Global Ethanol Outlook

2021 Report
What This Report Will Do For You

Policy, as ever, dominates the outlook for the fuel ethanol sector, with all the major players set to make changes:

- **Brazil** has made deep cuts both short and long term, to its RenovaBio program.
- The **EU's** Green Deal and RED II review set out decarbonisation ambitions to 2030 and beyond.
- President Biden’s decision to re-join the Paris accord signals a more pro-biofuels US stance than his predecessor's.
- **California** prohibits the sale of internal combustion engines in coming decades.
- **India** & **Canada** are set to announce new policies; **Thailand** will resume its E20 rollout after Covid-19 interruptions.

The *Global Ethanol Outlook: 2021 Report* analyses all these scenarios and their likely impact on ethanol demand and prices. And, as always, LMC charts the key trends in ethanol feedstocks and processing margins.

Inform your strategy

LMC’s report provides valuable commercial insights:

1. Policy – *in each of the major markets*
2. Production costs & margins – *how yours stack up against other producers*
3. Supply/demand - current & forecast - globally and across 23 major markets – *by country/region*
4. Upside & downside risks to supply & demand – *taking account of capacities/production, mandates, global GDP & electrification*
5. Price dynamics – *forecasts to 2040*
6. Strategic conclusions – *planning for the future*

Forecasts for the 2021 Report have been extended to 2040.
# COUNTRY COVERAGE

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WHAT YOU RECEIVE

Executive Summary and Strategic Conclusions

The Ethanol Report
120 pages of data and analysis

LMC Ethanol Forecasting Model in Excel
Choose your own scenarios to generate forecasts of demand and prices

Reasonable access to senior LMC staff to discuss and interpret findings & forecasts

The service covers both:
• 1st generation (crop-based) ethanol
• 2nd generation (waste-based and cellulosic) ethanol
GLOBAL ETHANOL POLICY – WHAT EVERYONE NEEDS TO KNOW!

Several years of lacklustre policy support for biofuels have been transformed since 2017, as governments look to lower GHG emissions to meet their Paris agreement targets. Most of these new policies are still under development, but there is significant potential for biofuels to see strong growth over the coming years. India, Brazil and Canada are among the countries to announce new policies.

We review mandates, fiscal incentives and any other instruments used to promote market growth. We comment on whether policies have been successful in promoting demand for biofuels and whether current targets/mandates have been, or are likely to be met.

*Global Ethanol Outlook: 2021 Report* reviews and summarises policy, capturing recent changes for each country.

**Potential scenarios include:**

1. Brazil’s *RenovaBio* program
2. The impact of electric vehicles on demand for liquid fuels
3. California, blazing a trail for low emissions with a sector-leading policy stance
4. China’s moves to implement E10 to improve air quality
5. The realistic prospect – in economically-priced commercial volumes – of advanced biofuels

**Key outputs include:**

- Ethanol mandates by country and by year
- Fiscal incentives, penalties and subsidies by country
- Key policies that impact ethanol trade and use
We compare the costs of producing ethanol by market and by raw material for these markets:
- EU* wheat, corn & molasses
- US corn
- Brazil sugarcane
- Pakistan molasses
- China grains & molasses
* France, Germany, Poland & Hungary
with production cost forecasts to 2040.
We also calculate and forecast processing margins.

**Key outputs**
- Ethanol production costs, 2015 - 2020
- Ethanol gross and net processing margins, 2015 - 2020
- Ethanol production costs, forecasts to 2040
- Gross and net processing margins, forecasts to 2040

### Gross and net cane ethanol production margins in Brazil (US cents/litre)

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### Ethanol Production by Feedstock
ETHANOL SUPPLY & DEMAND...

Ethanol supply and demand is presented for each country from 2010 through 2020, with forecasts to 2040. These forecasts are based on LMC’s view of the most likely outcome for policy, demand and supply. A full explanation is given to support these forecasts.

Key outputs

- Gasoline demand to 2040
- Ethanol demand to 2040
- Ethanol production to 2040 by raw material (crop-based and waste-based/cellulosic)
- Net trade in ethanol to 2040 by country

For country coverage, see page 3
...& THE DOWNSIDE AND UPSIDE RISKS

We quantify the impact of policy risk on the ethanol market in each country. We do this by considering a downside or upside scenario (as appropriate) based on:

• slower/faster growth in mandates and production;

• the impact of higher/lower global economic growth on gasoline and ethanol demand in the major consuming countries;

• the impact at the global level that electric vehicles are likely to have on gasoline and ethanol demand.

