Biofuels: Current Markets, Policies and the Future

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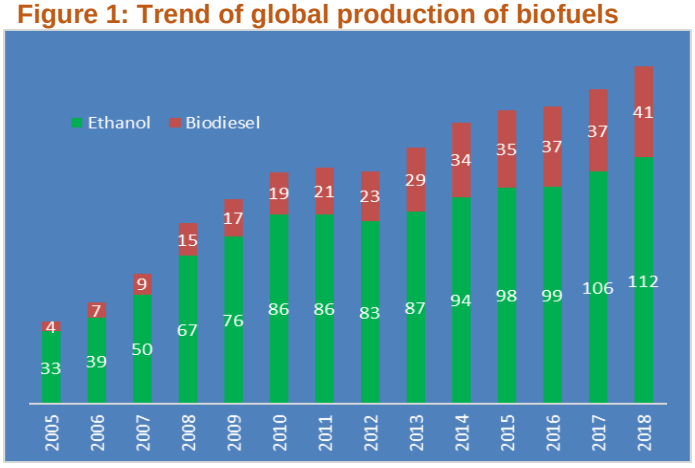
Abstract

During the second half of 2000, the market of liquid biofuels (ethanol and biodiesel) increased rapidly due to policy drives (Figure 1). The production of ethanol increased by 2.6 times during that period, whereas the production of biodiesel increased by 4.5 times. This rapid increase, however, paused in the next two years due to the controversy created by a suspicion that biofuels might have fueled the 2007-08 global food crisis. The growth of biofuels started again in 2013 but at a slower rate. It is still growing, it grew by 7% in 2018. The revival biofuels growth occurred despite the several adverse factors such as fuel vs. food controversy, indirect land-use change debate, drops in oil prices.

Government policies are the major drivers for the continuous growth of biofuels. Policy instruments include blending mandates, tax exemption or rebate, direct investment grants. More than 56 countries around the world have introduced explicit blending mandates for biofuels (existing or planned). Some countries (e.g. Costa Rica, Brazil, India, Indonesia, Paraguay and Zimbabwe) have mandates to blend biofuels more than 20% by volume.

Despite many obstacles and food vs. fuel controversy, the production of biofuels has increased over time. The aviation sector is also looking for using biofuels. Although the recent production growth (after 2010) is not as high as that of the early 2000s, the growth is expected to be maintained in the future due to continued use in the existing mode of transportation (i.e., road transportation) and emerging applications in the aviation sector.

Figure 1: Trend of global production of biofuels



Source: Renewable Energy Network (REN21)

This presentation will present the evolution of global biofuels and bioenergy (biomass for heat and electricity production) markets. It will discuss the drivers of the global growth of biofuels and bioenergy production and key challenge faced by the markets around the world. It will then highlight policy instruments and market conditions for further expansion of biofuels and bioenergy.

Recent Publications (minimum 5)

1. De Gorter H, Drabik D and Timilsina GR, (2016) Producing biodiesel from soybeans in Zambia: An economic analysis, Food Policy, Vol. 59, pp. 103–109,
2. Drabik D, De Gorter H, and Timilsina GR, (2014) The Effect of Biodiesel Policies on World Biodiesel and Oilseed Prices, Energy Economics, Volume 44, Pages 80-88.
3. Timilsina GR (2013) Biofuels in the Long-run Global Energy Supply Mix for Transportation, Philosophical Transactions of the Royal Society A. pp. 372-392.
4. Timilsina GR and Mevel S (2012) Biofuels and Climate Change Mitigation: A CGE Analysis Incorporating Land-Use Change, Environmental and Resource Economics, Vo. 55, pp: 1-19.
5. Zilberman D, Hochman G, Rajogopal D, Timilsina GR and Sexton S (2013) The Impact of Biofuels on Commodity Food Prices: Assessment of Findings, American Journal of Agriculture Economics, Vol. 95, No. 2, pp. 275-281.
6. De Gorter H, Drabik D, Just DR and Timilsina GR (2015) The economics of Brazil's ethanol-Sugar markets, mandates, and tax exemptions, American Journal of Agricultural Economics, Vol. 97, No.5, pp. 1433-1450.
7. Timilsina GR, Chisari OO and Romero CA (2013). Economy-wide Impacts of Biofuels in Argentina, Energy Policy, Vol. 55, pp. 636-647.
8. Chang S, Zhao L, Zhang X and Timilsina GR (2012) Biofuels Development in China: Technology Options and Policies Needed to Meet the 2020 Target, Energy Policy, Vol. 51, pp. 64-79.
9. Poudel, BN, Timilsina, GR and Zilberman, D (2012). Providing Numbers for a Food versus Fuel Debate: An Analysis of a Future Biofuel Production Scenario, Applied Economic Perspectives and Policy Vol. 34, No. 4, pp. 637–668.
10. Timilsina GR (2012). Biofuels: the food versus fuel debate, CAB Reviews, Vol. 7, No. 036, pp. 1-8.
11. Timilsina GR (2013). How Will the EU's Cap on Crop-based Biofuels Impact the Future of Biofuels? Biofuels, Vol. 4, No. 2, pp. 139-141.
12. Timilsina GR, Beghin J, van der Mensbrugghe D and Mevel S (2012). The Impacts of Biofuel Targets on Land-Use Change and Food Supply: A Global CGE Assessment, Agriculture Economics, Vol. 43, pp. 313-330.
13. Timilsina GR, Mevel S and Shrestha A (2011). Oil price, biofuels and food supply, Energy Policy, Vol. 39, No. 12, pp. 8098-8105.
14. Timilsina GR, Csordás S and Mevel S (2011). When Does a Carbon Tax on Fossil Fuels Stimulate Biofuels? Ecological Economics, Vol. 70, No. 12, pp. 2400-2415.
15. Carriquiry MA, Du X and Timilsina GR (2011). Second Generation Biofuels: Economics and Policies, Energy Policy, Vol. 39, No. 7, pp. 4222-4234.
16. Cheng JJ and Timilsina GR (2011). Status and Barriers of Advanced Biofuel Technologies: A Review, Renewable Energy, Vol. 36, No. 12, pp. 3541-3549.
17. Timilsina GR and Shrestha A (2011). How much hope should we have for biofuels?, Energy, Vol. 36, pp. 2055-2069.



Biography

Dr. Timilsina is a Senior Research Economist at the Development Research Group of the World Bank, Washington, DC. He has more than 20 years' experience across a board range of energy and climate change economics and policies at the international level. His key expertise includes biofuels, climate change policies, electricity economics and energy sector as well as general equilibrium modeling for policy analysis. Prior to joining the Bank, Dr. Timilsina was a Senior Research Director at the Canadian Energy Research Institute, Calgary, Canada. At present, he is leading a number of studies including the economics of renewable energy including biofuels, carbon pricing, and infrastructure and economic growth.

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Notes/Comments: