NET, IAS, State-SET (KSET, WBSET, MPSET, etc.), GATE, CUET, Olympiads etc.: Science and Technology Building Integrated Photovoltaic

Building Integrated Photovoltaic (BIPV)

1. The idea is to harness India's geographical advantage, its latitude, to get more sun hour by using solar energy through Building Integrated Photovoltaic (BIPV) and wind energy in case of Building Integrated Wind Turbines (BIWT) , thus coming up with what could be partially sustainable or green buildings.
2. To reduce energy requirement, conventional building materials are replaced by photovoltaic materials are replaced by photovoltaic materials in part of the building envelope such as the roof, skylights, or facades. The transparent and opaque photovoltaic modules are integrated with other facade for sunlight, air and an aesthetic look inside the building. They are increasingly being incorporated into the constitution of new building as a principal of ancillary source of electrical power, although existing buildings may be retrofitted with BIPV modules.
3. The advantage of integrated photovoltaic over more common non-integrated systems is that the initial cost can be offset by reducing the amount spent on building materials and labor that would normally be used to construct the part of the building that the BIPV modules replace. In addition, since BIPV are an integral part of the design, they generally blend in better and are more aesthetically appealing than other solar options. These advantages make BIPV one of the fastest growing segments of the photovoltaic industry. Building code and legal framework: The basic considerations in a BIPV system are:
    a. Mechanical resistance and stability
    b. Safety in case of fire
    c. Hygiene, health and environment
    d. Safety in use
    e. Protection against noise
    f. Energy, economy and heat retention
4. The country's leading building companies have shown considerable interest in setting up megascale projects using roof-integrated solar PV as an integral component.

Although BIPV homes are energy efficient with better aesthetic and environment concern, yet their initial cost is quite high. However, a long-term analysis of the cost of energy makes the technology sustainable. *Courtesy: Science Reporter*