

Green buildings in Romania

To become a green building, the design, construction, operation, deconstruction and re-usage of the building materials must limit damage to the planet's resources to the highest degree possible

Eurotower

Aiming to become an iconic landmark for a development artery between Bucharest's centre and north, Eurotower is an 18-floor vector-like glass and steel office block, designed by Dorin Stefan, a Romanian who recently won the bid to design Taiwan Tower - a 300-metre office with restaurant and observation deck in Taichung, Taiwan.

The facades are directed to the east and northwest, avoiding facing the south, which gains the most heat in summer. The floor to ceiling panelled glass also reduces lighting costs. "Everyone inside has access to natural light," says Alex van Breemen, managing director of developer the Cascade Group. "They get natural light, but not sunlight."

The office block is at a crossroads of public transport with a tram and bus stop and is five minutes' walk from metro station Stefan cel Mare. The building has waterless urinals for men, separate male and female changing rooms and showers for bicycle users. However in the Winter staff were not keen to cycle to work. "In Spring we will make push for this," says Van Breemen.

The developer plans to place trees and grass on its roofs. "These are heat islands," he adds. "All roofs are boiling hot in summer and radiate heat - but to put green on roofs makes sure they do not heat up."

Van Breemen has left an 800 sqm plot next to the building empty, where he plans to open a terrace with large plant pots and trees. This 'sacrifice' of prime retail space has costs him 1.5 million Euro, he says.

Eurotower: 80 per cent rented, with a GLA of 18,000 sqm, five levels of underground parking, space for 1,500 staff and 180 parking spaces.

Tenants: Avon, Banca Romaneasca, ArcelorMittal, Schneider Electric, Gloria Jeans

Architects: Dorin Stefan and Chapman Taylor

Location: Blvd Barbu Vacarescu/Bldv Lacul Tei, Bucharest

Green status: BREEAM certificate

United States of America Embassy Bucharest

Heat recovery, green space, and water conservation will be the main features in the USA's development of a green embassy in north Bucharest, which is due to be finished in May 2011 and occupied by August.

The four hectare-site is on a green field location opposite the mall Baneasa Shopping City and around the corner from showrooms for Ford and Harley Davidson.

The U.S. State Department has a policy that its new diplomatic missions must be "sustainable platforms" for operations, so highlight energy and water maximisation and the use of recycled materials. The new embassy has a dedicated heat recovery chiller, which works on recycling the heat commonly discarded by conventional water chillers. "This is of paramount importance to gaining the green building status," says Matt Otto, construction manager for the Bucharest New Embassy Compound - U.S. State Department Overseas Buildings Operations.

The embassy has also dug a 60-metre well on-site, where it will pump water to use for irrigating all on-site vegetation. Around three quarters of the space will be covered in green areas which also incorporates drought tolerant species to reduce water consumption. This will consist of 200 trees and 5,000 shrubs, such as flowering cherry, honey locust and weeping birch.

The perimeter site lighting system will use a light emitting diode (LED) lamp. "LED lighting is more expensive to install but does not need to be changed for 30 years and its generated energy savings pay back this investment in less than one year," says Otto.

Within the office spaces, a pendant lighting system with both daylight and occupancy sensors are employed to adjust lighting levels to the available natural light to reduce energy while also providing consistent task level lighting across the working plane.

The Embassy is aiming for a Silver rating on the LEED system. Under these principles, 'locally sourced' products can be procured within a 500 mile radius of the site, which allows the Embassy the freedom to source from most of central and eastern Europe. This includes building and paving stones sourced from local companies Titan Mar and Marmosim from quarries in Deva, Hunedoara county. There are also recycled materials in the carpets, floors, ceiling tiles, joinery and roofing. But Otto says that using renewable energy such as wind turbines, biomass or thermal energy, or

solar panels was "not pragmatic" for this Embassy design in achieving LEED credits.

The Embassy uses 20,000 cubic metres of concrete in the construction. This large amount has been mitigated by the presence of a LaFarge concrete factory a stone's throw from the site.

The smoke-free location is also moving to isolate puffers - any smokers will have to stay 8.3 metres away from the main buildings to light up.

U.S Embassy: Strada Dr Librescu, Bucharest

Design-builder: American International Contractors Incorporated - Special Projects.

Architect: KCCT (USA).

Sub-contractors include: Bog'Art, Sommering, Domus, Masterbuild

City Business Centre

Timisoara's City Business Centre (CBC) boasts a visually arresting glass shading system on the outside, with non-transparent glass shutters which close down when the light is strong, blocking 60 per cent of solar energy in the summer and preserving the building's cooling systems.

"In the winter these 'blinds' can close to create a double skin for the building in the form of an insulation cushion," says developer Ovidiu Sandor.

