CADMIUM TELLURIDE

News: IIT Mandi researchers assess environmental impact of solar cells

Whats in news?

Cadmium Telluride has lowest carbon dioxide emissions, ozone depletion potential, human health effects, and particulate air pollution

CdTe Technology:

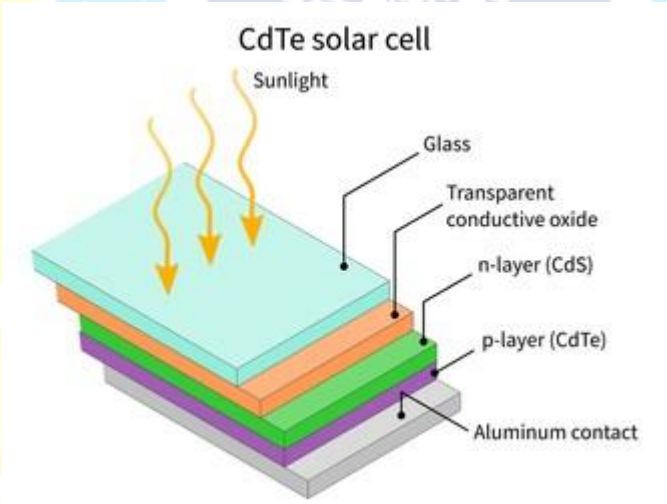
- Exhibits the least environmental impact among solar cell technologies in India.
- Shows the lowest carbon dioxide emissions, ozone depletion potential, human health effects, and particulate air pollution.

Study Details:

- Conducted by researchers at IIT Mandi.
- Included a life-cycle assessment (LCA) of five solar cell technologies: CdTe, mono-silicon, polysilicon, CIGS (Copper Indium Gallium Selenide), and PERC (Passivated Emitter & Rear Contact).

LCA Tool: Analyzed eighteen environmental impact categories such as global warming, ozone depletion, human toxicity, and particulate matter formation.

CIGS Technology: Closely followed CdTe in terms of environmental impact.



Study Findings:

- Solar PV systems are more environmentally friendly compared to fossil fuels during their operational phase.
- Significant environmental impacts exist during manufacturing and usage phases.

Future Research:

- The study did not cover recycling and end-of-life phases.
- Future research will address these phases, including use, disposal, and recycling.

Policy Implications:

- Findings can guide policymakers in promoting the most sustainable solar technologies.
- Aims to balance economic, social, and environmental benefits, supporting a low-carbon economy.

India's Clean Energy Progress:

- India made advancements in clean energy between 2010 and 2020, with initiatives like the Jawaharlal Nehru National Solar Mission.
- The COVID-19 pandemic disrupted the solar supply chain, delaying projects worth Rs. 160 billion.
- Post-COP26, India is focusing on green solar manufacturing to improve supply chain reliability and energy security.

Source: https://www.downtoearth.org.in/energy/iit-mandi-researchers-assess-environmental-impact-of-solar-cells-heres-what-they-found