UNITED NATIONS
OFFICE AT NAIROBI
unon The UN Headquarters in Africa

UNEP

Microsoft

UNEP:
Providing Environmental Stewardship in Africa with Sustainable Design and Technology

Sustain more ▶

The UN Environment Programme (UNEP) has taken a leading role in helping the UN Office in Nairobi, which houses its own headquarters along with those of the United Nations Human Settlements Programme (UN-HABITAT), design a new building in order to achieve energy neutrality and showcase innovative design and technology.

The building is the first energy neutral UN building in Africa, creating a sustainable 21st century work environment for the 1,200 staff working there

While UNEP has been climate neutral since 2008, they also took on the tough challenge of developing a state-of-the-art, energy neutral UN office building in Nairobi. Having carried out comprehensive background studies on areas such as energy production, lighting and hardware, it became clear that the greatest challenges in achieving energy neutrality were the high-energy components, specifically IT and lighting. IT and lighting policies were the areas where the largest efficiencies could be made, and challenged UNEP to find innovative solutions.

Achieving energy neutrality requires producing as much power as the building consumes over the course of the year. To power the building with sustainable and renewable sources, Kaneka Corporate, SCHOTT Solar AG, Energiebau Solarstromsysteme GmbH and SMA helped to plan and install almost 6,000 m2 of solar panels which will generate an estimated 750,000 kilowatt hours (kWh) of electricity, the needs of the new building over a year, aided by Nairobi's very high solar yield, and ranking it highly amongst green buildings worldwide.

In designing the building, UNEP discovered that the IT component of their operations was consuming the most energy and was the largest inhibitor to becoming energy neutral.

"As part of the Sustainable United Nations initiative, the UN is committed to making its operations more environmentally friendly. Lighting and IT infrastructure are far and away the biggest consumers of energy in buildings. Green IT policies are essential in ensuring the new building is carbon neutral, and the ITPAC datacenter has been a lynchpin in achieving this goal."

Achim Steiner, Director-General, United Nations Office at Nairobi and Executive Director, United Nations Environment Programme

"Nairobi is the headquarters of UNEP, so of course the building has to be green. It's a showcase. Energy neutrality is a key part of that goal."

Rob de Jong, Sustainable United Nations, Division of Technology, Industry and Economics, UNEP

Relying on traditional IT policies would consume so much energy that the goal of energy neutrality would be unreachable. Microsoft provided consulting advice and worked with UNEP through their public-private partnership to help develop IT policies, practices, and identify technologies gleaned from best practices from its global business, as well as the industry.

Part of the green IT strategy was a shift from desktop to energy efficient notebook computers from Hewlett Packard, yielding an immediate energy savings of around two-thirds. Working from United Nations best practice guidelines on notebook computers, the new notebooks will be powered by an intelligent A/C adaptor which, unlike many others, reduces energy consumption to almost nothing when machines are off or in standby mode.

However, green IT extends beyond the computers themselves and UNEP has recognized that ICT must be integrated into intelligent building planning from the outset to optimize solutions and ensure users' current and future needs are met. Numbers of servers, which consume large amounts of energy and need to be kept cool, can be reduced through new technologies that enable multiple application systems to use one physical server.

Some way into the project it became clear that the computer server rooms would need to be cooled by power-hungry air conditioners, making it difficult to achieve energy neutrality. Air conditioning in data centers accounts for up to 90 percent of IT energy

consumption, so it is vital to think beyond computers when planning green IT solutions. Microsoft began working with UNEP to implement the first green data center in Africa capable of helping the organization achieve its goal of carbon and energy neutrality. As a result, Microsoft's IT Pre-Assembled Components (ITPAC) technology, manufactured by technology partner Saiver, was recommended to help the building become a more energy efficient showcase demonstrating responsible stewardship of the environment. The expected energy savings are such that the substantial cost of purchase can be recouped in less than five years through savings in electricity bills.

Not only are green IT policies helping UNEP to achieve energy neutrality and increase efficiency in the new UN building in Nairobi, but they also provide additional benefits in terms of a more flexible IT environment. The highly scalable foundational IT infrastructure provided by the ITPAC can be useful for future ICT expansion into cloud computing at the complex, unlocking benefits in IT efficiencies and achieving further reductions in energy and carbon emissions. The comparatively smaller carbon footprint of cloud computing is a consequence of both improved infrastructure efficiency and a reduced need for IT infrastructure to support a given user base.

