Review on Biofuel And Its Need, Demand In Global Level

Dr.C.SANGAVAI[1], B.ROJA[2], HASEENA[3]

Assistant Professor In Biotechnology,Dhanalakshmi Srinivasan College Of Arts & Science For Women, (Autonomous) Perambalur.

*corresponding author-sangavai12@gmail.com

Abstract

Renewable and sustainable sources of energy can be obtained from conventional fossil fuel. The right choice to produce biofuels can get by exploitation of biomass.First and second generation biofuels are not available and critized for economic ,social and food industry. Since the early 2000s, the development of global biofuel markets has been driven by policies fostering their production and use. Policies were initially motivated by a combination of factors, including the view that biofuel use would improve energy security and reduce greenhouse gas emissions (GHG). Government support for the biofuel industry takes the shape of blending mandates, exemptions from taxes applied to corresponding petroleum fuels, and investment support. Biofuel markets also are suffering from sustainability criteria, fuel quality standards, and import tariffs on ethanol and biodiesel. The projections presented during this Outlook are supported a group of assumptions concerning the evolution of biofuel policies round the world .

Key: Biofuel ,demand of biofuel,Generations og biofuel

Introduction

Biofuel can produced by plant or algae material or animal waste in a form of biomass.compare with fossil fuels such as petroleum, coal, and natural gas biofuels are considered to be a source of renewable energy. Example for biofuel include biodiesel ,green diesel,methane and ethanol ,all are drived from sourced from vegetable oils and liquid animal fats, algae and other plant sources, corn in the United States and sugarcane in Brazil.For the alternative of diesel fuel biofuel can be used, biofuel can provide clean up oil,cooking oil ,hydrogen for Transportation,Energy Generation,Provide Heat,Charging Electronics,Clean Oil Spills and Grease,Cooking, Lubricate,Remove paint and adhesive,Create energy when fossil fuel runs out and Reduce cost and need for imported oil.Butanol is used as an alternative liquid transportation fuel and can be catalytically converted into jet fuels. Ethanol is a gasoline additive to increase to improve vehicle emissions. (sangavai and chellapandi 2017). Global energy demand to be faced in near future along with and Organization for economic co-operation and development (OECD) summarized byc International Energy Agency (IEA). (W. Ting, L. Boqiang (2019)
Biofuels are transformed solar energy used as a renewable energy . Biomass sources can be used to produce bioenergy in a variety of forms. For example, fibre and wood process residues from the economic sectorfood, ; short-rotation,energy crops crops and agricultural wastes from the agriculture sector.Biofuel may are derived from agricultural or fishery products or forest or municipal wastes and from agrowastes.It may be solid like charcoal ,wood pellets and fuel wood. Liquid fuel such as pyrolysis oils, biodiesel and ethanol, Biogas is a gasious

biofuel.

