Feedstocks for Advanced Biofuel Production: The 2030 Supply Gap

Strategic report from S&P Global Commodity Insights

S&P Global
Commodity Insights

Contents

The need for the report: Why advanced biofuels and why now?

Huge market potential for advanced feedstocks to meet the gap in supply needed to meet forecast demand of low CI fuels.

Decarbonization efforts worldwide are boosting demand for transportation fuels with a low carbon intensity (CI). The current focus is on cutting greenhouse gas emissions in road transport, but mid-term targets for the aviation and the shipping sectors exist as well in many countries.

One way – but definitely not the only one – to meet these targets are biofuels. However, there is growing concern that agricultural crops may not be able to cover the expected rise in demand for low CI fuels. To complement those, supplies of non-crop products made from waste, residues or various energy or cover crops, which do not compete with food and feed production, will have to rise sharply to fill the gap.

Adjusting for the partly lower energy density of biofuels, the market potential for biofuels may total more than 190 million tonnes in 2030. This projection is primarily based on current and planned biofuel blending shares.

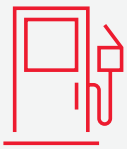
Of this, the bulk – 140-145 million tonnes - may be covered with crop-based biofuels. This means that the additional sales potential for non-crop product is 45-50 million tonnes as early as 2030.

Our supply-side estimates for biofuels for non-crop feedstock and the planned investments in this field lead to the conclusion that much needs to be done to fill the emerging feedstock supply gap for low CI fuels.

The report provides:

An in-depth 2030 market and feedstock outlook for the various biofuels by region

A policy overview in the key producing and consuming countries



Comprehensive profiles of existing and potential feedstocks for advanced biofuel production

For cellulosic feedstock, we currently expect a consumption of 15-20 million tonnes by 2030, the bulk of which from cane bagasse, and the remainder being various types of residues from grains harvesting (wheat and rice straw, rice husks, corn cobs and stover). This compares with marginal levels currently.

Roughly 20 million tonnes of biodiesel may be made from non-crop substrates, up from an estimated 15 million today, almost half of which from UCO. The other 50% will be dominated by animal fat (5 million tonnes) and by-products of palm oil production.

Cover crops will contribute rising amounts of lipids in the crop section. Although y/y growth rates, will be very high, their absolute contribution will remain small, reaching 1.5-2.0 million tonnes by 2030 in a very optimistic scenario.

Key features & benefits of the Feedstocks for Advanced Biofuel Production report from S&P Global Commodity Insights

Demand outlook for biofuels

Provides a detailed country-by-country market outlook to 2030 for the various types of biofuels.

Overview of regulatory framework for biofuels

Explains why policy is so important by looking at the opportunities that arise from incentives and targets. Explains the constraints the regulation faces.

Biofuel policies in the major producing and consuming countries

Provides insight into specific rules that shape the market for conventional and advanced feedstock in the USA, EU-17, Brazil and Canada.

Review of the technologies used for producing conventional and advanced feedstock

Provides understanding of current and potential methods to grow and process 1st, 2nd and 3rd generation feedstock for biofuels.

Analysis of the food and feed crops used for ethanol and biodiesel

Identifies the market shares of the various feedstock used for conventional biofuel production.

Detailed review of use of liquid waste feedstock for biofuels production

Provides insight in the market dynamics for used cooking oil, animal fat and palm oil mill effluent.

Analysis of energy crops and solid waste feedstock for biofuel production

Analyzes 30 existing and potential feedstocks with regards to the market chances.

Analysis of potential demand for advanced feedstock for biofuel production through to 2030

Assesses the potential of new market segments by feedstock.

Who should read and why?

Existing and new biofuel producers	Understanding opportunities for sustainable production of biofuels under tighter environmental regulations and carbon credit schemes.
Traditional and new biofuel buyers	Understanding policy landscape and production economics for biofuels from a feedstock perspective.
Aviation	Understanding the potential development path of supplies of advanced feedstock for sustainable aviation fuel production.
Seed companies	Understanding potential evolution of biofuel feedstock demand pattern in the light of the developing policy landscape.
Feedstock trading companies	Understanding the state of play as well as the future trade flows of feedstock for the production of advanced biofuels.
Investors	Understanding advanced biofuel feedstock production economics and outlook for advanced biofuels and the implications to biofuel investment decisions.

