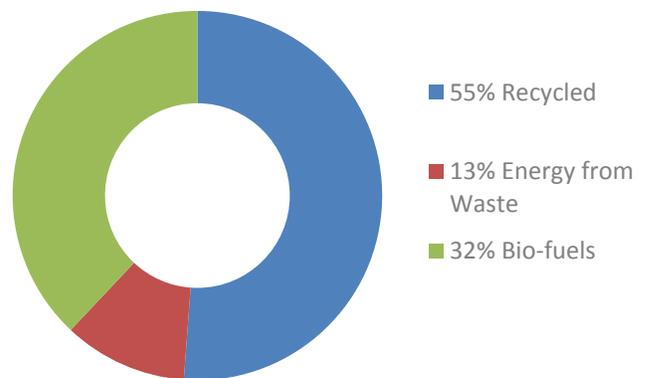
We are developing a Litter Prevention Action Plan in partnership with Zero Waste Scotland which will outline litter prevention actions across the estate.

Cafes on our sites now recycle food waste and the cafes in our Modern Art and Portrait Galleries use Vegware packaging which is fully biodegradable. .

Challenges

- Incidences of our recycling bins being used for incorrect waste by staff and the public is increasing.
- Large movement of staff offices has to lead to an increase in overall waste.

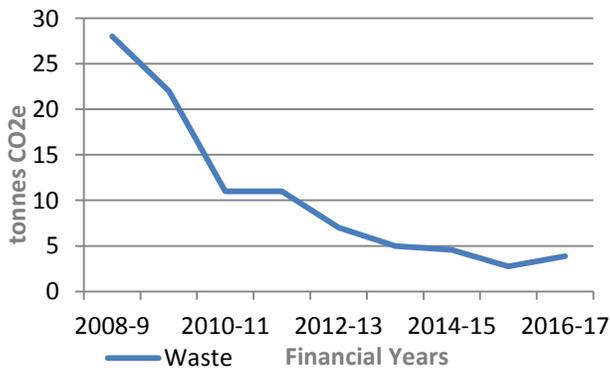
Waste Composition 2016/17



Future Goals

- Reduce the amount of waste going to landfill.
- Increase staff awareness on correct waste management and disposal practises.
- Review our waste management strategy to mitigate against added pressure from increasing visitor numbers.

Carbon Emissions - Waste



Water

Progress and Initiatives

Overall water consumption across the estate has reduced by over 9% compared to last year. Despite this the long term reduction of water consumption has been challenging due to high water demands of our cafes, plant equipment and the Jencks landform.

Water efficient taps and urinals have been fitted to all our public toilets reducing water consumption in these areas. We are now looking at what improvements can be made in our staff toilet facilities.

We are installing more sub water meters to track our water consumption more accurately and target areas of high consumption.

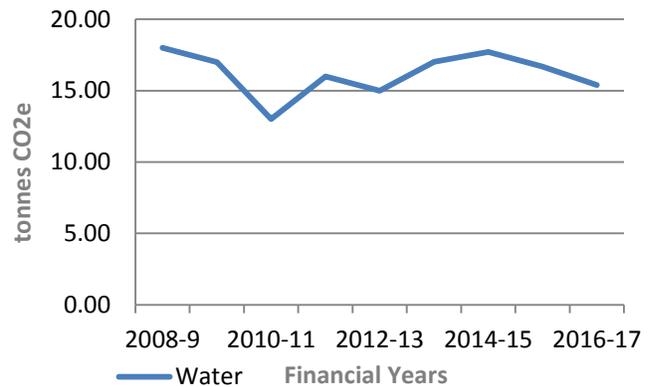
A feasibility study on water harvesting at our Gallery of Modern Art was undertaken by Resource Efficient Scotland but was found to be not viable at this site.



Challenges

- Large quantity of water is consumed by the Jencks landform ponds.
- Large amounts of water is consumed by our humidifiers, Reduction in this will only be seen in conjunction with more efficient environmental control of our exhibition areas.

Carbon Emissions - Water



Future Goals

- Continue to look into the viability of water harvesting across other sites in our estate.
- Engage with our cafes to investigate more efficient water use practises.
- Install more water efficient devices in our staff toilet facilities.

Action on Biodiversity

Progress and Initiatives

We are committed to maximising our green spaces for the encouragement of increased biodiversity as well as educating the public on the link of food from earth to plate.

We recently erected 16 bird boxes around the grounds of the Gallery of Modern Art to encourage more nesting birds. Along with this we have erected 6 Bat boxes to encourage more bat activity. Fauna such as foxes, badgers and squirrels can be regularly observed on the grounds.

The woodlands around the Gallery of Modern Art buildings are managed to encourage more insect activity with fallen tree retention in some areas. Leaves from the trees are used onsite for composting.

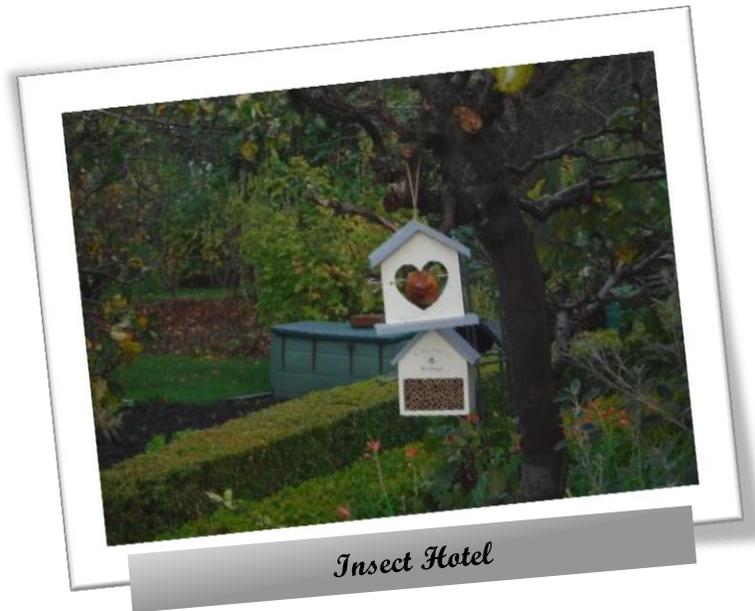
The café has developed a kitchen garden which produces fresh vegetables, fruits and herbs that are used on the menu. This garden consists of an orchard, raised beds, fruit patches, composting area and an insect hotel.

