Roha Health Ethiopia is the first healthcare project in Ethiopia to gain sustainability accreditation from Green Building Council South Africa, under the IFC Excellence in Design for Greater Efficiencies (EDGE) programme.

WORDS Anne Schauffer IMAGES Roha Health Ethiopia



The clean lines of Roha Health Ethiopia hospital, in Addis Ababa, make for an aesthetically pleasing facade. It is the first healthcare project in the country to achieve EDGE accreditation.

Project nutshell

Location:	379 Cape Verde Street, A4 Building, Addis Ababa, Ethiopia
Certification:	EDGE Preliminary
Type of building:	multispecialty hospital
Practical completion:	June/July 2026
Project size:	35 000m^2 (total gross floor area)

Ethiopia is Africa's second most populous nation, and accessing quality healthcare is a significant challenge for most of Ethiopia's 120 million plus citizens. But Ethiopia (Roha). Backed by United States investors, Roha Group, this $130-million facility will offer world-class, specialised care across a variety of disciplines with Centres of Excellence in the fields of orthopaedics, neurosurgery, cardiology and oncology. With a 300-bed capacity, Roha is positioning Addis Ababa as a regional hub for comprehensive and preventive healthcare. Importantly, it is envisaged that Roha would not only reduce the need for Ethiopians to spend scarce foreign currency on advanced medical treatment abroad, but it would open a new "medical tourism" income stream for the country.

A HISTORIC SUSTAINABILITY ACHIEVEMENT FOR ETHIOPIA

The Roha Group focuses largely on sustainable businesses throughout Africa, and this is its first foray into healthcare. The hospital achieved a historic milestone as the first healthcare project in Ethiopia to gain accreditation from Green Building Council South Africa (GBCSA) for sustainability under the International Finance Corporation (IFC) Excellence in Design for Greater Efficiencies (EDGE) programme. GBCSA certified the hospital in the absence of a local council in Ethiopia.

The sustainability lead on this ground-breaking project is Alison Groves, Director: Discipline Lead: Built Ecology at WSP. She outlines the EDGE criteria: "EDGE is a tool developed and managed by the World Bank and financed by the International Finance Corporation (IFC). It measures the savings of a building's energy, water consumption and materials used. It compares the building's input to a local baseline of the same typology – in other words, the EDGE tool calculates, for example, how much water this building is saving, compared to the Ethiopian base case value, thereby comparing apples to apples."

> One of the ways to mitigate the hospital's carbon footprint was to establish a forest in front of it.

Roha is being built close to Bole International Airport in Addis Ababa, one of Africa's busiest air transit hubs – Ethiopian Airlines serves approximately 20 million passengers a year and flies to around 60 African cities. Africans spend an estimated $5 billion on medical tourism, so for Roha, a key goal is for patients to choose Addis Ababa for medical services rather than flying on to the West, or to countries such as Turkey or India.

CREATING A FOREST

Roha is committed to reducing its ecological footprint through innovative design and operational efficiency. Their projection is to reduce energy use by 35%, water consumption by 21%, and material embodied carbon by 24%, compared to conventional hospitals in the region. Groves explains one excellent opportunity seized upon by Roha: "One of the ways to mitigate its carbon footprint was to establish a forest in front of the hospital."

Roha planted a forest of over 12 000 native trees using the Miyawaki method. Planting in this manner is one of the most effective ways for creating forest cover quickly on degraded land. Roha General Manager Welela Haileselassie tells how it came about: "This section of the project's land was ripe for rehabilitation. We wanted this forest to act as a noise barrier – we're right on the main road and alongside the airport – so it would quieten the environment for patients. In addition, we wanted a green space open to patients, visitors and our staff."

Miyawaki is based on natural reforestation principles, using trees native to the area and replicating natural forest regeneration processes. The Miyawaki methodology helps trees grow much faster and denser, which jump-starts the forest creation process in a sustainable way. It's



Addis Ababa's Roha medical oasis is set in the heart of a great, green lung, as much for the benefit of the people of the city as for the hospital patients.



A side view of Roha hospital's main entrance.

particularly effective for smaller afforestation projects and works well in urban environments. "Higher biodiversity has been recorded in Miyawaki forests than in neighbouring woodland, so it's perfect for creating diverse forest ecosystems quickly," says Haileselassie. "As part of our corporate social responsibility (CSR) initiatives, we've trained others in the methodology and they're creating green spaces in their own communities. It's pretty incredible to watch the return of birds and butterflies." Roha's green space is also designed to provide a natural healing environment, combat air pollution and support local ecosystems while contributing to Roha's goal of becoming Ethiopia's first carbon-neutral hospital.

> Roha aims to become Ethiopia's first carbon-neutral hospital.

