

What is the methodology for solar PV installation in Jordan?

The methodology is based on the assessment of the incident solar radiation on different surfaces, considering the shading effect from surrounding buildings in the most common residential urban zone in Jordan, and architectural suitable areas for PV installation.

How much solar energy does Jordan have?

Jordan benefits from an abundance of solar energy due to its location in the "global sunbelt," with average daily solar radiation ranging from 4 to 8 kWh/m<sup>2</sup>. This is equivalent to a total annual global horizontal radiation of 1,400-2,300 kWh/m<sup>2</sup> /year. The average length of sunshine about 300 days per year (Al-Addous et al., 2017).

Are solar water heaters available in Jordan?

In Jordan, solar energy technologies are not widely used except for solar water heaters, as it is a cost-effective technology, compared to other traditional water heating systems (Abdelhai, 2014; Al-Falahat, Abu Qadourah, et al., 2022; Alrwashdeh, 2022; AlShamaileh, 2010; Etier et al., 2010; Kiki et al., 2008; Sakhrieh & Al-Ghandoor, 2013).

Can a solar PV installation be installed in a multifamily building?

Figure 10. Architectural suitable surfaces area for solar PV installations into multifamily buildings in typical urban context in Amman, Jordan. Another possibility for the PV installation into the facade is attached elements such as an overhang shading device, which increased the potentially available area for solar PV installation.

Which facade has the highest potential for solar panels?

Generally, the outcomes confirmed that the highest potential envelope part of installing the solar systems is the roof, as most of its area is unshaded and received the highest solar radiation with about 2,000 kWh/m<sup>2</sup> /year. For the facades, the south facing facade has higher potential for installing PV panels than facades with other orientation.

Are apartment buildings a study model in Jordan?

Amman accounts for 45% of Jordan's new construction, while multi-family apartment buildings constitute approximately 75% of the overall housing stock and about 80% of all buildings (Younis, 2017). So basically, this study deals with the apartment buildings as a studying model.

The main objective of this study is to assess the solar PV systems potential installation area on the building's surfaces including the building roof and facades using different simulation software, taking the multi-family ...

The proposed work is novel in that it focuses on the design of a sustainable living system for carbon-reduced

residential buildings in Jordan, considering the new governmental support in kWh prices, which enables average Jordanian citizens to install a feasible photovoltaic system.

In the recent years, solar cooling technologies for buildings have garnered increased attention. This study aimed to evaluate the performance of current solar thermal and solar photovoltaic (PV...

Because Jordan is located within the world's solar belt, with average solar radiation ranging between 5 and 7 (kWh/m<sup>2</sup>), PV technology is critical to achieving a significant increase in the use of renewable solar energy sources for achieving sustainable development goals [6, 7]. Furthermore, global power generation from solar photovoltaic (PV ...

PV technology is essential to achieve a significant increase for the use of renewable solar energy sources for achieving the sustainable development goals [28,29], because Jordan has a massive solar energy potential as it is located within the world's solar belt, with average solar radiation ranging between 5 and 7 (kWh/m<sup>2</sup>). In addition, global

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solar potential of a building is determined by a variety of factors, including local irradiation, the solar system's orientation and tilt, and the building's operating conditions (Bouty et al., 2020). In comparison to the roof, predicting the solar energy potential of the building's facades is rare

Among the renewable technologies, solar photovoltaic (PV) is widely regarded as promising in the Middle-East region. However, the adoption rate of PV technology remains limited in Jordan. The effective shift to solar energy necessitates social acceptance.

Accordingly, this study aims to investigate the energy and economic viability of installing a grid-connected PV system on the rooftops of apartment buildings in Jordan's various climate regions.

This paper presents a novel study in relation to solar energy use in residential dwellings in Jordan, to discuss the benefits and challenges of using domestic solar energy systems within the current context of increasing energy prices.

The main objective of this study is to assess the solar PV systems potential installation area on the building's surfaces including the building roof and facades using different simulation software, taking the multi-family buildings in the typical neighborhood context of Amman, Jordan as a case study.

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