Contents and structure of the Feedstocks for Advanced Biofuel Production report

Brief Outline of the Report Structure

Executive summary

- Key conclusions
- Main takeaways for key stakeholders

Demand-outlook for biofuels in general

- What is the global demand for fuel ethanol, biodiesel or SAF?

Regulatory landscape

- Why is policy so important and what are the constraints?
- Key policy drivers by region and mandates worldwide
- Decarbonization/RE options by sector
- USA regulatory overview – RFS, RIN IRA and LCFS
- EU regulatory overview – RED II, Fit for 55 and palm oil issue
- Brazil regulatory overview – RenovaBio
- Canada regulatory overview – CFR

Feedstocks overview

- Technologies used for producing feedstocks

Traditional feedstocks

- Global perspective of feedstock technologies
- Fuel ethanol – Feedstocks info by global share, historic use, continent and supply use and process detail
- Biodiesel – Feedstocks info by global share, historic use, continent and supply use, process detail and new technologies

Waste feedstocks

- Global feedstock use by share and continent 2022
- Global feedstock use for biodiesel from food by-products (historical and outlook to 2030)
- Global feedstock use and share in supply
- Biodiesel production from non-crop feedstocks – Impact on input markets

Advanced feedstocks

- Perspective on next generation feedstocks and emergent biofuel technologies summary
- Comparison analysis – Oil & yield, attribute, feedstock production CI, and outlook
- Annual output volumes
- Visible potential expansion capabilities
- Energy crops profiles – POME, castor bean, camelina, jatropha, pennycress, hemp, croton tree, tallow tree, switchgrass, giant reed, and algae
- Ag residue profiles – Manure, straw, corn stover, corn cobs, and bagasse
- Forestry biomass profiles – Poplar residue, willow, tops, thining & slash piles, branches & bark, shavings, sawdust, chips, pulp and paper, and tall oil
- Others profiles – Municipal solid waste, carinata, miscanthus, and bio-sludge
- Summary feedstock recommendation

