



Biofuels and Global Biofuels Alliance

This editorial is based on the Article [‘Are biofuels a viable energy source?’](#) which was published in The Hindu Businessline on 29/09/2023. It talks about Biofuels and analyzes the potential of Global Biofuels Alliance.

For Prelims: Global Biofuels Alliance, Biofuels, Different Categories of Biofuels, [Pradhan Mantri JI-VAN Yojana 2019](#), [National Policy on Biofuels, 2018](#), Ethanol Blending.

For Mains: Global Biofuels alliance, Biofuels: Different Categories, Advantages, Disadvantages, International Initiatives on Sustainable Biofuels, Recent Initiatives.

As the world looks towards renewable energy sources to combat climate change, biofuels have emerged as a potential solution. Recently concluded [G20 summit at New Delhi](#) saw formation of [Global Biofuels Alliance](#) which is an India-led initiative. It aims to develop an alliance of governments, international organizations, and industry to promote the adoption of biofuels.

What are Biofuels?

- Any hydrocarbon fuel that is produced from an organic matter (living or once living material) in a short period of time (days, weeks, or even months) is considered a [biofuel](#).
- They can be used to power vehicles, heat homes, and generate electricity. Biofuels are considered renewable because they are made from plants that can be grown again and again.
- Biofuels can be solid, liquid, or gaseous.
 - Solid biofuels include wood, dried plant material, and manure.
 - Liquid biofuels include bioethanol and biodiesel.
 - Gaseous biofuels include biogas.
- Biofuels can replace or be used in addition to fossil fuels for various applications such as generating heat and electricity.
- Reasons for shifting to biofuels include rising oil prices, greenhouse gas emissions from fossil fuels, and interest in obtaining fuel from agricultural crops for the benefit of farmers.

What are the Pros of Biofuels?

- **Renewable:** Biofuels can be produced by growing biomass and thus are renewable.
- **Energy Security:** Biofuels will help reduce dependence on foreign oil, which will also help in reducing import bills.
- **Cleaner Energy:** They emit less [greenhouse gases](#) than fossil fuels, making them a cleaner alternative.
- **Increase in Farmer's Income:** Biofuels contribute to additional income of farmers and have potential to contribute to the goal of doubling farmer's income.

- **Abundant Availability of Biofuels:** Biofuels can be produced from a variety of sources, including crops, waste, and algae.

What are the Concerns about Viability of Biofuels?

- One major concern is the **amount of land and water resources** required to produce them. In countries like India, where there is a lack of agricultural surplus, it may not be feasible to divert arable land to grow the crops needed for biofuel production.
- Additionally, the **competition between biofuel production and food production for land and resources** is a significant concern. If biofuels are produced at the expense of food production, it could lead to higher food prices and food insecurity.
- The production of some biofuels can actually result in **higher greenhouse gas emissions** than fossil fuels, particularly if they are produced from crops grown on land that was previously forested.

What is the Global Biofuel Alliance?

- **Global Biofuel Alliance (GBA)** was recently launched by world leaders to expedite the global uptake of biofuels, under **India's G20 presidency**. The alliance brings together major biofuel producers and consumers, such as the US, Brazil, and India.
- Nineteen countries and 12 international organizations have already agreed to join or support the GBA.
- The GBA aims to strengthen global biofuels trade for a greener sustainable future.

What is the Significance of Global Biofuels Alliance for India:

- **Learning from Best Practices:**
 - GBA will facilitate **transfer of technologies** and mobilization of international climate funds.
 - It will accelerate progress in the compressed biogas sector and third generation ethanol plant capacities
- **E-20 Target:**
 - Having achieved the E10 target, India aims to achieve **E20 by 2025-26**.
 - Learning from **Brazil's success in achieving E-85** through the Global Biofuels Alliance.
- **Adoption of Flex Fuel Vehicles in India:**
 - It may accelerate adoption of **Flex Fuel Vehicles**.
 - It will contribute to reduction in emissions and India's crude oil import bill.
- **Climate Action:**
 - Establishment of GBA reinforces the fight against climate change as it will help countries cooperate to reduce the usage of fossil fuels.
- **Promotion of Biofuel Exports:**
 - It presents an opportunity for India to increase its share in biofuel production leading to greater energy independence for India.
 - India has potential to become a major exporting nation alongside Brazil and the US.
- **Increase in Employment Opportunities:**
 - Investments in the biofuel sector create employment opportunities
 - It will contribute to the improvement of financial status of farmers and will assist in **doubling farmers' income**.

What are the Concerns about Viability of Global Biofuels Alliance?

- **Transfer of Technology:**
 - Reluctance from the developed countries including US to share technology with other countries. Technological secrecy may hinder the objectives of the alliance.
- **Geopolitical Contestation:**
 - **Opposition from China and Russia** to platforms led by western countries.
 - **Saudi Arabia and Russia** may be concerned that the alliance could promote **biofuels as a competitor to oil**.