Two bee hives have been installed in the grounds. We have had a wild garden planted around it to encourage honey production from the bees.

A well-established allotment space is situated on the grounds of Modern Two that is managed by Dean Allotments. A large array of soft fruits and vegetables are grown all year round with the grounds surrounded by apple and pear trees. The space is managed to a high standard of cultivation and all produce is organic. Green waste from the surrounding Gallery parkland is composted and used in the allotments to provide organic fertiliser.

Challenges

- Green space in our estate is predominantly at the Gallery of Modern Art, limiting biodiversity opportunities at our other galleries.



Insect Hotel

Future Goals

- Continue to look to introduce new measures and installations that encourage increased flora and fauna activity onsite.
- Produce honey from our bee hives to sell within our cafes.
- Engage and educate the public on biodiversity where possible.

Sustainable Procurement

Progress and Initiatives

We follow best practise in managing our procurement processes. Our Procurement Strategy 2016-19 has seven key priorities, one of which is to deliver sustainable procurement, supporting our commitment to economic, environmental and social sustainability.

NGS are signatories to the supplier charter which gives businesses access to public contracts. Also we have placed orders through Framework for Supported factories and businesses, increasing community benefit where possible.

We run a volunteer program providing opportunities for people to gain valuable experience in the arts. We were the first national arts organisation to achieve the Investing in Volunteers UK quality standard.

Our IT equipment is Energy Star certified which ensures they meet stringent environmental and energy efficiency standards.

Our Office paper is EU-ecolabel certified which means it meets stringent criteria which take the whole product life cycle into account - from the extraction of the raw materials, to production, packaging and transport, right through to use and then the recycling bin.

Our cafes use local suppliers to source their food and supplies leading to a decrease in the carbon footprint of their supply chain.

We report to government on our sustainable procurement activities through the annual Climate Change Duties reporting requirement.

Challenges

- Lack of centralised management for purchasing can lead to inconsistencies in our approach to sustainable procurement.



Future Goals

- Increase the level of environmentally friendly office supplies purchased within the organization.

Performance Figures

The following table provides a summary of how we are performing against our carbon reduction targets.

	EMISSIONS	2008-09 (Baseline)	2015-16	2016-17	Change from previous year
Targets	Total Carbon (CO2e)	3,745	2,519	2,251	-10.7%
	Our Target	-	-26.73%	-30.55%	-3.82%
	Actual performance	-	-34.36%	-40.37%	+6.01%
	Difference	-	+7.63%	+10.82%	-

The following chart provides a summary of how we are performing in energy use.

	Scopes	2008-09 (Baseline)	2015-16	2016-17	Change from previous year
Gross Emissions (Tonnes Co2e)	Scope 1 : Direct (gas)	1,021	773	765	-1%
	Scope 2 : Indirect (electricity generation)	2,476	1,580	1,344	-9.5%
	Scope 3 : (electricity transmission & distribution)	193	133	142	+4.6%
	Total	3,690	2,486	2,251	-5.9%

The following chart provides a summary of how we are performing in transport.

Transport	Scope 1	2008-09 (Baseline)	2015-16	2016-17	Change from previous year
Gross Emissions (Tonnes Co2e)	Direct (vehicle fleet)	8.62	14.35	14.56	+1.56%

The following chart provides a summary of how we are performing in water.

	Scope 3	2008-09 (Baseline)	2015-16	2016-17	Change from previous year
Water	Water m3	20,639	18,383	16,637	-9.5%
	Water tonnes (CO2e)	18.09	16.68	15.39	-7.8%

The following chart provides a summary of how we are performing in waste.

	Scope 3	2008-09 (Baseline)	2015-16	2016-17	Change from previous year
Waste	Waste Total (tonnes)	117	122	184	+50.8%
	Waste Recycled (tonnes)	16	66	122	+84%
	Waste to Anaerobic Digestion (tonnes)	0	23	20	-3%
	Waste to Refuse Derived Fuel (tonnes)	0	30	69	+230%
	Waste to Landfill (tonnes)	97	0	0	0%
	Waste (Co2e) tonnes	28.38	2.77	3.87	+43%

Emission Factors 2016/17

Electricity Generation (kWh)	Electricity Transmission & Distribution (kWh)	Gas (kWh)	Water Supply (m3)	Water Treatment (m3)	Waste to Landfill (tonne)	Waste Recycled (tonne)	Diesel (Litre)	Petrol (Litre)
0.4493	0.1840	0.3440	0.3440	0.7080	421	21	2.6116	2.1970

Scope Definitions

Scope 1: Direct – This includes directly consumption of gas and oil. Emissions from NGS owned fleet vehicles are included.

Scope 2: Indirect – This is for emissions which result from energy consumed which is supplied by another party. For us this is electricity generated by another party.

Scope 3: Others – This is for emissions relating to official business travel, waste disposal, water supply and treatment and electricity transmission and distribution.