Key outputs

We translate these policy risks into forecasts of:

• Gasoline demand to 2040 by country

• Ethanol demand to 2040 by country

• Ethanol production by country

• Net trade in ethanol to 2040 by country
The report examines the key determinants of global ethanol prices, focusing on the link between carbohydrate, gasoline and ethanol prices in the US, EU and Brazil.

**Key outputs**

Anhydrous ethanol price forecasts to 2040 under different crude oil price scenarios (US$ 40/bbl, US$ 60/bbl and US$ 80/bbl for:

- EU (T2 Rotterdam FOB)
- US (Midwest ex-factory & US Gulf FOB)
- Brazil (ex-mill São Paulo & Santos FOB)

We also examine the level of crude oil prices required for ethanol to be competitive to enable discretionary blending, regardless of the mandates.
STRATEGIC CONCLUSIONS

Where is the ethanol sector headed?

The report examines policy, production costs and processing margins, supply, demand, and pricing for the major producing and consuming countries/regions. This analysis enables LMC to forecast supply, demand and prices.

LMC draws on this analysis and the forecasts to determine the short and long-term implications for the ethanol sector.

Key issues addressed

• The outlook for ethanol production by feedstock
• The prospects for crop-based vs. waste/cellulosic ethanol supply
• The impact of blend walls and the potential for increased blends
• The status of the cellulosic ethanol industry and prospects
• The outlook for ethanol profitability
• The potential for competing gasoline substitutes, such as bio-butanol and methanol
• Potential synergies between 1st and 2nd generation ethanol
• The outlook for the impact of increasing market share of electric vehicles on gasoline and ethanol demand

The Global Ethanol Outlook: 2021 Report analyses the major issues in the operating environment and presents strategic conclusions about how the market is likely to develop over the next 10 years.
As part of the supply, demand and price analysis, clients also receive a forecasting model in Excel.

**The LMC Global Forecasting Model provides:**

- **Ethanol demand forecasts to 2040**
  Clients are able to select alternative GDP and policy scenarios for each country, to generate their own demand forecasts.

  and

- **Ethanol price forecasts to 2040**
  Forecasts are prepared under alternative crude oil price assumptions.
Global Ethanol Outlook: 2021 Report provides comprehensive and reliable data and analysis of supply, costs, demand, pricing, and policy, along with a unique forecasting model.

## DELIVERABLES & TIMING

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<tr>
<td>• The Ethanol Report &amp; Executive Summary</td>
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B GEO 2021
LMC’s CLIENTS INCLUDE

- AB Sugar
- Apical
- ArcelorMittal
- Archer Daniels Midland
- Asian Development Bank
- Asocaña
- Azucareros del Istmo Centroamericano
- BASF
- Bayer CropScience
- Beta San Miguel
- Bioagra
- BP Biofuels
- Bunge
- Cargill
- CEFS
- Cepsa Quimica
- Chevron
- COFCO
- Corn Refiners Association
- Corteva Agriscience
- COSAN
- Diamond Green Diesel
- DowDuPont
- DSM
- EBRD
- Ecopetrol
- Equinor
- European Commission
- Evonik
- ExxonMobil
- FAO
- Flint Hills Resources, LP
- Glencore International
- Global Green Chemicals
- Groupe Sucrerie
- Győr Distillery
- Ineos
- Ingredion
- International Finance Corp
- Investec
- Itochu
- Mabanaft Deutschland
- E D & F Man Sugar
- Marubeni
- Mitr Phol
- Mitsubishi
- Mitsui
- Neste
- National Biodiesel Board
- Nordzucker
- Oxiteno
- Pantaleón
- Petrobras
- Pfeifer & Langen
- POET
- Praj Industries
- Procter & Gamble
- Rabobank
- Raizen
- Reckitt Benckiser
- Renewable Energy Group
- Roquette
- SASOL
- Shell
- Sociedade Corretora de Álcool
- South African Sugar Association
- Sud-Chemie
- Südzucker
- Suiker Unie
- Sumitomo
- Suncor
- Syngenta Crop Protection
- Tereos
- Thai Roong Ruang Industry
- Tongaat-Hulett
- Total
- UNICA
- Unilever
- United Soybean Board
- U.S. Grains Council
- US International Trade Commission
- Valero Energy
- The World Bank
- Yara International

and many others