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India Energy Week 2025: Untapped Opportunities & Investment Trends

A Nueconomy Perspective

India's Energy Demand: An Unstoppable Force

Rapid urbanization & industrialization are driving unprecedented demand growth for energy in India. Renewables are leading the charge, but conventional sources remain crucial. There's also an increased focus on energy access and affordability for all. While these trends are well-known, their scale and complexity create unique opportunities. As per IEA India Energy Outlook 2021, India's energy market is projected to reach \$400 billion USD by 2030, with the potential to double by 2040. However, meeting this demand sustainably requires overcoming challenges such as ensuring grid stability, managing peak demand, and addressing energy poverty in rural areas.

Agrivoltaics: Maximizing Land Use for Energy & Food Security

Agrivoltaics combine solar power generation with agriculture on the same land. Benefits of agrivoltaics include increasing land productivity, improving crop yields, and helping reduce water consumption for irrigation through optimized microclimates. This empowers rural communities by being a source of additional income to the farmers and offering a compelling solution to land constraints. However, wider adoption requires addressing challenges such as standardization of technology, land ownership issues, and financing models for farmers.

Cold Chain Logistics: Preserving Value, Reducing Waste

As per the Food and Agriculture Organization of the United Nations, India incurs significant food loss—estimated at 14 billion USD annually—due to a lack of adequate cold storage infrastructure. Hence, investing in efficient cold chain logistics is crucial for India's agricultural sector. Cold chains enhance food security, improve farmer incomes, and reduce greenhouse gas emissions. A wide range of opportunities exist for innovative cooling technologies and sustainable supply chains. However, challenges include high initial investment costs, lack of skilled manpower, and inadequate infrastructure in rural areas.

Building the Future: Energy Efficiency in Construction

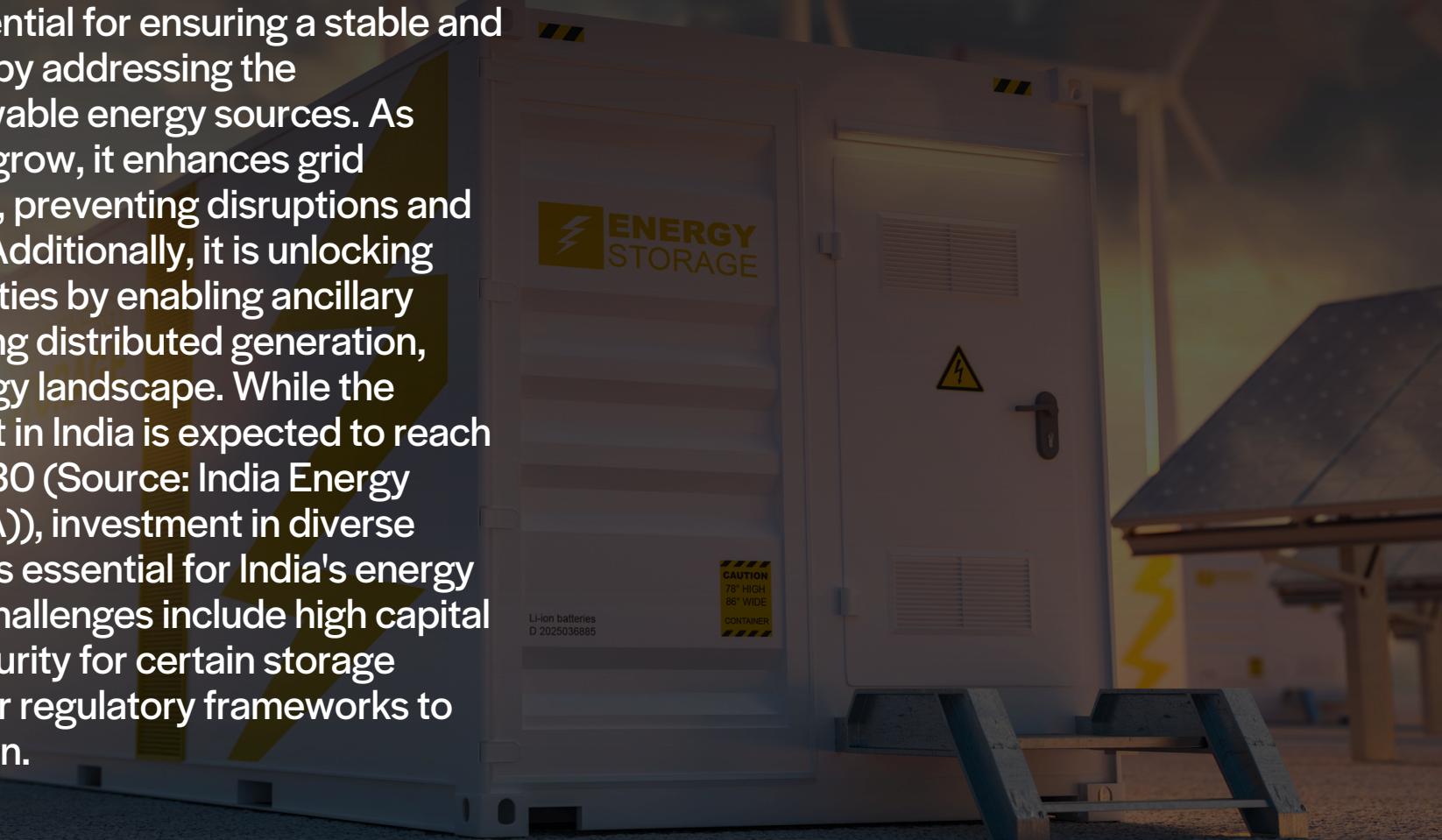
The Indian Bureau of Energy Efficiency reports a significant potential for energy savings in residential and commercial buildings—almost up to 30%. This creates a huge market for energy-efficient appliances and retrofits. Energy efficiency in the construction sector can transpire in the form of innovative designs, smart technologies, and green building materials. Regulations, incentives, and awareness campaigns can drive adoption of such energy-efficient practices. However, challenges include lack of awareness among builders and consumers, high upfront costs of energy-efficient technologies, and the need for effective enforcement of building codes.