CBC has also installed a building management system (BMS) which adjusts the air conditioning, heating and lighting to the immediate demands of the tenants without waste. This system can also absorb the cold at three am in the morning in the summer and redistribute this throughout the day.

The project was built on a brownfield site - an industrial platform - and the developer used the concrete to turn into gravel for the foundations and dispatched the iron to metal recycling.

There is green grass on the terraces, LED lighting and the building collects rainwater and uses this to irrigate the terraces. The water run-off from the AC system is also used to cool down the cooling agents in the AC system.

City Business Centre: three buildings in the 45,000 GLA sqm project in Timisoara are now delivered, a fourth is due in June 2012 and a fifth in 2013.

Developer: ModaTim

Awards: Romanian Green Building Council project of the year in 2009.

Architects: Andreescu & Gaivoronski

Atenor Hermes Business Campus

The Belgian Atenor Group is planning a build-to-finish green narrative for the construction and delivery of offices Hermes Business Campus and employing solar panels on its roof for heating water.

Aiming for a BREEAM Excellent rating, the Pipera-based office will have a radiant ceiling, which provides a balanced distribution throughout all spaces, providing cooling in Summer and heating in Winter.

The building management system will control most of the equipment, including the lighting and electricity. If the building is not occupied, it will not be heated or cooled, therefore will not waste energy. This will also allow tenants to be sure they only pay for what they consume - not for their neighbours.

The building will have intelligent lighting to respond to natural light and adjust to keep consistent light level. In the toilet areas and staircases there will be LED lighting and movement sensitive lighting.

There will be solar panels on the roof to reheat water for hand-washing. The water system will recuperate grey water for flushing toilets and time-controlled taps.

Construction of building B has started and will be finished by the end of 2012. The construction of two neighbouring buildings - A and C - will depend on whether B will be fully let. All will be green buildings. Atenor Group is now looking for tenants.

Hermes Business Campus B building: under construction, 18,225 sqm of gross lettable space, four levels of underground parking, due for delivery end 2012

Location: Blvd Dimitrie Pompeiu, Pipera, Bucharest

Architects: B23T International Architectural Services

Cacica library

An experiment to revamp a civic building in a salt-mining town in Suceava county, the Cacica library project includes the renovation of the energy performance, waste water and indoor air quality in a broken-down structure infected with asbestos.

The 'Eco Biblioteca' undertaking will cost 70,000 USD [52,000 Euro] and is financed by companies donating their time and materials, alongside the Romanian Green Building Council (RoGBC).

The aim is to renovate the first building by April 2011 as a platform for information and education and become a local community centre.

In the future the project may use solar thermal panels to heat water, but more likely is a small biomass boiler. "The design is intended to inspire another 3,000 libraries in Romania," says Steven Borncamp, RoGBC president.

Waste water is a tough call. In the countryside the strategy has often been for homeowners to dig a hole in the ground. Once this fills with human waste, they put down lime and mud and then dig another hole next door. But one method is a reed bed, which can filter sewerage, argues Borncamp. Bacteria, small plants and snails can contribute to an organic recycling plant that breaks down filth.

Project: Eco Biblioteca

Stakeholders: Biblionet, WSP, Dicositiganes, Cacica Mayor, RoGBC, COS, Interface Flor, B Lighting, Dexion

Eco Bucuresti

Eco Bucuresti is a proposed platform for a green development on a brownfield site in one of Bucharest's fluvial arteries - between reservoir Lacul Morii and Ceausescu's People's Palace - now the site of Parliament - via the Dambovitza river.

"If redeveloped this could help contribute to developing a brand of Bucharest and could become a tourist attraction," says Teodor Frolu, architect, PR company owner and pioneer of the project.

Nearby are the largest concentration of educational institutions and students in the country. In addition there are unique environmental features - such as Bucharest's botanical gardens and Lacul Morii, which irrigates nearby agriculture and acts as a city reservoir. This is good for winter sports and eco-sports.

There is also the Grozavesti power station overlooking the botanical gardens. Part of Frolu's vision is to enable the gardens to invade the cooling towers of the power plant and transform some of the unused industrial buildings into a centre for a bio-economy.

The aim is to act as a platform to connect groups, businesses and institutions which neighbour one another but rarely communicate and align their objectives under a green umbrella. "In collaboration, Romania has a handicap," says Frolu. "We are very promising as individuals, but very weak in partnership."

The ambition also includes breaking the barriers that exist between the public and institutional space, such as the wall around the Parliament building, as well as opening up public spaces that did not previously exist.

Using the principles of a sustainable economy, the route aims to create a platform for innovation - a kind of urban laboratory, where ecological designs and technology could be tested in public. "If 100 experiments result in one business, we can see the future as more entrepreneurs will be interested in working and studying," says Frolu.

