Putting sustainability at the core of Africa's health

By Jabulile Nhlapo

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The healthcare buildings we are designing and building today are very different from the hospitals, clinics and general practitioner surgeries we had become accustomed to for such services in Africa.

Source: Supplied. Jabulile Nhlapo.

Technological innovation, changing population demographics, shifts in expectations of how healthcare should be provided, and environmental considerations are driving a revolution in building design as achieving net-zero becomes increasingly important. In Africa, accessibility must be a key consideration for governments and healthcare providers if true sustainability is to be achieved.

Worldwide, citizens depend on hospitals to run 24/7 without interruption and deliver continual critical care. From cooling and ventilation to sterilisation and lighting, the energy needs of hospitals are significant and, as such, their carbon emissions are high.

The healthcare sector is responsible for 4.4% of annual global emissions. As governments around the world pledge to meet net-zero targets, hospitals have a significant responsibility.

Decarbonisation of the healthcare sector is a pressing and difficult challenge on a global scale.

The challenge is compounded in Africa by the fact that only 52% of its citizens have access to the healthcare they need. This means that, in the African context, sustainability is about so much more than green building principles, carbon footprints and the race to achieve net-zero.

It is also about addressing people's needs, improving access to care for rural communities and ensuring that the solutions provided can be continuously maintained and supported over time.

How using renewable energy can help clean up the construction industry

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With rising adoption of technology to support carbon-emission reductions and improve patient care, we will also see hospitals making increasing use of technology to deliver outpatient services straight to the patient's home.

These services will be supported by networks of decentralised, community-based day clinics, to provide hands-on nursing care and social support, as needed.

But the mutually beneficial applications for sustainability principles do not end there.

Electrification presents significant opportunity

There is certainly the challenge of an unreliable electrical grid in many African countries. Second to this, the electrical power provided by the grid in most of these countries is still heavily reliant on fossil fuels like coal and gas, with diesel-generator backup solutions.

Within this local-market context, while the solutions we provide as a start might not necessarily eliminate the use of fossil fuels entirely, they certainly reduce the reliance on fossil fuels through integrated hybrid energy solutions.

This sees healthcare groups and developers looking to invest in stand-alone or micro-grid hybrid power solutions that incorporate some form of alternative and zero-carbon electricity sources such as wind-, solar-, hydro- and geothermal solutions with battery storage backup. Such hybrid solutions can, for example, be used to power isolated systems which represent a significant annual energy consumption within the facility.

By incorporating electrification, hospitals can reduce their reliance on fossil fuels and reap significant benefits. And while an all-electric facility may seem like a futuristic vision in the African context now, it's not impossible and represents the opportunity to save on energy costs, contribute to improving human health and pave the way towards a greener, more sustainable future for healthcare and the planet.

Getting this right will require taking further steps to swap existing technologies and systems that use fossil fuels with sustainable alternatives like heat pumps, either during hospital refurbishments or in new hospital designs from the outset.

Buildings and climate change - there is a massive contribution to be made

Mark Freeman 26 Sep 2022

If Africa can harness its significant potential for renewable energy production, the cost of running healthcare facilities in more remote communities, as well as the significant challenges posed by insufficient infrastructure in these communities, could be heavily reduced.

On a continent where new facilities are sorely needed, it's about designing for sustainability from the outset.

Heat, ventilation and air-conditioning systems can be designed to leverage electric technologies to meet cooling and hot-water generation requirements, where heat rejected from cooling the facility is used to provide pre-heating for hot-water systems.

There are indeed challenges, but these hurdles can be overcome with adequate and thorough preparations. Engineers and healthcare providers need to approach new building designs, and building refurbishment projects, with sustainability in mind. Each estate needs a comprehensive technical assessment and detailed strategy and business case to find the most effective solution.

Green building non-negotiable

In the African context, aging and over-subscribed healthcare infrastructure and strained budgets for new builds or refurbishments are another compounding factor.

And, while there are some phenomenal, forward-thinking government-led and private hospital-group projects that are adopting sustainability principles to create world-class hospitals and medical centres, largely we still seem to be falling behind this global trend.

Often, this can be attributed to concerns over delivering a project within budget. Some of the current challenges exacerbating project budgets are the fluctuating costs to import equipment and materials for construction as well as the exorbitant lead times. However, this is also an opportunity to shift the focus to the long-term returns, which could provide the confidence needed to make the necessary investments.

To put this into context, in the commercial-property space building for efficiency, sustainability and climate-change resistance have already been proven to boast significant return on investment. Added to this, in many parts of Africa there are infrastructure concerns that constrain access to basic services such as water and power.

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20 Sep 2022

This makes the case in Africa much stronger for hospitals and healthcare facilities to implement green-building best practices and renewable energy solutions to provide their own power and heat efficiently, making them self-sufficient in the event of outages and, at the same time, countering the effects of climate change, rising energy costs and water scarcity.

Striking the balance

Sustainability in African healthcare provision is a balancing act between sustainable, leading-edge engineering, and providing basic access.

In the pursuit of a prosperous future of inclusive and sustainable growth, where all African people have a high standard of living, quality of life, sound health and well-being, learning from global trends and adapting these to suit African conditions is the key to building successful networks of healthcare infrastructure and medical facilities across the continent.

For healthcare in Africa to contribute to achieving net zero, without losing sight of the urgent need to provide access to quality healthcare for all, it's about harnessing the opportunities in digital transformation to address shifts in expectations of how healthcare should be provided, both in wealthier urban environments and in more rural areas where infrastructure in general is lacking.

At other times, it's about finding sustainable energy solutions that do more than save on the client's running costs and improve their facility's carbon footprint. These solutions must also allow them to remain accessible to their patients during rolling blackouts, as a common problem in Africa.

And always, it's about working towards net zero, on a continent with limited infrastructure but an abundance of resilience and optimism.

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