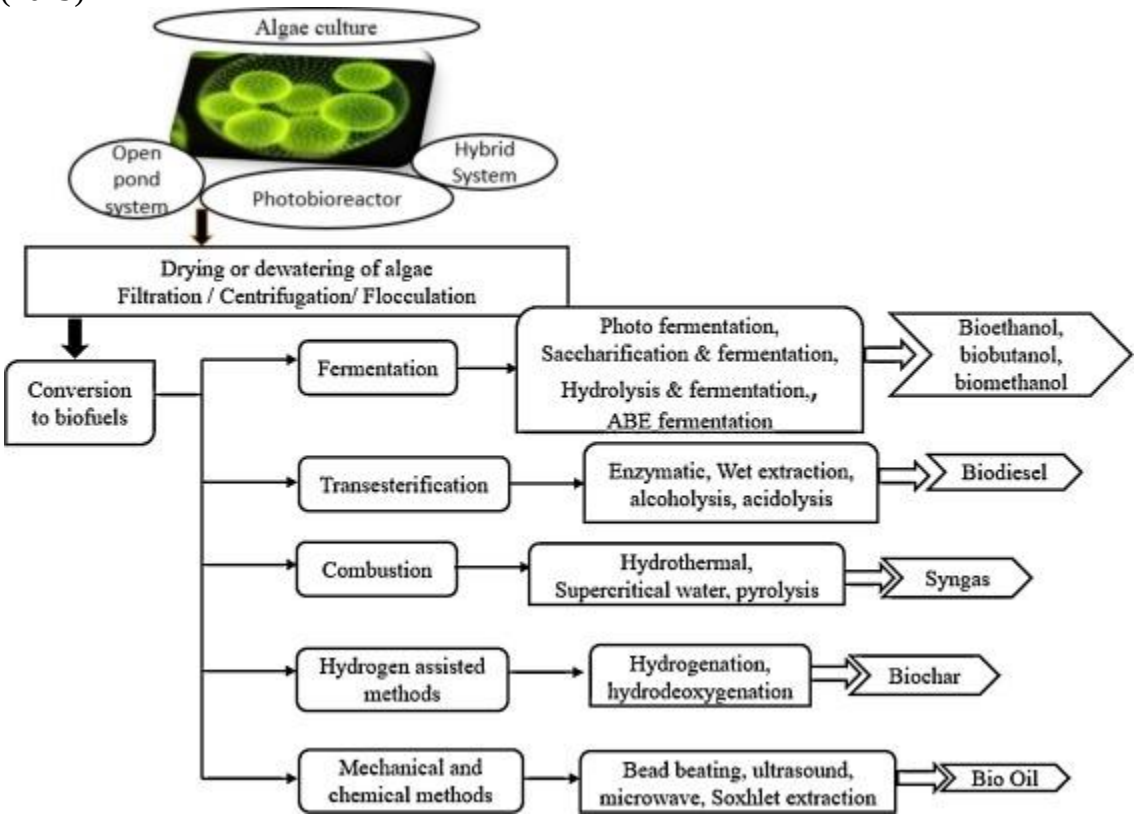
In the United States, the Energy Independence and Security Act (EISA) of 2007 defined the Renewable Fuel Standard programme known as RFS2.1 Under this programme, EISA established four quantitative annual mandates up to 2022: the entire and advanced mandates that need fuels to realize respectively a minimum of a 20% and a 50% GHG reduction also because the biodiesel and the cellulosic mandates that are nested within the advanced mandate. The Environmental Protection Agency (EPA) provided on an annual basis the minimum quantities for every of the four classes of biofuels required.

Generations of biofuel

First-generation biofuel-Food crops grown on arable land used for the making of first generation biofuel. Yeast fermentation or transesterification process are used for the convesion of biofuel from sugar, starch or oil and crops. (C.V.P. Pascoal 2020).

Second-generation biofuels-Lignocellulosic or woody biomass, or agricultural residues/waste are used for the biofuel making.The materials used for the produced from the main crop which use minaral land for growing. this generation feed stocks are perennial grasses, jatropha, waste vegetable oil,straw, bagass,municipal solid waste. (Lira et al (2019)

Third-generation biofuels-Algae are used for the production of thered generation biofuel , it can be cultivated by photoheterotrophic , mixotrophic,photoautotrophic and heterotrophic and it has to be harwested by flocculation ,floatation and gravity sedimentation. Muraza . O (2014). High yields can be obdained by using fresg water resources. (Mathimani and Pugazhendhi (2019)



Fourth-generation biofuels- This include electrofuels and solar fuels made up of storing electrical energy in the chemical bonds of liquids and gases.The targets are butanol, biodiesel,

and hydrogen, but include other alcohols and carbon-containing gases such as methane and butane. Light is converted to chemical energy, typically by reducing protons to hydrogen, or carbon dioxide to organic compounds.A solar fuel is a synthetic chemical fuel produced from solar energy.

Need of biofuel

Biofuel need for the improvement of energy,replace crude oil .

1) Combating climate change

Combating climate change forces the world to seek alternative, low-carbon sources of energy and fuel.Biofuels offer a solution to reduce carbon emissions of traffic when other solutions, such as switching to electric vehicles, is not an option due to high vehicle costs or lack of vehicle charging network. Since traffic is one of the largest sources of greenhouse gas, i.e. carbon emissions, substituting fossil fuels with renewable alternatives like biofuels is an efficient to reduce these emissions.

2) Responding to higher energy consumption

The expected increase in world population maybe 10.5 billion by 2050, combined with significant economic process in emerging economies will end in substantially increasing energy consumption. To be able to respond to this growing demand, we need to use natural resources more efficiently and increase the use of renewable energy, such as biofuels.

3) Securing energy supply

Increasing energy demand will pose challenges to security of supply as resources are scattered around the globe. Biomass is a resource that is more evenly distributed globally. Biofuels help to reinforce and safeguard energy security by reducing the world's reliance on fossil energy sources

4) Making the most of scarce resources

Reducing the amount of waste and making the most of our valuable natural resources is crucial for our future survival.Using waste and residue as raw materials for biofuels is an excellent example of answering to the needs of a circular economy.