The project has the support of the University of Bucharest and state institutes in biology, biochemistry, chemistry, energy, philosophy and law. The European Commission is sympathetic to idealistic urban ambitions, but the Bucharest City Hall and local Sector Halls are yet to give their backing.

By 2014 Frolu hopes to have a feasibility study completed and then auctions could begin for development.

Suceava University Campus

A team of architects, educationalists and businesses are planning a 300 million Euro project to expand Suceava's university into an energy independent showcase for sustainable buildings. The plan includes dormitories, services, lecture spaces and green areas across 33 hectares on farmland owned by the Ministry of Education. "We want to create a little eco-city," says Peter Oostveen, a Dutch consultant for one of the pioneers of the project, the Architectural Group. There are no water or power lines to the land, but the location needs only a road to link it up to the town, as the plan is to make the campus energy independent. It will act as a University, a campus and a local community centre - including swimming pool, cultural centre, social centre, hotel, theatre and doctor's clinic,

An auction was due to go out as we went to press for a technical feasibility study. By mid-2011, Oostveen believes it will be possible to work out the financing possibilities. Around 60 to 70 per cent of the project could come from EU funds.

The project has the backing of the Suceava county council and city council and will need to be a Private Public Partnership (PPP). All financing needs to be in place by 2013, therefore the application for EU Structural Funds has to be organised by 2012. ■

What is green building?

To become a green building, the design, construction, operation, deconstruction and re-usage of the building materials must limit damage to the planet's resources to the highest degree possible. "What the builders take, they must give back," says Steven Borncamp, president of the Romanian Green Building Council.

Many green buildings represent a return to the original value system of building houses - such as locally sourced materials, the use of the sun to heat and allow visibility and trees to offer shelter from the rain and wind, as well as insulation using natural materials such as wool. In Romania, before 1900, housing were insulated with a thick wall of a fibrous mixture mud, hay, grass and hemp - chirpici. In many houses the smoke used to exit the flue and into the attic, where it could seal the wooden construction and provide heating and insulation. Villages also had animals in the home to keep warm.

Green buildings can either be accredited through the UK's Bre Environmental Assessment Method (BREEAM) or the US Leadership in Energy and Environmental Design (LEED), Germany's DGNB, Japan's CASBEE, Australia's Green Star or Switzerland's Minergie. BREEAM certification focuses more on the socially enriching aspects of green building, while LEED is biased towards energy efficiency and sustainable siting.

The entire cost of pre-checking, applying for and winning a certificate tends to cost between 30,000 and 40,000 Euro, but there is no guarantee a building will gain a certification.

Eco-friendly buildings in Romania

LAKEVIEW, BUCHAREST This 15-floor office building over 28,000 sqm won a BREEAM 'Very Good' certificate for design and procurement, its health and well-being qualities, pleasant internal environment, use of natural daylight on 80 per cent of floor space and its re-use of land for warehousing and industrial storage. Developed by AIG/Lincoln on Bucharest's Blvd Barbu Vacarescu, the building's tenants include RBS, Colgate Palmolive and PricewaterhouseCoopers.

NOKIA FACTORY, JUCU, CLUJ COUNTY Opened in 2008, the 60 million Euro Nokia mobile equipment factory includes recycled and locally sourced materials in the construction and fit-out. To save energy, the building employs a thermal envelope around the core of the building, energy-efficient glazing, reduced lighting power density and occupancy sensors to manage heat and lighting. The Finns claim this enables the building to reduce consumption of heating energy by over 50 per cent and electricity consumption by 26 per cent compared to a standard building. It uses flow limiters on water supply to save water. In transport, there is a shuttle system for staff, 18 preferred parking spaces for low-emitting vehicles, and provisions for bicycle storage and showers, plus a gym, health clinic and sauna. The factory is Romania's first certified green building with a Gold LEED certificate.

PETROM CITY, STRAULESTI Romania's largest company OMV Petrom targeted sustainability for its new 130 million Euro headquarters in Straulesti, north Bucharest. Opened last year, Petrom City includes bicycle lanes for the local municipality and access to natural light for all employees. The main quality is a 5 MW installed power co-generation energy production and consumption system which is part of a system that intends to increase energy efficiency up to 90 per cent, according to OMV Petrom.

BAUMAX DIY STORE, PLOIESTI, PRAHOVA COUNTY Austrian DIY store opened a 'green DIY store' in 2009 over 15,000 sqm using a system which recuses CO2 emissions by 75 per cent and an energy-saving lighting system which consumes 35 per cent less electricity, according to the company.

P&G SHAMPOO FACTORY, URLATI, PRAHOVA COUNTY Finished in 2010, the American fmcg giant's new plant can recover heat created in the manufacturing process and reuse this to heat the building and water units. The roof of its administration building also faces due south, maximising the possible future use of solar panels.

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