Lighting was another challenge for UNEP in achieving energy neutrality. The new building was planned to make maximum use of natural light, simultaneously reducing costs and energy consumption, while creating an attractive working

environment. Finding an energy efficient lighting solution, the project team sourced the most efficient fluorescent luminaires and combined them with a daylight sensing and presence detection controller system that automatically dims or increases lighting as needed. Through these sustainable lighting policies, the UN building in Nairobi can reach potential savings of up to 70 percent on lighting costs.
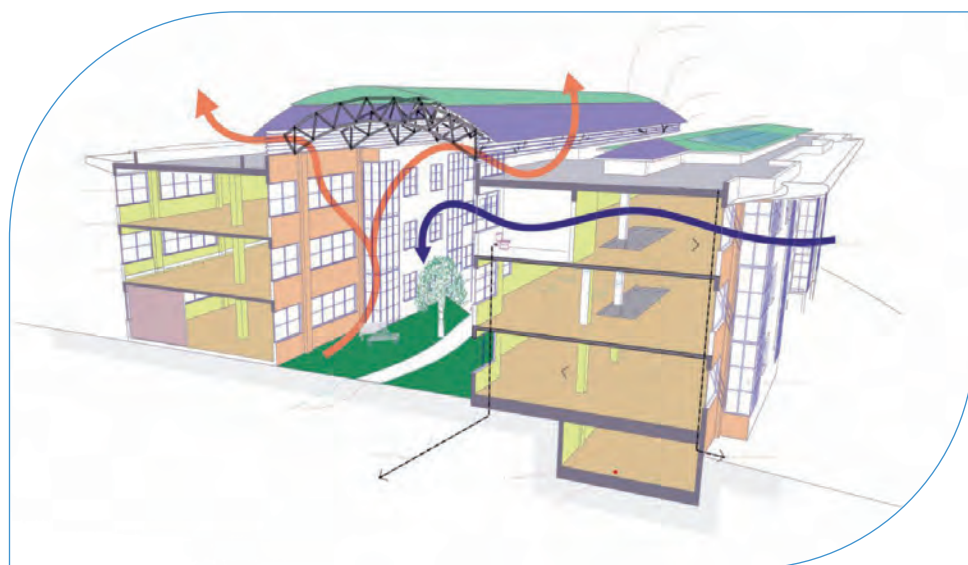
Through the chosen IT and lighting solutions, the new UN office building is able to achieve energy neutrality as well as showcasing cutting-edge sustainable design and technology. As the area where the most efficiencies could be made, IT presented the greatest opportunities for innovation. UNEP carefully selected the design and technology which not only allows the UN office building in Nairobi to meet its energy goals and reduce the building's environmental impact, but also provides the necessary infrastructure to introduce future innovations – creating a living showcase of sustainability in Africa.

"With their new headquarters, UNEP is at the forefront of the UN's adoption of green IT and decreasing their carbon footprint. With the building's innovative use of design and technology, the UN building in Nairobi will not only deliver much enhanced energy efficiency, but will also have the infrastructure in place to leverage more flexible and scalable technology to take advantage of new technologies like cloud computing."

Frank McCosker, Managing Director, Microsoft Global Strategic Accounts

ITPAC data center being boarded on to the flight to Nairobi

ITPAC based on Microsoft technology

About UNEP

UNEP's mission is to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations. UNEP is an advocate, educator, catalyst and facilitator, promoting the wise use of the planet's natural assets for sustainable development. With its headquarters in Nairobi, Kenya, UNEP has a first-hand understanding of the environmental issues facing developing countries.
www.unep.org

About Microsoft

Founded in 1975, Microsoft (Nasdaq "MSFT") is the worldwide leader in software, services and solutions that help people and businesses realize their full potential. www.microsoft.com

Through its Unlimited Potential initiative, Microsoft is committed to making technology more affordable, relevant and accessible to help transform education, foster innovation and enable better jobs and opportunities. By working with governments, intergovernmental organizations, nongovernmental organizations and industry partners, Microsoft hopes to extend the benefits of technology to the next 1 billion people by 2015.
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