Industry outlook to 2030

- Demand for advanced feedstock by type and year up to 2030

The team

Key Authors: S&P Global Commodity Insights Biofuel Market Experts

Claus Keller

Christoph Berg

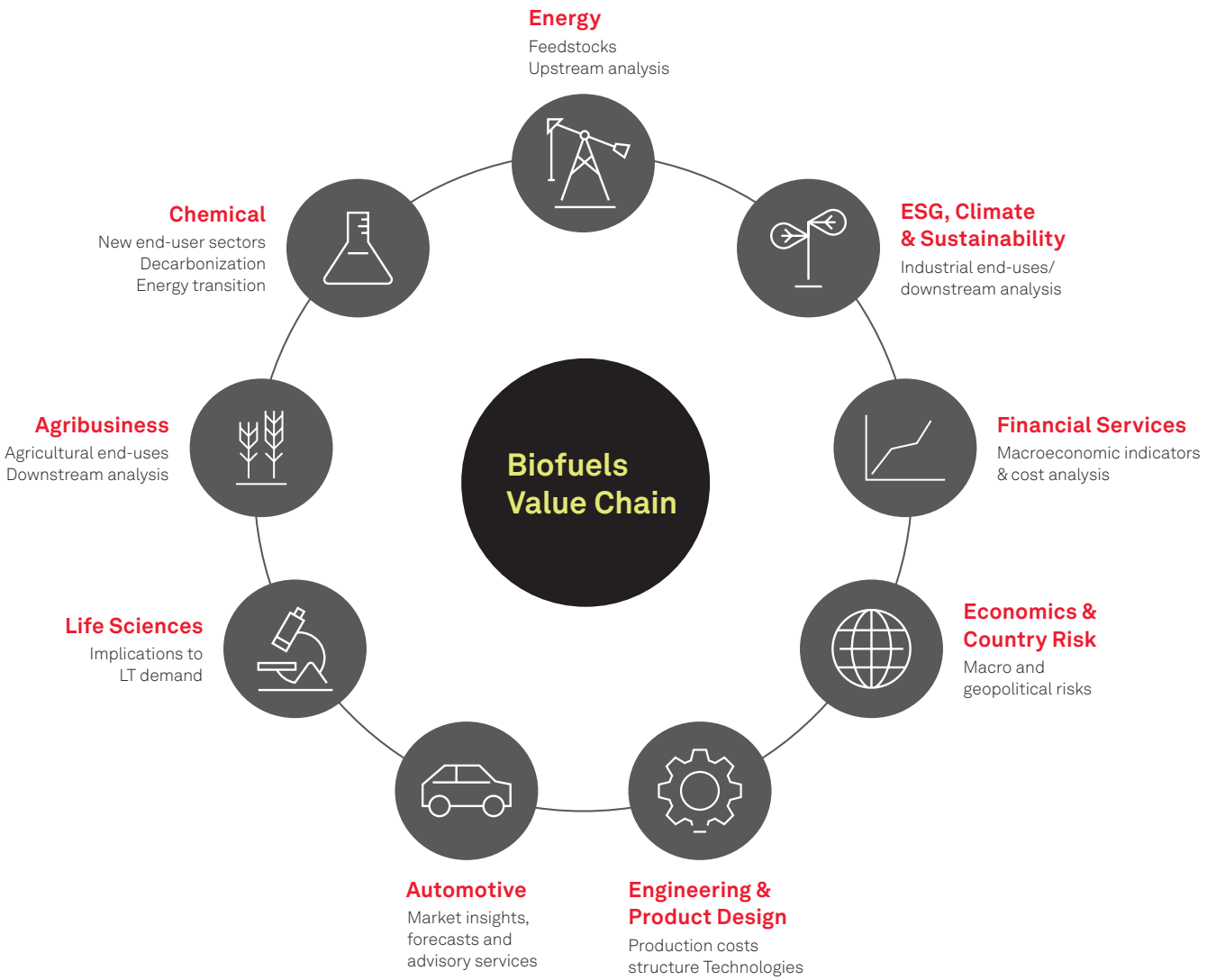
Contributors: S&P Global Commodity Insights Biofuel Market Experts

Juan Sacoto

Jean Benoit Deloron

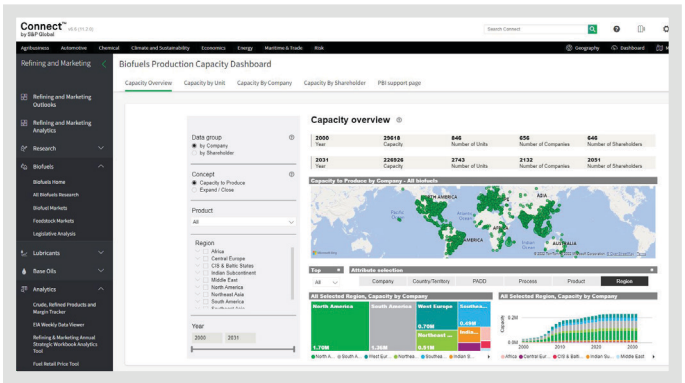
Ryland Maltsbarger

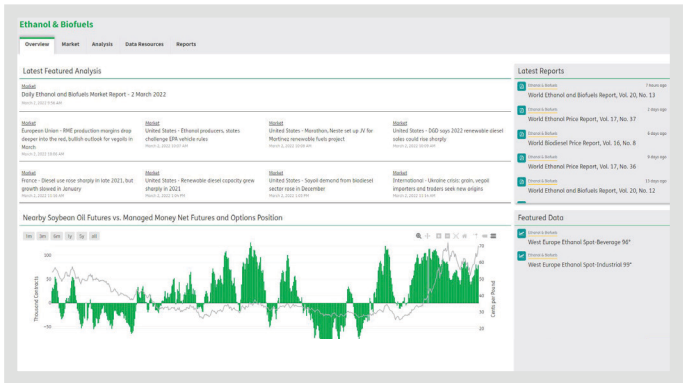
Addressing Strategic Challenges with Interconnected Areas of Expertise