Neste

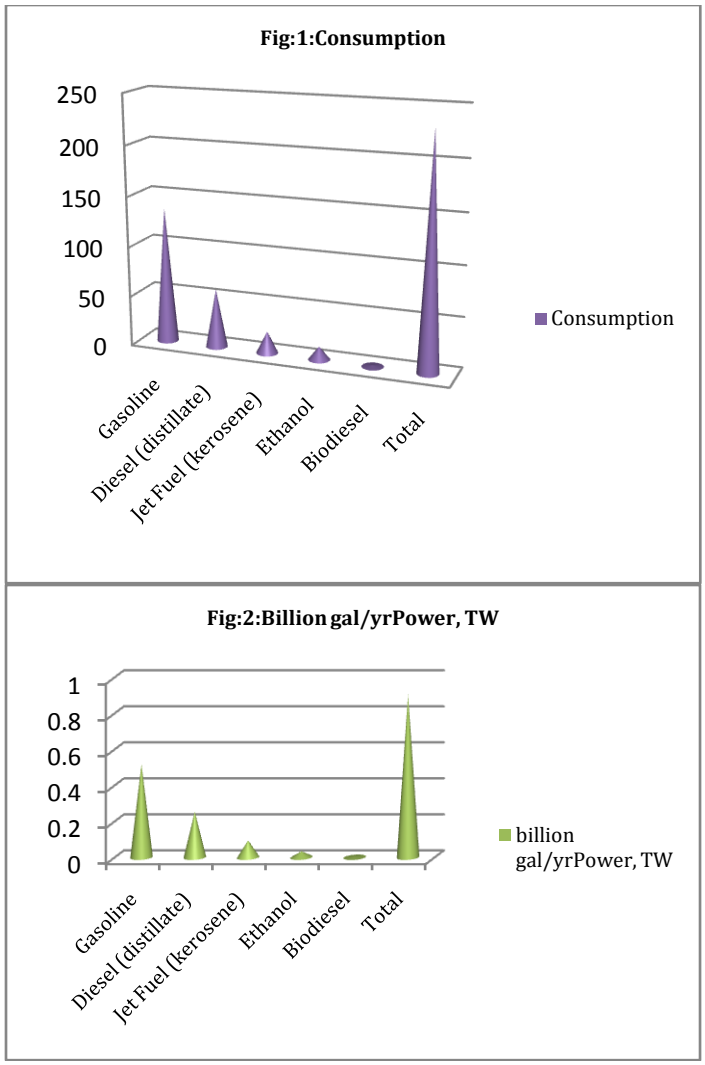
Neste may be a pioneer in oil refining and renewable solutions. We provide our customers with premium-quality products for cleaner traffic and industrial products supported world-class research. We are the world's leading producer of renewable diesel, and our annual production capacity is quite 2 million tons. The world's largest company providing renewable fuel from waste and residues. Our sustainable operations have received recognition within the Dow Jones Sustainability World Index and therefore the Global 100 list of the world's most sustainable companies, among others. Our income for 2015 amounted to approximately EUR 11 billion, and our shares are listed on NASDAQ Helsinki. Cleaner traffic, energy and life are moved forward by about 5,000 professionals.

The oil extrac-tion rate in the U.S. is a result of the shale oil boom to recent sharp increase, but worldwide the extraction rates from old conventional oil wells are declining so the oil extraction rate has not increased. The peak of U.S. shale oil extraction is predicted to occur in about 2020 (Annual Energy Out-look 2014). Using these and other approaches to extend biomass production, biomass for biofuel production within the U.S. could reach 1,000 to 2,000 million dry ton/yr. Assuming that fifty of the embedded energy in biomass becomes

liquid fuels, this much biomass could provide about 0.29 to 0.58 TW, or 32% to 64% of liquid fuel consumption (Table 1Fig1,2). These estimates are consistent with various low-carbon energy future scenarios in which approximately 25% of primary energy is provided by biomass (Dale 2014 and U.S energy information administration 2012), or approximately 1 kW for liquid fuels out of the 4 kW per capita required to realize sufficient levels of human development.

