

## National Policy on Biofuels 2018 - UPSC Notes

A National Policy on biofuels was made by the Ministry of New and Renewable Energy during the year 2009. The policy was introduced in recognition of the fact that India still relied largely on imported crude oil to fulfill domestic consumption requirements. The topic of National Policy on Biofuels, 2018 finds relevance in GS-2 of the [UPSC](#) exam.

### National Policy on Biofuels, 2018 - Introduction

Biofuels have garnered global attention in recent times and it is imperative to keep up with the pace of developments in the field of biofuels. Biofuels are of strategic importance in India and augers well with the initiatives of the Government.

- India still relies heavily on crude oil imports for its domestic consumption requirements. However, fluctuating crude oil prices in the world market could affect the developing countries significantly.
- Biofuels program in India has been largely impacted due to the sustained and quantum non-availability of domestic feedstock for biofuel production which needs to be addressed.
- The National Biofuels Draft Policy came to light in 2007 and was launched by 2009.

**The objective of the National Policy on Biofuels 2018: The policy is aimed at taking forward the indicative target of achieving 20% blending of biofuels with fossil-based fuels by 2030.**

- The policy intends to ensure the adequate and sustained availability of domestic feedstock for biofuel production, increasing farmers' income, import reduction, employment generation and waste to wealth creation.
- This policy clearly exhibits the Centre's push towards strengthening the energy infrastructure of the country while promoting the agenda of sustainability.

### Salient Features of the National Policy on Biofuels, 2018

The salient features of the National Policy on Biofuels, 2018 are:

The policy categorizes biofuels into:

- **Basic biofuels - First Generation (1G) bioethanol & biodiesel**
- Advanced biofuels - Second Generation (2G) ethanol, Municipal Solid Waste (MSW) and drop-in fuels
- Third Generation Biofuels - Bio-CNG

**The categorization aids in the extension of appropriate financial and fiscal incentives under each category.**

- The policy expands the scope of raw materials to be used for ethanol production by allowing the use of Sugarcane Juice, **sugar-containing materials** like Sugar Beet, **starch containing materials** like Cassava, **damaged food grains** like broken rice, and rotten potatoes which are unfit for human consumption.
- The Policy allows the usage of surplus food grains for the production of ethanol to be used for blending with petrol. This is to ensure that the farmers get the appropriate price for their produce during the surplus production phase.

- 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. The policy places a thrust on Advanced Biofuels.
- Setting up of supply chain mechanisms for biodiesel production from non-edible oilseeds, used cooking oil, and short gestation crops are encouraged under the Policy.
- The Policy enlists all the roles and responsibilities of all the concerned Departments/Ministries with respect to biofuels to provide synergy in the efforts.

## Benefits of National Policy of Biofuels, 2018

The National Policy of Biofuels, 2018 offers the following benefits:

- It reduces the country's dependence on imports.
- It promotes a cleaner environment: It results in a reduction in the burning of crops, as the agricultural waste/residue is converted to bioethanol.
- The re-use of cooking oil presents grave health hazards, however, it's a potential feedstock for biodiesel.
- It also aids in Municipal Solid Waste (MSW) management. There are technologies available that can convert waste/plastic in the MSW to biofuels. One ton of such waste has the potential to provide around 20% reduction in fuels.
- The process of production of biofuels will aid in the creation of jobs.
- The conversion of surplus grains and agricultural biomass can help in price stabilization and thereby provide an additional source of income to the farmers.

## What are Biofuels?

A hydrocarbon fuel that is produced directly or indirectly from an organic matter is known as Biofuel. Biofuels are usually produced through a contemporary process (rather than from a slow geological process) from biomass. They are substitutes for the conventional forms of fuels - fossil fuels.

- The rising prices of oil, emission of the [greenhouse gases](#) from fossil fuels and depletion of the non-renewable sources of fuel provide the thrust to shift towards more sustainable options of fuels.
- The word biofuel is usually reserved for liquid or gaseous fuels, used for transportation.

