

SDG COLUMN

SDG 7: affordable and clean energy in oral healthcare

7 AFFORDABLE AND CLEAN ENERGY



Continuing with our cover series on the UN's Sustainable Development Goals (SDGs), we reach SDG 7: Affordable and Clean Energy. Our focus for this SDG was to illustrate the various ways in which dental practices as well as patients can contribute to this goal, including renewable energy sources at the dental practice (eg solar panels) and reducing CO₂e emissions for both dental professional and patient commutes (eg cycling; coordinating appointments to reduce number of visits). **Nicolas Martin**¹ discusses SDG 7 within the context of oral healthcare, highlighting how we can engage in mitigating climate change and how every individual effort towards this goal results in a collective impact.

There is an increased global demand for energy driven by population growth and increased technology dependence, which at the same time is causing anthropogenic climate change. Both can be managed by ensuring access to affordable and clean energy, which is key to achieve global energy security.¹

This article considers the UN Sustainable Development Goal 7 (SDG 7) in the context of oral healthcare, and how we can engage to mitigate climate change and contribute to planetary health. The aim of SDG 7 is to 'ensure access to affordable, reliable, sustainable and modern energy for all', with specific targets to be achieved by 2030 (Table 1).²

As individuals, tucked away in our surgeries and quietly getting on with our jobs, we may assume that any progress towards implementation of the UN SDGs is safely in the hands of governments. The reality is that currently, the world is not on track to meet the SDGs by the target date of 2030. Governments are failing to make sustained progress or translate the goals into concrete policy changes.³

The UN is re-invigorating the SDG targets, highlighting that synergistic work between the SDGs and climate action results in environmental and socioeconomic co-benefits.⁴ A perfect example of this win-win situation is that the provision of good-quality oral

healthcare will benefit the individual, society and the profession with direct environmental sustainability gains from reduced CO₂e emissions and reduced waste.⁵

In parallel with the SDG efforts, the energy sector has developed an 'Energy hierarchy' with a similar structure to the well-established 'Waste hierarchy' strategy^{6,7} (Fig. 1). Both hierarchical strategies have proven to be very influential in advancing ways to control waste and energy, and they provide a further framework for our efforts in oral healthcare.

Energy hierarchy applied to oral healthcare

Energy reduction

Reduction of energy use at all levels is the most preferable strategy with the most impactful outcomes. The focus is energy conservation and not wasting energy. We know that the greatest contribution to CO₂e

diseases.^{5,9} This has a synergistic impact with the waste reduction hierarchy, which results in a reduction of energy use and also unnecessary waste from all sectors in the supply chain, not just the dental practice. Remote clinical consultations may provide a further strategy to reduce patient commute.^{10,11} In addition, practical measures that encourage the use of electric vehicles with charging stations in the carpark of the dental practice should be considered. Improved insulation of the dental practice and switching off lights and appliances when not in use, such as lunch breaks, are effective strategies. It is helpful to remember that these small measures, when multiplied by the thousands of dental practices around the world, equate to many thousands of saved megawatts of energy.

Energy efficiency

The energy efficiency of equipment and infrastructure is the balance between the productivity of the device and the energy it consumes. LED lighting is a great example of how to tip the balance in favour of