- **India and China are major producers of coal** as well as major consumers. They are unlikely to give up on using this resource any time soon despite its harmful impact on the environment.
- **Funding Limitations:**
 - Structuring **sustainable financing mechanisms** for projects is crucial.
 - Global institutions like WB and IMF do not have sufficient resources to invest in financing such groups.
- **Import Restrictions on Biofuels:**
 - India's policies restrict import of biofuels, impacting global biofuels market development
- **Environmental Implications:**
 - Growing demand for biofuels can have environmental implications
 - **Water and land requirements** may **deter water-scarce countries** from joining the alliance

What are the Different Generations of Biofuels?

- **First Generation Biofuels:**
 - Made from food sources such as sugar, starch, vegetable oil, or animal fats using conventional technology.
 - Examples include Bioalcohols, Biodiesel, Vegetable oil, Bioethers, Biogas.
 - But, use of food sources in production creates an imbalance in the food economy, leading to increased food prices and hunger.
- **Second Generation Biofuels:**
 - Produced from non-food crops or portions of food crops that are not edible and considered as wastes.
 - Examples include cellulose ethanol, biodiesel.
 - Thermochemical reactions or biochemical conversion processes are used for producing such fuels.
 - These fuels emit less greenhouse gases when compared to first generation biofuels.
- **Third Generation Biofuels:**
 - Produced from micro-organisms like algae. Example: Butanol
 - Micro-organisms like algae can be grown using land and water unsuitable for food production, reducing the strain on already depleted water sources.
 - But, the fertilizers used in production may lead to environmental pollution.
- **Fourth Generation Biofuels:**
 - Crops genetically engineered to take in high amounts of carbon are grown and harvested as biomass.
 - The crops are then converted into fuel using second generation techniques.
 - The fuel is pre-combusted, and the carbon is captured. Then the carbon is geo-sequestered, meaning that it is stored in depleted oil or gas fields or in unmineable coal seams.
 - Some of these fuels are considered carbon negative as their production pulls carbon out of the environment.

What are the Recent Steps taken for Biofuels?

- **Indian Initiatives:**
 - **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 2G Ethanol sector.
 - **Ethanol blending:** The 2018 Biofuel Policy has the objective of reaching 20% ethanol-blending and 5% biodiesel-blending by the year 2030.
 - Recently, instead of 2030, the Centre plans to move ahead with its **ethanol blending** target of 20% of petrol containing ethanol by 2025-26.
 - **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 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" viz. First Generation (1G) bioethanol & biodiesel and "Advanced Biofuels" - Second Generation (2G) ethanol, Municipal Solid Waste (MSW) to drop-in fuels, Third Generation (3G) biofuels, bio-CNG etc. to enable extension of appropriate financial and fiscal incentives under each category.
- **Global Initiatives:**
 - [Roundtable on Sustainable Biomaterials \(RSB\)](#):
 - It is an international initiative that brings together farmers, companies, governments, non-governmental organisations, and scientists who are interested in the sustainability of biofuel production and distribution.
 - In April 2011, it launched a set of comprehensive sustainability criteria - the "RSB Certification System." Biofuels producers that meet these criteria are able to show buyers and regulators that their product has been obtained without harming the environment or violating human rights.
 - **Sustainable Biofuels Consensus:**
 - It is an international initiative which calls upon governments, the private sector, and other stakeholders to take decisive action to ensure the sustainable trade, production, and use of biofuels.
 - [Bonsucro](#):
 - It is an international not for-profit, multi-stakeholder organization established in 2008 to promote sustainable sugar cane.

What can be the Way Forward?

- The GBA should be utilized to enhance and fortify biomass supply chains.
- GBA should prioritize the efficient technology transfer for the production of second-generation ethanol from agricultural residue.
- GBA should promote sustainable financial support for bioenergy projects and showcase pilot-scale production facilities for Sustainable Aviation Fuel (SAF). It has the potential to emulate the success of the [International Solar Alliance \(ISA\)](#) in the renewable energy sector, with India leading the way.

Conclusion

While biofuels have the potential to be a major energy source in the fight against climate change, their viability remains a concern. The Global Biofuel Alliance holds promise for a greener future, but it remains to be seen how effective it will be in practice. Biofuels may not be a viable major energy source in countries like India due to the lack of agricultural surplus, but they can still play a role in achieving a greener future through sustainable production and consumption practices.

Drishti Mains Question

Discuss the potential of biofuels as a renewable energy source and evaluate the viability of the Global Biofuels Alliance (GBA) in promoting sustainable bioenergy.

UPSC, Civil Services Examination Previous Year's Question (PYQs)

Prelims

Q. According to India's National Policy on Biofuels, which of the following can be used as raw materials for the production of biofuels? (2020)

1. Cassava
2. Damaged wheat grains
3. Groundnut seeds
4. Horse gram
5. Rotten potatoes
6. Sugar beet

Select the correct answer using the code given below:

- (a)** 1, 2, 5 and 6 only
(b) 1, 3, 4 and 6 only
(c) 2, 3, 4 and 5 only
(d) 1, 2, 3, 4, 5 and 6

Ans: (a)

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