## How are Biofuels categorized?

Biofuels are categorized as First Generation biofuels, Second Generation biofuels, Third Generation biofuels, and Fourth Generation biofuels.

- **First Generation Biofuels:** These are usually made from food sources containing sugar, starch, vegetable oil, or animal fats. The process utilizes conventional technology. Eg. Bioether
  - These kinds of biofuels usually create an imbalance in the food economy as they tend to use agricultural crops, thus, leading to increased food prices and hunger.
- **Second Generation Biofuels:** these biofuels utilize inedible parts of the plant such as stems and husk to produce biofuel. These fuels usually require biochemical or thermochemical conversions during production. Eg. Biodiesel
  - These biofuels do not affect the food economy, however, their production process is quite complicated.
  - These fuels, however, emit fewer greenhouse gases in comparison to the first-generation biofuels.
- **Third Generation Biofuels:** These biofuels are produced using microorganisms such as algae. Micro-organisms like algae can be grown on land and water unsuitable for food production. This in

return, reduces the strain on depleted water resources. Eg. Butanol

- **Fourth Generation Biofuels:** plants used for the production of the fourth-generation biofuel, are genetically modified to absorb and store higher amounts of carbon which can be harvested as biomass.
  - This is then converted into biofuels using chemical conversion or thermochemical conversions.
  - The fuel is pre-combusted and the carbon is captured. Then the carbon is geo-sequestered, meaning that the carbon is stored in depleted oil or gas fields or in unmineable coal seams.
  - These fuels are mostly carbon neutral. Eg. Electrofuels

### Advantages of Biofuels

Biofuels offer a wide range of advantages, but their primary advantage is that they offer a green-shift from the conventional non-renewable fossil fuels. Some of the other benefits of Biofuels are:

- **Availability:** since biofuels only require biomass for their production, which is ubiquitous, biofuels are easy to produce.
- **Reduction in waste:** biofuels can also be produced using waste materials such as municipal sewage waste, inedible parts of the crops. This effectively aids in the reduction of waste.
- **Reduce dependency on crude oil and non-renewable sources of fuels.**
- **Economic development:** the production of biofuels can be a labor-intensive process thus resulting in the creation of jobs. This can provide a source of employment. It can aid in the development of rural areas when the second generation biofuel production units are set up there.

### Disadvantages of Biofuels

There are a few disadvantages that are associated with the production and usage of biofuels, such as:

- **Efficiency:** The efficiency of biofuels is much lesser compared to fossil fuels, as fossil fuels produce more energy on burning.
- **Loss of biodiversity:** the genetically modified crops used for the production of fourth-generation biofuels could result in a loss of biodiversity.
- **Availability of space:** production of biofuels requires land, and in the case of second-generation biofuels, the crops used are mostly non-food crops, thus the production of biofuels requires a lot of space.
- **Food shortage:** The first generation biofuels make use of food sources and there is an imminent threat of facing food-shortage if the production of biofuels is carried out extensively.
- **Water usage:** Massive quantities of water are required for proper irrigation of biofuel crops as well as to manufacture the fuel, which could strain local and regional water resources. This is, however, not the problem in case of the third generation biofuels.

## UPSC Questions related to National Policy on Biofuels

### What is the Objective of the National Policy on Biofuels 2018?

The policy is aimed at taking forward the indicative target of achieving 20% blending of biofuels with fossil-based fuels by 2030.

### What is a drop-in fuel?

A drop-in fuel is a synthetic and completely interchangeable substitute for conventional petroleum-derived

hydrocarbons (gasoline, jet fuel, and diesel), meaning it does not require adaptation of the engine, fuel system or the fuel distribution network.

**On what basis are the biofuels categorized?**

There are four types of biofuels: 1st, 2nd, 3rd, and 4th generation biofuels. They are characterized by their sources of biomass, their limitations as a renewable source of energy, and their technological progress.

