



## 6c. *How to:* Measure and evaluate sustainable changes



### Why is it important?

#### Measuring:

Embedding sustainability into a healthcare setting is a quality improvement process. An integral part of quality improvement is the use of measurement. Measurements could be used in the future for dental practices to benchmark their sustainability performance against their colleagues, and it is possible that sustainability metrics could also be used in future commissioning decisions.

Indicators recorded in order to measure sustainability within the dental practice should be SMART: Specific (the measure should quantify an important result e.g. kWh of electricity), Measurable, Achievable, Relevant (i.e. related to sustainability), and Time specific (e.g. over one month, one year etc.)

#### Carbon Footprint:

There are no ready-made carbon footprint calculators for dental practices but by collecting electricity and gas use (KWh), a sample of patient and staff travel, and procurement (purchases) information, a practice can capture a significant part of its carbon emissions. The carbon footprint is calculated by converting this data into emissions using DEFRA or SDU figures used in the Scottish and English Carbon footprint studies (see Resources below).

Simple to understand elements of sustainability could be displayed in a sustainability electronic folder and on patient information boards within the dental practice.

#### Evaluating:

Evaluation is the process of assessing or determining the significance of an action. Many dental practices may wish to evaluate their sustainability indicators informally e.g. comparing energy use, or waste use from one given period to another.

A more formal evaluation can be performed quantitatively (e.g. using data) or qualitatively (e.g. using non data information such as descriptions of sustainability improvements). Evaluation can either be process (how an outcome was achieved) or outcome based (the actual change, or how effective the program was in producing change).



## What does sustainable practice look like?

### Real life example

The **'Green Impact audit tool'** for dental practices was developed by the postgraduate dental department of the University of Bristol and piloted in 2014-15, supported by the National Union of Students (NUS). It enrolled dental practices in the South West to implement sustainable changes using the tool, led by Foundation Dentists in their practices. 50 practices were engaged, 42 of which submitted a toolkit and were audited remotely by trained students. Changes involving waste management and recycling, printing and photocopying and energy awareness and use were made; and energy, carbon and financial savings were demonstrated.

Calculations to estimate the impact of the practices' combined actions on both carbon reductions and financial savings were carried out using the **Carbon Trust Empower Calculator**. Through just two of the actions (printing double-sided and switching off lights and equipment) approximately **£11,035 and 53 tonnes of carbon** was saved.

An estimated **456** people had been reached by practices implementing a lighting and equipment responsibility plan, potentially saving **91,309 kg CO<sub>2</sub> and £14,289**. **531** people were reached by practices raising awareness of recycling, potentially saving up to an estimated **39,592 kg CO<sub>2</sub> and £10,640** on resource costs in that year.

### Modelled example

Sonya is a dental practice owner. She has worked with her team to implement sustainable changes in the practice and wanted to evaluate the changes. She has created a template to evaluate the process and outcomes achieved, which will be used as part of a sustainability audit. Each dental team member in the practice will lead on a part of the audit for each indicator:

Indicator	Process evaluation	Outcome evaluation
Energy use	Insulation installed LED lights changed Zero emissions supplier now used	Energy use change in kWh
Travel	Travel policy Use of teledentistry Use of electronic referrals Secure cycleparking, showers	Number of appointments Patient or staff travel (using patient or staff questionnaires) reduced, increased active travel etc.
Procurement	Use of suppliers questionnaire	Amount spent per patient on procurement



## Modelled example *continued*

Indicator	Process evaluation	Outcome evaluation
<b>Waste</b>	Waste audit Waste policy	Amount of waste sent under each category
<b>Biodiversity</b>	List of actions undertaken	Increase in biodiversity e.g. a particular bird species
<b>Embedding sustainability</b>	Appointing a lead Staff education Practice policy	Staff knowledge / behaviours



## Actions






### KEY:

**Implementation:** Easy = 😊😊😊 Less Easy = 😊

**Investment Cost:** Low = 💷 High = 💷💷💷

**Financial return on Investment (ROI):** Low = 🐷 High = 🐷🐷🐷🐷

**Environmental benefit:** Small = 🌍 Large = 🌍🌍🌍

- Choose indicators to measure sustainable changes in your practice, both qualitative and quantitative 
- Ensure your indicators are **SMART** 
- Collect data e.g. from utilities statements, procurement records or travel survey 
- Evaluate progress against your indicators and involve the whole team 
- Display sustainability progress on practice notice boards and website 

Sara Harford, Darshini Ramasubbu, Brett Duane, Frances Mortimer - Centre for Sustainable Healthcare (2018)

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## Resources

### Case studies:

#### Green Impact Tool:

<https://sustainability.nus.org.uk/green-impact/articles/how-green-impact-works-in-healthcare>

### More links:

#### Carbon Trust Carbon Footprint Software:

<https://www.carbontrust.com/client-services/advice/footprinting/carbon-footprint-software/#footprintmanager>

#### Sustainable Development Unit measurement metrics:

<https://www.sduhealth.org.uk/areas-of-focus/metrics.aspx>

#### Dental Carbon emissions studies using DEFRA & SDU footprint figures:

Duane B, Hyland J, Rowan JS, Archibald B. Taking a bite out of Scotland's dental carbon emissions in the transition to a low carbon future. *Public Health* 2012; **126(9)**: 770-777

**Carbon modelling within dentistry: towards a sustainable future.** Public Health England and Centre for Sustainable Healthcare (2018)

[www.gov.uk/government/publications/carbon-modelling-within-dentistry-towards-a-sustainable-future](http://www.gov.uk/government/publications/carbon-modelling-within-dentistry-towards-a-sustainable-future)

Duane B, Croasdale K, Ramasubbu D, Harford S, Steinbach I, Stancliffe R, Vadher D. (in press). Environmental Sustainability: Measuring and embedding sustainable practice into the dental practice. *British Dental Journal*.

**Dental Susnet**, online network for improving the sustainability of dental services:

<https://networks.sustainablehealthcare.org.uk/dental-susnet>