E20 Fuel

Why in News

Recently, the Indian government has invited public comments for introducing adoption of **E20 fuel to promote green fuel like ethanol.**

Key Points

- **Composition:** E20 fuel is **a blend of 20% of ethanol with gasoline.**
  The **current permissible level of blending is 10% of ethanol,** though India reached **only 5.6% of blending in 2019.**
- **Significance:**
  - It will help in **reducing emissions of carbon dioxide,** hydrocarbons, etc.
  - It will help **reduce the oil import bill,** thereby saving foreign exchange and boosting energy security.
- **Compatibility of Vehicles:** As per the government, the **compatibility of the vehicle to the percentage of ethanol** in the blend of ethanol and gasoline shall be defined by the vehicle manufacturer and the same shall be **displayed on the vehicle by putting a clearly visible sticker.**

Green Fuel

- **Green fuel, also known as biofuel**, is a type of fuel **distilled from plants and animal materials,** believed by some to be more environmentally friendly than the widely-used fossil fuels that power most of the world.

- **Types:**
  - **Bioethanol**
    - It is **derived from corn and sugarcane** using the fermentation process.
    - A **litre** of **ethanol** contains approximately **two thirds of the energy provided by a litre of petrol.**
    - When mixed with petrol, it **improves the combustion performance** and **lowers the emissions of carbon monoxide and sulphur oxide.**
  - **Biodiesel**
    - It is **derived from vegetable oils** like soybean oil or palm oil, **vegetable waste oils,** and **animal fats** by a biochemical process called **"Transesterification."**
    - It produces very less or no amount of harmful gases as compared to diesel.
  - **Biogas**
    - It is **produced by anaerobic decomposition of organic matter** like sewage from animals and humans.
    - Major proportion of biogas is methane and carbon dioxide, though it also has small proportions of hydrogen sulfide, hydrogen, carbon monoxide and siloxanes.
    - It is commonly **used for heating, electricity and for automobiles.**
  - **Biobutanol**
    - It is produced in the same way as bioethanol i.e. through the fermentation of starch.
    - The **energy content in butanol is the highest among the other gasoline alternatives.** It can be added to diesel to reduce emissions.
    - It **serves as a solvent in the textile industry** and is also used as a base in perfumes.
  - **Biohydrogen**
    - Biohydrogen, like biogas, **can be produced using a number of processes such as pyrolysis, gasification or biological fermentation.**
    - It can be the **perfect alternative for fossil fuel.**

- **Initiatives to Promote Biofuels:**
    - **Ethanol Blended Petrol (EBP) programme**: To extract the fuel from surplus quantities of food grains such as maize, jawar, bajra fruit and vegetable waste.
    - **Pradhan Mantri JI-VAN Yojana, 2019**: The objective of the scheme is to create an ecosystem for setting up commercial projects and to boost research and development in the 2G Ethanol sector.
    - **GOBAR (Galvanizing Organic Bio-Agro Resources) DHAN scheme, 2018:** It focuses on managing and converting cattle dung and solid waste in farms to useful compost,biogas and bio-CNG, thus keeping villages clean and increasing the income of rural households.

        It was launched under Swachh Bharat Mission (Gramin).
    - **Repurpose Used Cooking Oil (RUCO)**: It was launched by the **Food Safety and Standards Authority of India (FSSAI)** and aims for an ecosystem that will enable the collection and conversion of used cooking oil to biodiesel.
    - **National Policy on Biofuels, 2018:**
        - The Policy categorises biofuels as "Basic Biofuels" to enable extension of appropriate financial and fiscal incentives under three categories:
            - **First Generation** (1G) ethanol & biodiesel and "Advanced Biofuels".
            - **Second Generation** (2G) ethanol, Municipal Solid Waste (MSW) to drop-in fuels.
            - **Third Generation** (3G) biofuels, bio-CNG etc.
        - It **expands the scope of raw material for ethanol production** by allowing use of sugarcane juice, sugar containing materials like sugar beet, sweet sorghum, starch containing materials like corn, cassava, damaged food grains like wheat, broken rice, rotten potatoes, unfit for human consumption, for ethanol production.
        - The Policy **allows use of surplus food grains for production of ethanol** for blending with petrol with the approval of National Biofuel Coordination Committee.
        - With a **thrust on Advanced Biofuels,** the Policy indicates a viability gap funding scheme for 2G ethanol Bio refineries of Rs. 5000 crore in 6 years in addition to additional tax incentives, higher purchase price as compared to 1G biofuels.

Way Forward

- India being a large agricultural economy, there is a large amount of agricultural residues available, therefore the scope of producing biofuels is immense in the country. **Biofuels can help in rural and agricultural development in the form of new cash crops.**
- Efforts for producing sustainable biofuels should be made by ensuring use of wastelands and municipal wastes that get generated in cities. **A properly designed and implemented biofuel solution can provide both food and energy.**
- A **community-based biodiesel distribution programme** that benefits local economies, from the farmers growing the feedstock to local businesses producing and distributing the fuel to the end consumer, will be a welcome step.

Source: PIB