Table 1: consumption of liquid transportation

Fuel	Consumption billion gal/yr	Power, TW
Gasoline	135.56	0.5166
Diesel (distillate)	58.67	0.254
Jet Fuel (kerosene)	21.98	0.0941
Ethanol	13.18	0.0335
Biodiesel	1.368	0.0054
Total	230.76	0.9036



Demand In Global Level

By 2025, 22% of worldwide sugarcane production should be wont to produce ethanol. Biofuel production is predicted to consume 10.4% and 12% of worldwide coarse grains and oil production respectively in 2025. The economic recovery and weak petroleum prices cause stronger gasoline use within the us in 2015 and 2016 resulting in a better total amount of ethanol blended in regular cars. The conventional gap7 should decrease from a high value of 54.9 Bln L in 2016 to 50.7 Bln L by 2025. Ethanol production supported maize should also reach its maximum in 2016 then decrease in accordance with a lower conventional gap and limited demand on international markets. Lignocellulosic biomass based ethanol is not expected to develop over the outlook period. Ethanol markets in Brazil are expected to be driven by the assumptions concerning blending requirement in gasohol and the differential taxation system. Brazilian ethanol production is thus projected to extend from 29.2 Bln L in 2015 to 35.5 Bln L in 2025. Given the current economic crisis in the country, prospects for further development of the car fleet and of transportation fuels are less optimistic than in the past though still positive.

Apart from Brazil, most countries in the developing world slow their production growth compared to their recent fast development and expand production levels only modestly in the

coming decade. India remains a big producer of ethanol focussing on the domestic fuel and non-fuel markets. The policy aiming at compensating sugar mills is expected to increase production of ethanol based on molasses, with an annual growth of 2% p.a. to reach a production of 2.6 Bln L by 2025. Thailand is poised to increase its production at 7% p.a. such that supply reaches 2.9 Bln L by 2025. Global biodiesel production is expected to reach 41.4 Bln L by 2025 corresponding to a 33% increase from the 2015 level (Figure 3.7.5). The European Union is expected to be the major producer of biodiesel (Figure 3.7.6). Other significant players are the us , Brazil, Argentina and Indonesia. Policy instead of economic process will still influence production patterns in most countries.

Reference

The need for biofuels. Available from: https://www.researchgate.net/publication/284745600_The_need_for_biofuels [accessed Jan 04 2021].

C.V.P. Pascoal, A.L.L. Oliveira, D.D. Figueiredo, J.C.C (2020). Assunção,Optimization and kinetic study of ultrasonic-mediated in situ transesterification for biodiesel production from the almonds of Syagrus cearensis.Renew. Y.M. Sani et al (2013),Energy, 147 (1) (2020), pp. 1815-1824.

Dale, B. E., et al., "Take a Closer Look: Biofuels Can Support Envi-ronmental, Economic and Social Goals," Environmental Science and Technology, 48 (13), pp. 7200–7203 (July 2014

http://ec.europa.eu/clima/policies/2030/index_en.htm
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF
http://www.epa.gov/OTAQ/fuels/renewablefuels/

Muraza . O (2014) ,Biodiesel production from algae by using heterogeneous catalysts: a critical review Energy, 78 , pp. 72-83.

Sangavai C and Chellapandi P (2017),Amino acid catabolism-directed biofuel production in Clostridium sticklandii: an insight into model-driven systems engineering Biotechnology reports 16, 32-43.

T. Mathimani, A. Pugazhendhi ((2019),Utilization of algae for biofuel, bio-products and bio-remediation.Biocatal. Agric. Biotechnol., 17 , pp. 326-330.

T.A.M. Lira, A.P. Santos, T.C.F. Moreti, A. Lopes, M.C.J. de Oliveira, M.C.T. Neves, P.S. Lamaguti, L.P. De Lima, G.H.A. Koike, R de A(2019),Silva Performance of agricultural tractor consuming diesel and biodiesel derived from babassu ('Orbinya martiana') Aust. J. Crop Sci., 13 (7) , pp. 1037-1044.

U.S. Energy Information Administration, "Annual Energy Out-look 2014 Early Release Overview," www.eia.gov/forecasts/aeo/er/early_production.cfm (May 2014)

W. Ting, L. Boqiang (2019),Fuel consumption in road transport: a comparative study of China and OECD countries J. Clean. Prod.206, pp. 156-170.

Y.M. Sani, D. Wmaw, A. Aziz (2013),Solid acid-catalyzed biodiesel production from microalgal oil the dual advantage,J. Environ. Chem. Eng., 1 , Article 113e41.