Richard Komp tells us about the Earth intercepts a lot of solar power: 173 thousand terawatts that is ten thousand times more power than the planet's population uses.

The author suggests studying how solar panels convert solar energy into electrical energy, what these panels are made of and from which elements. He gives an example that the most common solar cells are made of silicon - it is the second most abundant element on Earth. A silicon solar cell uses two different layers of silicon. An n-type silicon has extra electrons, and p-type silicon has extra spaces for electrons, called holes. Where the two types of silicon meet, electrons can wander across the p-n junction, leaving a positive charge on one side and creating negative charge on the other. When one of these photons strikes the silicon cell with enough energy, it can knock an electron from its bond, leaving a hole. The negatively charged electron and location of the positively charged hole are now free to move around. But because of the electric field at the p-n junction, they'll only go one way. The electron is drawn to the n-side, while the hole is drawn to the p-side.

Solar energy is unevenly distributed across the planet. Some areas are sunnier than others. Less solar energy is available on cloudy days or at night. So a total reliance would require efficient ways to get electricity from sunny spots to cloudy ones, and effective storage of energy. The efficiency of the cell itself is a challenge, too. If sunlight is reflected instead of absorbed, or if dislodged electrons fall back into a hole before going through the circuit, that photon's energy is lost.