Beyond Solar & Wind: Green Hydrogen's Untapped Potential

India's abundant renewable resources provide a competitive edge in green hydrogen production. According to The Energy and Resources Institute (TERI), India's green hydrogen market could be worth 8 billion USD by 2030. There's a potential to decarbonize heavy industries, long-haul transport, and fertilizer production. Emerging opportunities are apparent in export markets and green hydrogen derivatives. To unlock the full potential of India's green hydrogen economy, strategic partnerships and supportive policies are crucial. However, challenges include high production costs, the need for infrastructure development (like transportation and storage), and ensuring the availability of green electricity.

Beyond the Grid: The Rise of Energy Storage

Energy storage is essential for ensuring a stable and reliable power supply by addressing the intermittency of renewable energy sources. As demand continues to grow, it enhances grid stability and resilience, preventing disruptions and improving efficiency. Additionally, it is unlocking new market opportunities by enabling ancillary services and supporting distributed generation, transforming the energy landscape. While the energy storage market in India is expected to reach \$15 billion USD by 2030 (Source: India Energy Storage Alliance (IESA)), investment in diverse storage technologies is essential for India's energy transition. However, challenges include high capital costs, technology maturity for certain storage types, and the need for regulatory frameworks to support grid integration.

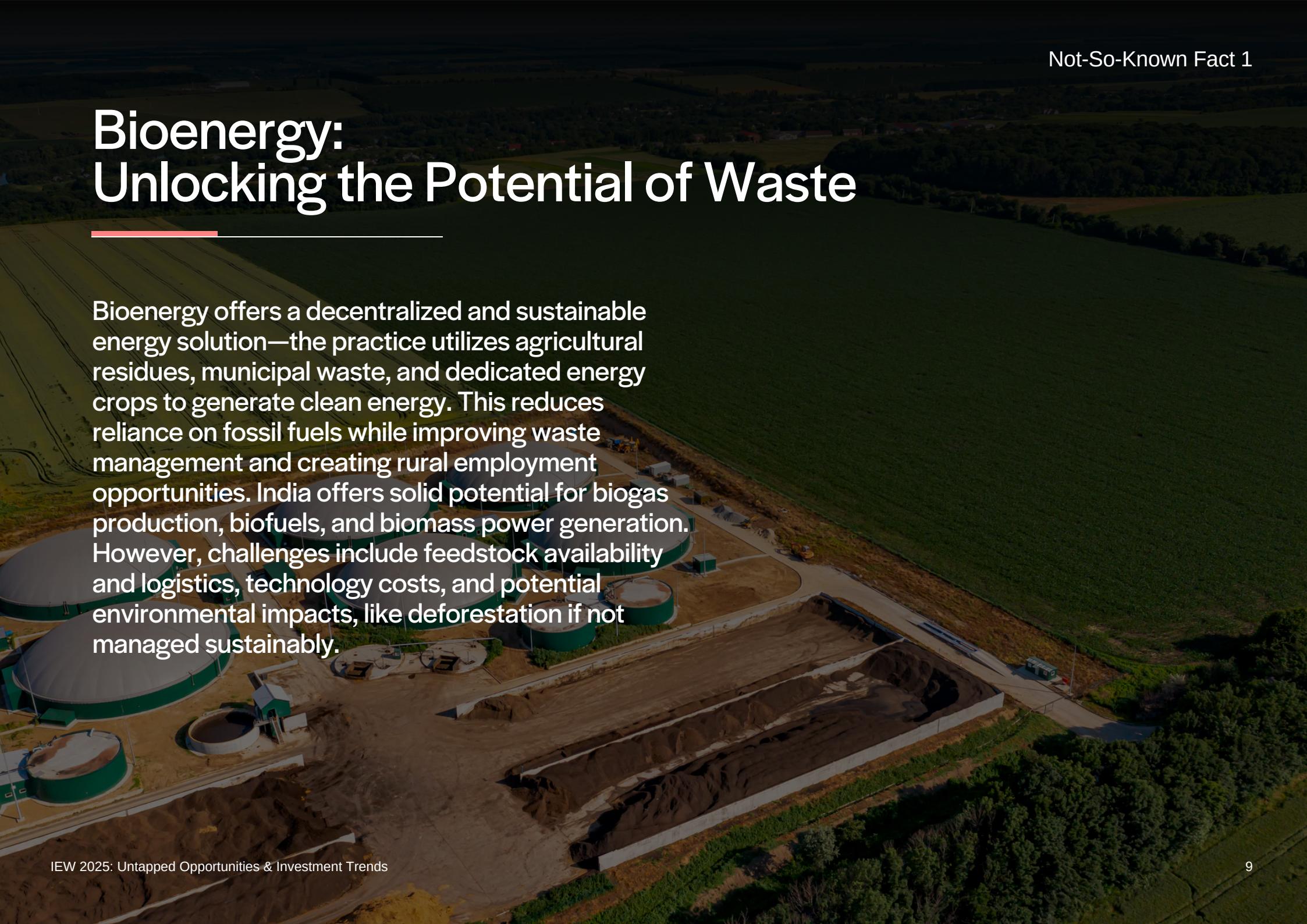


Smart Energy Communities: The Future of Urban India

Smart cities could reduce their energy consumption by 30% by 2030 (Source: Ministry of Housing and Urban Affairs, India). The smart energy community concept integrates energy efficiency, distributed generation, and demand-side management at the community level. It leverages data analytics and smart grids to optimize energy consumption and reduce costs while also creating sustainable and resilient urban environments. Collaboration between public and private sectors will be essential in accelerating clean energy adoption. However, challenges include data privacy concerns, cybersecurity risks, and the need for interoperable platforms to integrate various smart technologies.

Bioenergy: Unlocking the Potential of Waste

Bioenergy offers a decentralized and sustainable energy solution—the practice utilizes agricultural residues, municipal waste, and dedicated energy crops to generate clean energy. This reduces reliance on fossil fuels while improving waste management and creating rural employment opportunities. India offers solid potential for biogas production, biofuels, and biomass power generation. However, challenges include feedstock availability and logistics, technology costs, and potential environmental impacts, like deforestation if not managed sustainably.