CONSIDERED DESIGN

Roha's green features include a thermally activated building (TAB) heating and cooling system. Groves described the TAB system of air conditioning – essentially, thermally activated slabs: "In the system, water piping runs through the slabs, and the slabs are cooled or warmed accordingly


Roha hospital is being built close to Bole International Airport in Addis Ababa, one of Africa's busiest air transit hubs, and is set for completion at the end of 2026.



Sustainable features in the hospital include a thermally activated heating and cooling system: water piping runs through the slabs, which are cooled or warmed accordingly, and this releases heat or cold slowly into the spaces.



With plants and trees as an exceptional environmental aspect – as well as a contributing element to Roha's EDGE certification – this view of the main entrance allows visitors a glimpse of another green space, the rooftop garden.

– which releases heat or cold slowly into the rooms. It reduces the amount of energy required for heating and cooling. It's much more efficient, but it's a slower lag." Haileselassie says it's a great advancement of healthcare infrastructure in Ethiopia.

The Roha hospital faced numerous challenges in terms of design, materials and skills. Addis Ababa is located in a geographically active region, the East African Rift System, so earthquakes and volcanic activity are common. This has a significant effect on the selected materials. Initially, the hospital facade was planned to be constructed with mostly hollow concrete blocks (HCB) with punch windows to bring in light. "The HCB would have enabled us to manufacture the facade walling fully in Ethiopia with 100% local labour," says Henry Mutenga, Project Director, "however, we had difficulty producing HCB that consistently met the minimum compressive strength development without exceeding the maximum weight limitations imposed by structural and facade engineers.

> The fully glazed building complies with seismic requirements, while delivering excellent aesthetic appeal.



Roha hospital's glassed facade is softened by sweeping outdoor curves and calming forested surrounds.

Ultimately, we went for a fully glazed building where the facade is light and complies with seismic requirements, while delivering excellent aesthetic appeal."

Iphendule Ndzipho, sustainability consultant at WSP and EDGE expert on the project, says, "Design-wise, we looked very carefully at the window-to-wall ratio, and how that ticks the building's energy consumption, and also the embodied materials of the building. Generally speaking, glazing has a much higher embodied carbon footprint – these kinds of attributes in the EDGE tool balance out in terms of the building's performance. We are working very closely with our mechanical engineers to make sure we have the best energy outcome. Owing to the location of clinical departments in the basement, we've designed the space to have natural light, with three light wells on three sides. We've also designed an atrium over the main entrance to allow for even more natural light to enter the building and to promote a healing environment."

A hospital has, in numerous ways, more critical demands than other commercial buildings – stable utility supplies are vital, and there are significant restrictions on reducing water and electricity use. Ndzipho continues, "The supplied power from Ethiopia's grid is 100% renewable, however it is unreliable, so it's important to minimise the building's reliance on supplied power. That's a huge ask in a hospital. Ultimately, if it's not going to be solar – there is insufficient space for enough solar to cover the needs – the hospital would need a generator. Clearly, the best way of reducing energy consumption is to not need a generator in the first place, so they've been exploring the most efficient way of operating this building so they can maximise the amount of renewables used."

WATER CONSIDERATIONS

With regard to water supply, which is vital to a hospital's operation, Mutenga says, "The government's corridor project in Addis Ababa has essentially allowed us to connect our sewage directly to the main city drainage as it was being expanded and reengineered. That has been very helpful for our project." Water is vital to infection control, so reducing water consumption is a major challenge. Methods of achieving it – such as installing aerators to reduce the water flow – get major push-back in terms of infection control."

> Roha is a marriage of sustainability and innovation in Africa's healthcare landscape.

Mutenga adds, "There's currently no substantiative infrastructure for treating black water in Addis Ababa. A comprehensive black water treatment system is very important for us not only as a hospital to minimise infections, but also as an institution that aims to set new environmental standards by responsibly managing all the waste produced in our facility."

Likewise with waste materials and biohazardous materials: "Ethiopia has very poor disposal systems, and in a medical facility it's absolutely essential," says Mutenga. "We're proud to show how our advanced waste management, powered by clean technology, can work for the people and the environment. Our waste disposal system can be held up as an example of what can be achieved."

Groves says that for Roha Health Ethiopia, "Many of Roha's initiatives in this building are incredibly forward-thinking in terms of building sustainably ... but don't necessarily fall within the EDGE tool." Still, in keeping with Roha's authentic commitment to sustainability, they're nevertheless incorporating them.

A marriage of sustainability and innovation in Africa's healthcare landscape, Roha is set not only to improve medical access in Ethiopia and beyond its borders, but to raise the bar for similar developments throughout Africa.