Energy Efficiency and Climate Change

(This editorial is based on the article “Energy Efficiency and Climate Change” which appears in Livemint for 13th December.)

The impact of climate change is being felt by everybody and everywhere. Extreme weather conditions, air pollution, crop failure, biodiversity losses, and much more are affecting both human health and natural wealth. **More than 70% of India’s population is exposed to outdoor air pollution, which has contributed to one in eight deaths and has reduced the average life expectancy of Indians by nearly two years.**

- **The cost of not addressing global warming today would surpass the expense of addressing it in the future.**

Energy production and consumption remain the largest contributor to global carbon emissions and greenhouse gas. The proven solution to manage the climate change agenda is still evolving.

- **It is estimated that nearly 70% of the global carbon emissions could be reduced by increasing energy efficiency.**

Most countries are more advanced on renewable energy compared to energy efficiency. **Many quick wins on energy efficiency that have been overlooked in the past can be given a bigger seat at the table, including energy efficiency in the kitchen, residential buildings, industries, transport, utilities, and energy labeling.**

Increasing energy efficiency is also essential for most developing countries for preparing them to move towards more expensive energy system needed to deal with carbon capture and storage, and other technology solutions.

What is Energy Efficiency?

- **Energy efficiency means using less energy to provide the same service.**
- For example, a compact fluorescent bulb is more efficient than a traditional incandescent bulb as it uses much less electrical energy to produce the same amount of light. Similarly, an efficient boiler takes less fuel to heat a home to a given temperature than a less efficient model.

India and Energy Efficiency

- **India’s energy intensity(it is a measure of the energy inefficiency of an economy) has declined during the last decade. China’s energy intensity is roughly 1.5 times that of India.**
- Cities and urban settings have increased energy efficiency and reduced the cost of electricity use per output level because of denser customer bases and more efficient plant sizes for local energy producers.
- **However, large industrial enterprises in India are moving away from cities and opening**

plants in rural areas to remain competitive. Observed analysis of manufacturing enterprises in India shows that average electricity consumption is much higher in rural regions compared to urban regions.

- Small and medium-sized enterprises have the most difficult time as their modest plant scale does not justify extensive investments in self-provision power generation capacity, and their higher levels of operation make them more vulnerable to uncertainty than larger enterprises.
- Developed states in India have improved energy efficiency. But electricity usage per unit of output is twice the level in lagging states compared to leading states.
- Whether India's structural (eg. construction, infrastructure developments etc) and spatial (eg. population increase, increasing size of urban agglomerations etc) transformation will exacerbate or alleviate energy efficiency is important for issues ranging from reducing power blackouts to stemming rising pollution levels.
- **How developing countries manage industrialization, urbanization and infrastructure investments will have vital environmental implications.**

Government Initiatives

- As part of its commitment to create awareness about energy efficiency as a resource and also to develop an action plan for energy conservation initiatives, Bureau of Energy Efficiency (BEE) and Alliance for an Energy Efficient Economy (AEEE), had released the **'State Energy Efficiency Preparedness Index',** which assesses state policies and programmes aimed at improving energy efficiency across various sectors.
- **The National Mission for Enhanced Energy Efficiency (NMEEE)** is one of the eight national missions under the National Action Plan on Climate Change (NAPCC).
- **NMEEE has the following schemes:**
    - Perform Achieve and Trade Scheme (PAT)
    - Market Transformation for Energy Efficiency (MTEE)
    - Energy Efficiency Financing Platform (EEFP)
    - Framework for Energy Efficient Economic Development (FEED)
- **Other government initiatives include:**
    - DeenDayal Upadhyaya Gram Jyoti Yojana (DDUGKY)
    - Integrated Power Development Scheme (IPDS)
    - UDAY
    - Soubhagya
    - Power for All 24*7
    - Ujala
- **Other technological innovations and initiatives**
    - Electric vehicles –No Licence required for charging stations
    - Smart Metering- Procurement of 50 lakh smart meters done
    - Energy efficiency- Energy Star labeling program
    - Energy Conservation Building Code for energy efficient buildings launched in June 2017
- **Vidyut Pravah** – The Mobile/Web App provides real-time information of current demand met, shortages if any, surplus power available and the prices in Power Exchange.
- **UJALA (Unnat Jyoti by Affordable LEDs for All) –** App provides real-time updates on the LED distribution happening across the country.
- **UrjaMitra** – monitoring of power availability and sending power cut information through SMS.
- **MERIT–**information pertaining to marginal variable cost and source wise purchase of electricity.
- **URJA (Urban Jyoti Abhiyaan)** – It is an informative App for Urban Distribution Sector. It captures Consumer-centric parameters from the IT systems created under IPDS.
- **TARANG (Transmission App for real-time monitoring & Growth)** – It is an IT Web/mobile-based platform to provide the status of both inter and intrastate Transmission Projects in the country. This platform also shows the prospective interstate as well as intrastate Transmission Projects.
- **DEEP e-bidding (Discovery of Efficient Electricity Price) –** The portal will provide a common e-bidding platform with e-reverse auction facility to facilitate nation-wide power procurement through a wider network so as to bring uniformity and transparency in the process of power procurement.
- **Ash Track-** linking fly ash users and power plants for better ash utilization.

Way Forward

- Although global investments in renewable energy have increased rapidly in recent years, its share in the global stock of energy is still very small.
- Besides ongoing reforms, **a package of additional interventions** is needed to internalize externalities that are much more significant in developing countries compared to advanced countries and play an import role in increasing energy efficiency.
- There remains a huge potential for energy efficiency gains in most industries, ranging from 46-88% in textile industry to 43-94% in paper and pulp industry, to 51-92% in the iron and steel industry. Energy efficiency gain policy will need to go beyond industries and enter our kitchen, buildings, and transport.
- Energy policy will also need to focus much more on rural regions that are the future drivers of growth. Energy outages are common in rural areas, where unreliable energy supply forces firms to invest in self-generation capacity.
- **Developing countries have raised their ambitions for a faster and greener growth. The younger population in the developing world are shifting towards less polluted kitchens, electric vehicles, and energy-efficient technologies. Up to half of the global annual emissions could be reduced through more efficient use of energy in kitchens, residential buildings, and transport.**
- Improved energy efficiency is a win-win for everybody. Energy-efficiency planning is prevalent globally, but the quality of targets and specifications could be improved.
- There is a big market potential for scaling up energy efficiency through **green mortgag**e (it is a mortgage specifically targeted at green buildings), **green bonds** (bonds created to fund projects that have positive environmental and/or climate benefits), t**ax incentives, credit lines with banks for energy efficiency activities, and public-private partnerships in energy sector**

investments. //