

WHO Building in Amman: The First Green Building in Jordan

The World Health Organization (WHO) Building- Amman Offices earned the first Leadership in Energy and Environmental Design (LEED) Gold Certification for a green building not only in Jordan but in the entire Region. LEED is an internationally recognized green building certification system, providing third-party verification that a building is designed, built and operated using environmental health strategies aiming at improving performance across all the metrics that matter most: energy savings, water efficiency, CO₂ emissions reduction, indoor environmental quality improvement, and conservation of resources.



According to the United States Green Building Council (USGBC), buildings are one of the heaviest consumers of natural resources and account for a significant portion of the greenhouse gas (GHG) emissions, contributing to climate change phenomena (38% of carbon dioxide CO₂ emissions). Below is a list of the major health and environment benefits of the new WHO Green Building in Amman:

- **60% reduction in the total water consumption**
- **22.5% reduction in energy consumption**
- **reduction in CO₂ emissions**
- **75% reduction in the building waste**
- **Lower contribution to the urban heat-island effect**
- **Total harmony with the neighborhood and community**
- **Conservation of resources through recycling**
- **Higher occupant satisfaction and safer indoor environment**
- **Cost effective and lower maintenance costs**

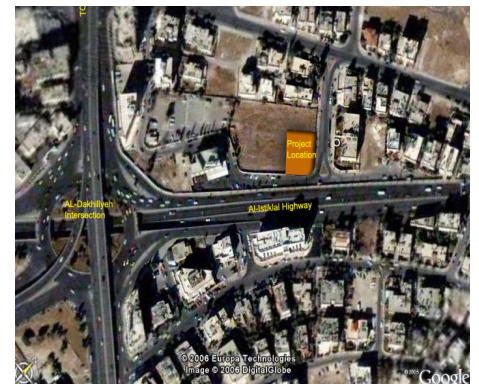
Green Building Health and Cost Benefits

Green buildings provide multifaceted benefits that conventional buildings do not. These benefits include occupational health and safety merits, energy and water savings, reduced waste, improved indoor environmental quality, greater employee comfort/productivity, reduced employee health costs and lower operations and maintenance costs. There is growing recognition of the huge health and productivity costs imposed by poor indoor environmental quality (IEQ) in buildings. This is not surprising as people spend 90% of their time indoors, and the concentration of pollutants indoors is higher than outdoors, sometimes by as much as 100 times.

Let alone health, wellbeing and other benefits, savings from energy cost alone will recover the additional 5% costs that was invested in constructing the WHO Green Building in less than 7 years

Land Use and Community

The building was designed and constructed in a total harmony with its surroundings. All means to minimize pollution during the construction process were taken. Adequate parking spaces were allocated inside the building so as not to create additional pressure on the already crowded urban zoned. The low water consumption garden and the project's reflective roof (white cement tiles) along with the smooth concrete and white stone surfaces reduce the building's contribution to the urban heat-island effect. Lighting & glaring pollution is minimized through: full cut off control over exterior lighting fixtures; and installation of interior lighting that are automatically switched off at night to minimize the light trespassing through the windows to the external environment.



High Water Efficiency

In response to the severe water shortage in the region, the building was designed and constructed as a model for water conservation and efficiency. Potable water consumption is reduced by more than 60%. The building collects both rainwater from its roof, and air conditioning condensate into a separate water tank for usage in toilet flushing; landscaping, and general cleaning purposes. The project's plumbing fixtures include infrared censored water taps, low-flow showerheads, and dual flush toilets.



High Energy Efficiency

In order to minimize its carbon footprint, the building was designed and constructed with energy consumption that is 22.5% lower even than the well- designed standard buildings (American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Baseline). The walls and roof were insulated at levels higher than what mandated by the national code and ASHRAE Standards, improving the glazing performance and thus energy efficiency. The building windows take advantage of natural light and limit heat gain, and the mechanical systems were designed to minimize the building's use of energy. In addition, the building uses renewable energy; solar street lighting and solar thermal for hot water.



Indoor Environment

The effect of indoor environmental quality can negatively affect occupants' physical health through poor air quality, extreme temperatures, excess humidity, and insufficient ventilation and psychological health through inadequate lighting, acoustics, and ergonomic design. The WHO building was designed to minimize such adverse impacts through several engineering measures: Smoke free environment; preoccupancy air flush out; proper entry to facilitate removal of dirt before entering building; thermal comfort through use of special glazing; visual comfort and interior design through adapting open floor plans to allow exterior daylight to penetrate to the interior; reduction of indoor pollutants through: using very low or no-VOC paints and sealants only; avoidance of wood containing formaldehydes; minimizing the generation of airborne particulates during construction; and using a comprehensive commissioning process for indoor environment quality (IEQ).



Conservation of Resources

In addition to conserving water and energy resources the project team recycled construction and demolition waste, diverting at least 75% of the waste, by weight, from landfilling. New materials were selected for their recycled content, regional origin, and low chemical emissions. Finally, solid wastes generated in the building are segregated into four groups: paper, plastic; glass and other wastes.



For more information please contact:

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