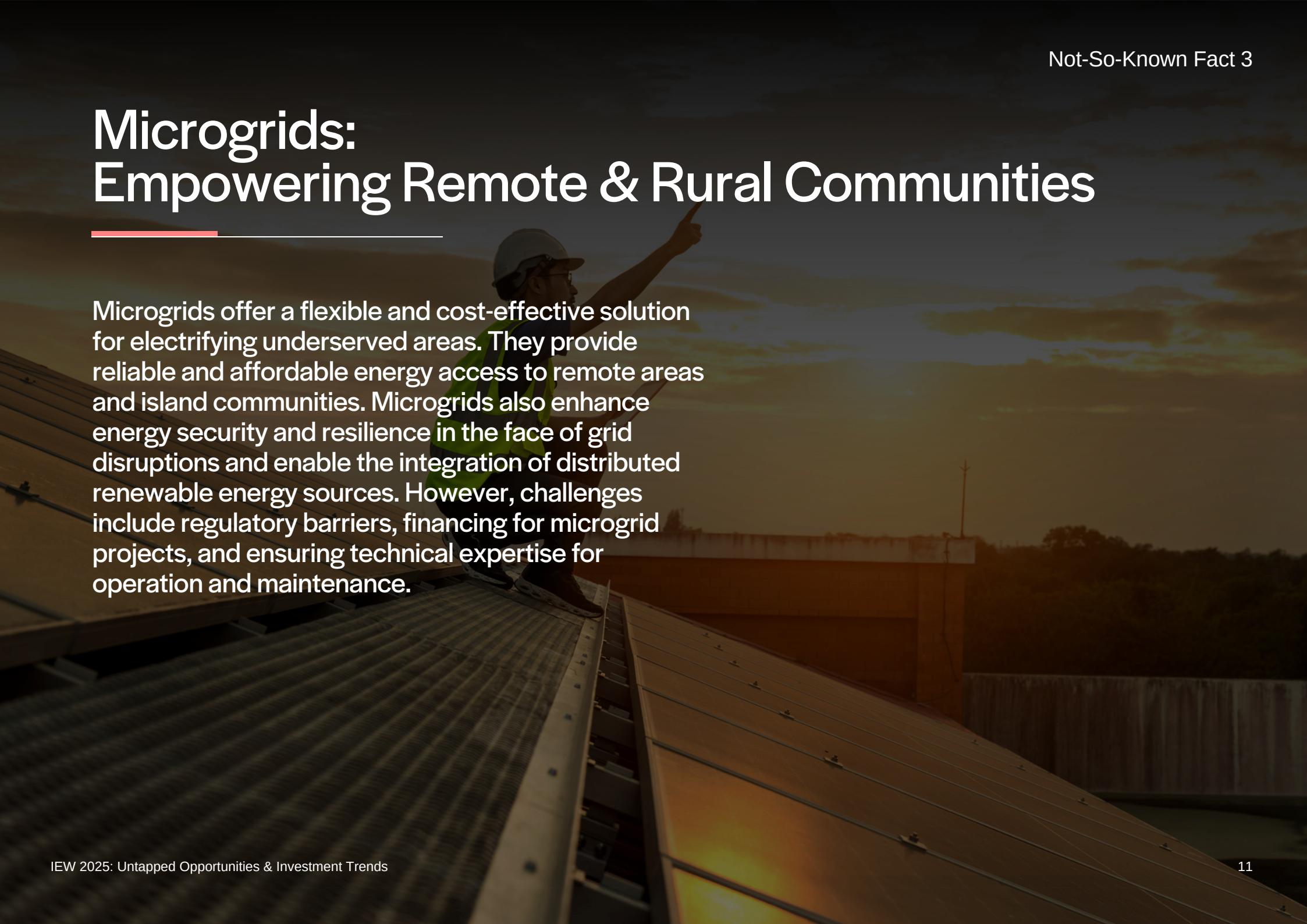


Harnessing the Winds of Change: Offshore Wind Energy

As per data from the National Institute of Wind Energy, India's extensive coastline (7,500 km) offers significant potential for offshore wind power generation (estimated at 127 GW). India enjoys the benefit of higher wind speeds and consistent availability compared to onshore wind, thereby presenting potential to create a new industry and contribute to coastal economic development.

Overcoming technical challenges and attracting investment are crucial for realizing India's offshore wind potential. However, challenges include high initial costs, environmental impact assessments, and developing the necessary grid infrastructure to transmit power from offshore locations.

Microgrids: Empowering Remote & Rural Communities

A photograph showing a person in a hard hat and safety vest standing on a roof, pointing towards the horizon over a field of solar panels. The scene is set during sunset or sunrise, with a warm glow in the sky.

Microgrids offer a flexible and cost-effective solution for electrifying underserved areas. They provide reliable and affordable energy access to remote areas and island communities. Microgrids also enhance energy security and resilience in the face of grid disruptions and enable the integration of distributed renewable energy sources. However, challenges include regulatory barriers, financing for microgrid projects, and ensuring technical expertise for operation and maintenance.

Conclusion

India's energy transition presents a unique landscape of challenges and opportunities. By focusing on innovation, collaboration, and strategic investment, we can unlock India's vast potential for sustainable and inclusive growth.

Nueconomy is committed to partnering with stakeholders across the energy ecosystem to navigate this transformative journey.

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