



First Virtual Smart Grid Knowledge Centre

For Prelims: Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA), Green Energy Corridor (GEC), National Smart Grid Mission (NSGM), Smart Meter National Programme (SMNP).

For Mains: Indian Initiatives Shaping Energy Transition, Benefits of Smart Meters and related challenges.

Why in News?

Recently, the **Union Minister for Power** has launched the **Virtual Smart Grid Knowledge Center (Virtual SGKC) and Innovation Park**.

What is Virtual Smart Grid Knowledge Center (Virtual SGKC)?

- Located within the **powergrid centre in Manesar (Haryana)**, **Virtual Smart Grid Knowledge Center (Virtual SGKC)** is the **first of its kind initiative** by the Union government.
- The initiative, as part of [Azadi ka Amrit Mahotsav Programme](#), will be one of the leading **Centers of Excellence** globally to foster innovation, entrepreneurship and research in smart grid technologies.
- It has been **established by POWERGRID** with support from the **Union ministry of power and technical assistance** from **US Agency for International Development's (USAID)** for demonstration and advancement of frontier smart grid technologies.

What is the Significance of this Initiative?

- SGKC aims to be **one of the leading Centers of Excellence** globally to foster innovation, entrepreneurship and research in **smart grid technologies** and create capacities in the power distribution sector.
- It will **enable a digital footprint of the physical setup of SGKC**, the need for which was felt during [Covid-19 pandemic](#).

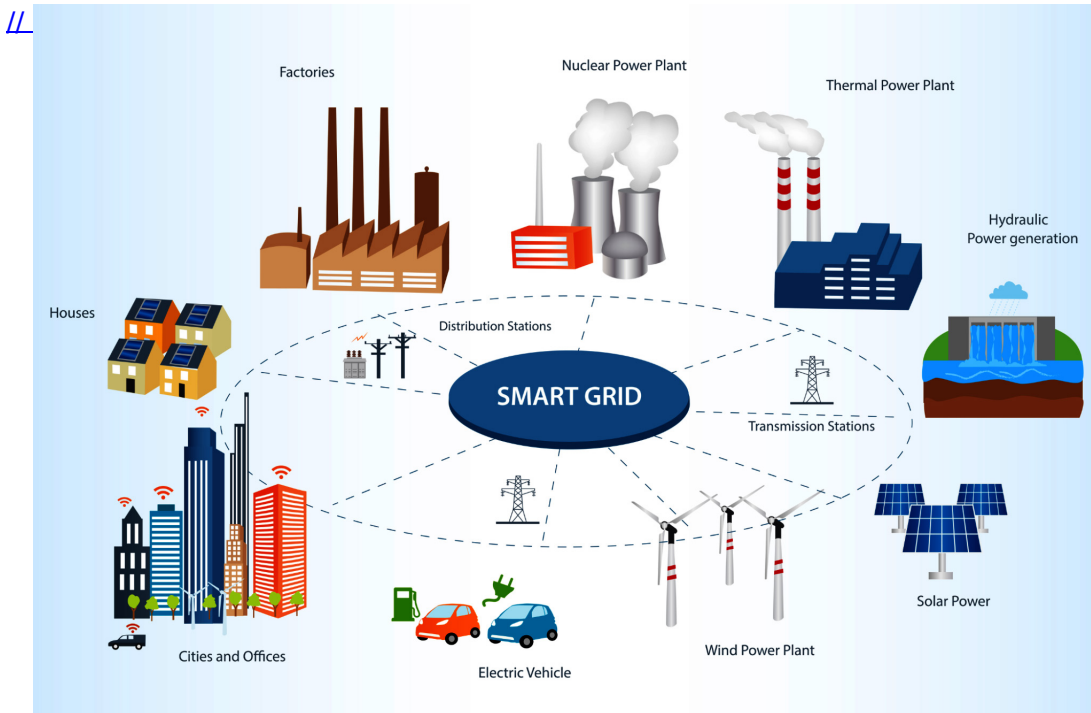
What is a Smart Grid?

- **About:**
 - Smart Grid is an **Electrical Grid with Automation, Communication and IT systems that can monitor power flows** from points of generation to points of consumption (even down to appliances level) and control the power flow or curtail the load to match generation in real time or near real time.
 - Smart Grids can be **achieved by implementing efficient transmission & distribution systems**, system operations, consumer integration and renewable integration.
 - Smart grid solutions **helps to monitor, measure and control power flows in real time** that can contribute to identification of losses and thereby appropriate technical and managerial actions can be taken to arrest the losses.
- **Vision for India:**
 - Transform the Indian power sector into a secure, adaptive, sustainable and digitally

enabled ecosystem that provides reliable and quality energy for all with active participation of stakeholders.

▪ **Benefits of Smart Grid Deployments:**

- Reduction of T&D losses,
- Peak load management, improved QoS and reliability.
- Reduction in power purchase cost.
- Better asset management.
- Increased grid visibility and self-healing grids.
- Renewable integration and accessibility to electricity.
- Increased options such as ToU tariff, DR programs, net metering.
- Satisfied customers and financially sound utilities etc.



What are the Related Initiatives?

- **Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA):**
 - Empowering rural and urban households through access to reliable and affordable electricity.
- **Green Energy Corridor (GEC):**
 - Synchronising grid-connected renewable energy with India's national transmission network.
- **National Smart Grid Mission (NSGM) and Smart Meter National Programme (SMNP):**
 - Modernising India's power sector into a secure, adaptive, sustainable, and digitally enabled ecosystem.

Source: ET