

# Ethanol Industry

March, 2019

## Product Insight

Ethanol is manufactured by use of renewable or bio-based raw material feedstock. Based on the feedstock type, the market is classified into three product segments which are starch-based, sugar-based, and cellulosic ethanol.

Starch-based product is manufactured by using raw materials such as corn, wheat, barley, and cassava. These products have high starch content and are capable of reducing greenhouse gas (GHG) emissions to a considerable extent. In particular, corn based ethyl alcohol has resulted in minimizing the airborne emissions by nearly 20%, as regularized stated by The U.S. Department of Energy. However, use of cassava as a suitable feedstock is expected to gain importance in future in developing countries including China and Thailand, owing to its rich starch content and ability to produce ethyl alcohol comprising high octane rating and good anti-knocking characteristics.

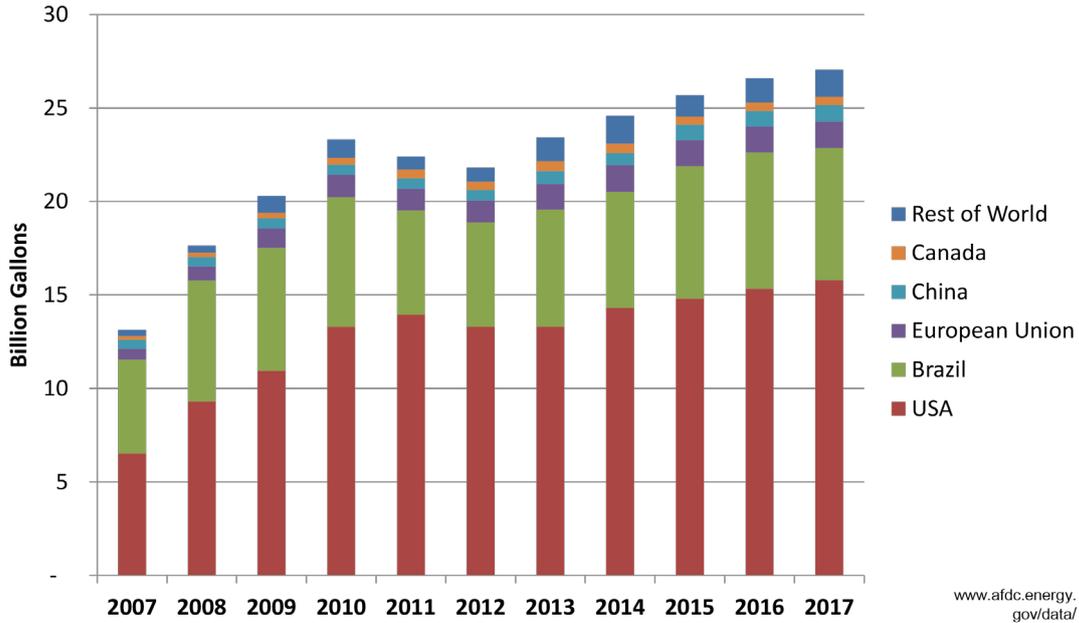
Sugarcane ethanol is an alcohol-based fuel produced by the fermentation of sugarcane juice and molasses, because it is a clean, affordable and low-carbon biofuel. Sugarcane ethanol has emerged as a leading renewable fuel for the transportation sector. Cellulosic ethanol is ethanol (ethyl alcohol) produced from cellulose (the stringy fiber of a plant) rather than from the plant's seeds or fruits. It is a biofuel produced from grasses, wood, algae, or other plants.

Ethanol is prevalently used as a motor gasoline for the automobile and transportation segment. Conventional fuel vehicles have limited compliance of ethanol fuel as a motor fuel and it utilizes ethanol blends such as E10 and E15. E10 is a combination of 10% ethanol and 90% gasoline whereas E15 is a blend of 10.5%-15% of ethanol with remaining contribution of gasoline. However flexible fuel vehicles (FFV) consist of internal combustion engines that are capable of operating on ethanol based motor fuel blend ranging from 51%-83%. With the increasing influx of FFVs in Brazil, USA, European Union and key automobile assemblers (Dacia and Toyota) being involved designing FFV based cars, usage of ethanol is expected to boost considerably going forward.

## Global Outlook

USA dominates the world ethanol production followed by Brazil and European Union. USA and Brazil are also the leading exporters of ethanol followed by India and Pakistan. North America, Europe, Central and South America have been the major consumers of the product over the past few years. Numerous developing countries in Asia Pacific such as China, India, and South Korea are major crude oil importers. Use of ethanol as a blending additive can be considered to benefit these countries in terms of improving energy security and efficiency of motor vehicles. Other countries in North America including Canada and Mexico have been implementing various environmental policies and programs for improving the growth of industry. For instance, Canada signed the Paris Agreement in 2016 and announced its futuristic targets of minimizing emissions by nearly 30%, by the end of 2030. This regulatory policy will boost the use of low carbon intensity fuels and will ultimately impact the ethanol consumption in the future. Strong global demand coupled with government initiatives to cut down on carbon emissions and promote the use of bio fuels has driven many sugar mills to vertically integrate into ethanol distilleries.