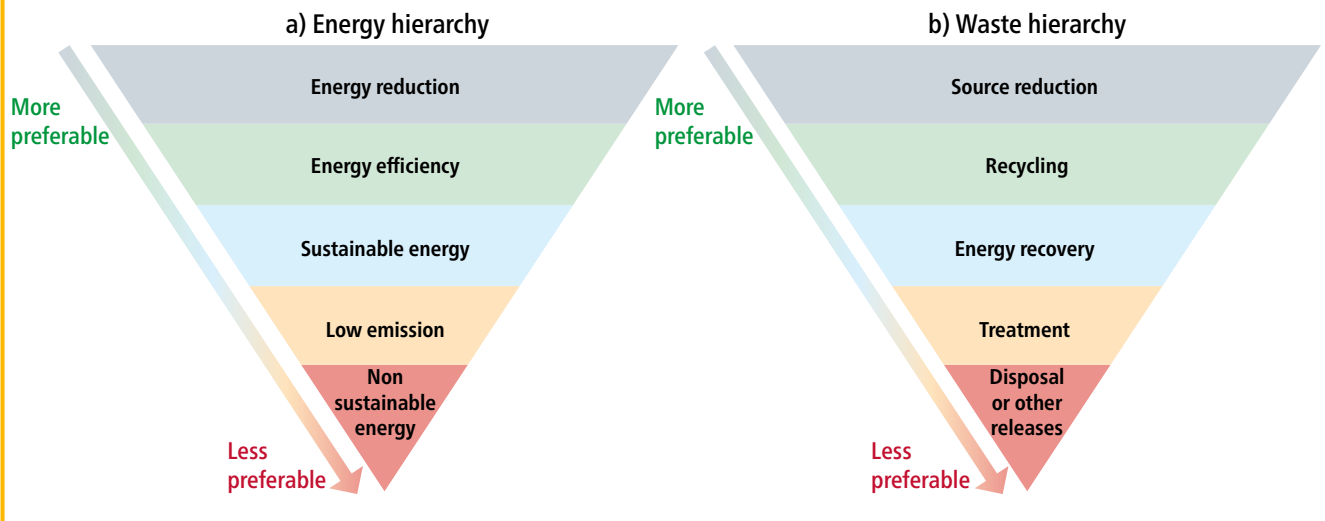
'We should be mindful that our apparently small individual efforts are hugely impactful...'

emissions in dentistry arises from patient journey and staff commute.⁸ Our efforts should concentrate on reducing the use of combustion engine cars for these journeys. The single most effective way to achieve this, is by reducing the need for patients to attend for the treatment of preventable oral

efficiency versus consumption. The purchase of energy-efficient equipment should be a strong consideration. For example, the use of 'A' labelled energy-efficient refrigerators in Europe will result in a reduction of up to 9.6 TWh of electricity per year by 2030 and will prevent around 3.1 million tonnes of

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Fig. 1 a) Energy hierarchy, proposed by Philip Wolfe in 2005 and subsequently refined and adopted by the energy industry and government.⁶ b) Waste hierarchy, proposed by Hyman *et al.* (2013) in the UNEP and widely adopted as a fundamental strategy⁷



CO2 from being emitted every year, which is close to the annual household electricity consumption of Lithuania.¹²

Sustainable energy

The most achievable form of sustainable energy is to purchase this from the national grid if it uses elemental renewables, such as sunlight, wind, waves, tides or rainfall. At a local level, dental practices can install solar panels to generate electricity and heat pumps (geothermal energy), set to become the most economical and lowest carbon form of heating available.¹³

Low-emission and non-sustainable energy

These two strategy categories, which are considered the least preferable, focus on the use of fossil fuels with carbon capture and storage and unabated fossil fuels. Neither of these are within the direct domain of oral healthcare provision, but we can as a profession apply pressure and lobby our governments to stop using these highly undesirable energy forms.

Conclusion

In oral healthcare, the most impactful way to achieve the aim of SDG 7 is through the provision of good oral healthcare, which reduces the need for treatment and re-treatment of preventable diseases and the associated patient commute and energy use throughout the supply chain. We should also engage with energy efficiency measures in our dental practices. We should be mindful that our apparently small

Table 1 UN SDG 7 – targets to be reached by 2030²

Target	Description
Target 1	Ensure universal access to affordable, reliable and modern energy services.
Target 2	Increase substantially the share of renewable energy in the global energy mix.
Target 3	Double the global rate of improvement in energy efficiency.
Target 4	Enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.
Target 5	Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing states, and land-locked developing countries, in accordance with their respective programmes of support.

individual efforts are hugely impactful when multiplied by the thousands of dental practices around the world. ■

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