Global Ethanol Production by Country/Region and Year

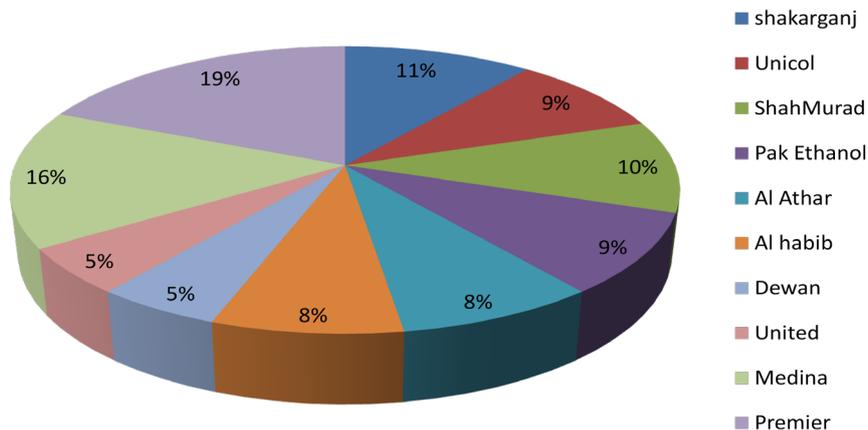


USA has maintained its strong hold on ethanol exports on the back of higher production volumes and lower corn prices after the drought of 2012. Trade with the European Union (EU) has remained restricted since 2013 onwards on account of a punitive trade tariff placed on US produced fuel grade bioethanol. Also access to Chinese markets has been restricted due to heavy trade tariffs imposed by China. Cost advantage of US corn based ethanol has been offset by trade tariffs imposed by EU and China which has created room for other emerging ethanol producing countries to become more competitive in the European market. On the other hand Brazil has also exhibited positive development in margins as a result of higher sugarcane crop being diverted to ethanol and low cost of molasses.

**Domestic Outlook**

It is estimated that Pakistan currently has an installed production capacity of over 700,000 metric tons for Ethanol with around 20 distilleries in operation. Pakistan ethanol exports were recorded at an all-time high of 742m liters (2017: 580m liters; 2016: 450m liters) and increased by 28%. Increase in exports was facilitated by new ethanol capacities coming online and excess availability of molasses given elevated levels of sugar production over the last 2 years. Top 5 players account for over 50% of the total exports. Premier group is the largest player in the segment followed by Madina, Shakarganj, Shahmurad and Unicol. The biggest buyers were Alcotra with 230m liters followed by Kolmar and Mitsubishi. Major markets for ethanol exports include China, South Korea, EU and Philippines. Going forward, with lower forecasted sugar and resulting molasses production, ethanol exports are expected to witness some decline existing levels.

Capacity Share



## Profitability

Overall profitability of local ethanol distilleries have witnessed a sizeable jump in the outgoing year on account of increasing global demand, restricted supply from USA to key ethanol markets (China and EU) and expansion in margins. Higher inventory levels as a result of restricted supply from USA have slightly pushed down global prices of ethanol during the latter part of MY18 however volumetric sales remained healthy. Revenue base of key players has substantially expanded due to volumetric growth (due to capacity additions) and rupee devaluation while availability of molasses at competitive rates has supported the increment in margins. Going forward, the expected decline in sugar production in MY19 has limited the availability of molasses driving up prices significantly and hence increasing cost of producing ethanol. This is however expected to be partly offset by benefit of rupee depreciation that industry players will enjoy. Moreover, profitability will depend on international prices of ethanol and efficiency in operations.

Rs. In m	Premier Sugar Mills			Shahkarganj Sugar Mills			Shahmurad Sugar Mills			Unicol		
	MY16	MY17	MY18	MY16	MY17	MY18	MY16	MY17	MY18	MY16	MY17	MY18
Revenue	1,249	1,359	2,441	534	2,056	3,114	2,018	2,471	3,746	4,000	4,300	4,800
Gross Profit	N/A	744	1,336	(47)	(185)	859	374	427	958	N/A	N/A	N/A
Net Profit	(114)	540	1,048	(121)	(374)	549	196.20	130	349	325	320	1,213
Gross Margins	N/A	55%	55%	-9%	-9%	28%	19%	17%	26%	N/A	N/A	N/A

### Analysts Contacts

#### Talha Iqbal

Senior Manager

talha.iqbal@vis.com.pk

#### Hamza Amir

Assistant Manager

hamza.amir@vis.com.pk

Sources: <https://www.grandviewresearch.com/industry-analysis/fuel-ethanol-market>

F.O Licht World Ethanol and Bio Fuels Report