S&P Global Commodity Insights' unique capabilities across the entire biofuels value chain

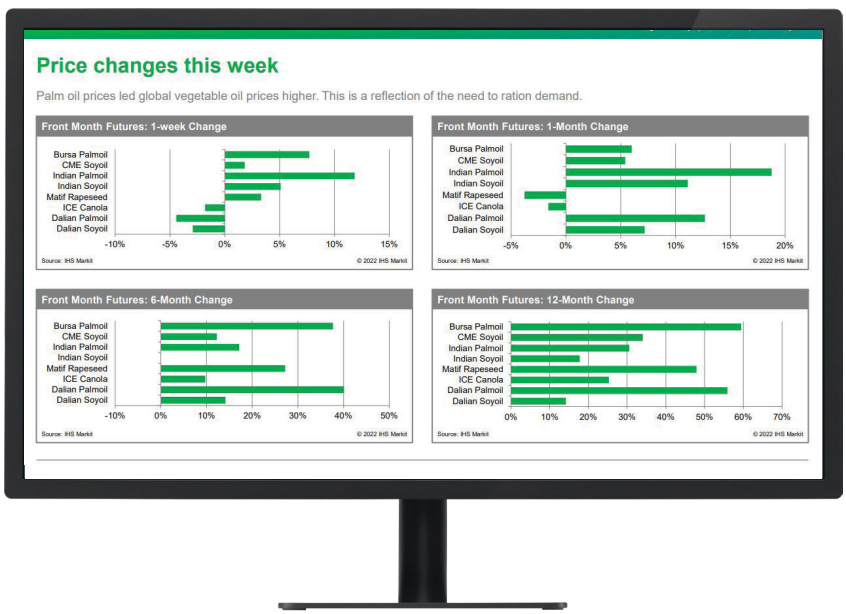
Integrated market intelligence to bring transparency to the global biofuels sector, including leading coverage of biofuels, bio-feedstocks, and refined products, though a unique mix of price assessments, new reporting, market data and insights, and fundamentals-based forecasting across the full biofuels value chain.





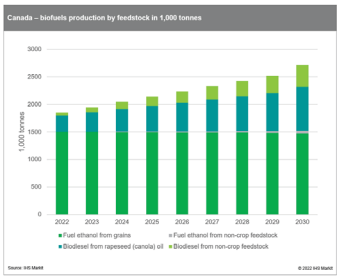
Related expertise and proprietary data across wider S&P Global Commodity Insights

- Ethanol & Biofuels Economics
- Food and Agricultural Commodities Economics
- Biofuels Value Chain Service
- Platts Market Data – Agriculture
- Platts Market Insight – Agriculture
- Platts eWindow Market Data



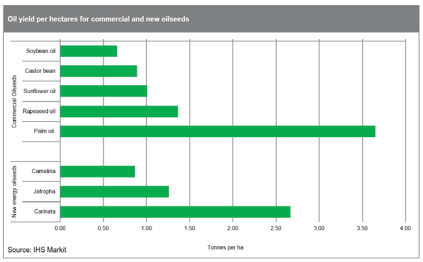
Extracts from the report

Outlook for advanced biofuels and feedstocks to 2030



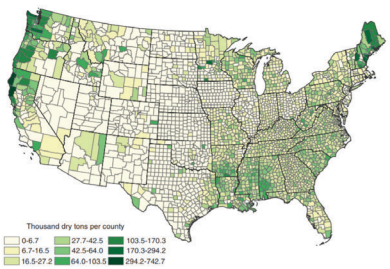
- The CFS will support domestic bofuels production.
- Non-crop inputs will only play a very minor role.
- The main inputs will remain non-crop feedstock like UCO but also grains and rapeseed oil.

New technologies: Increasing oil content of oilseeds



- Biofuel policies aspire to limit to reduce land use for biofuels and lower carbon intensity of biofuels
- With the market shifting to require more "vegetable oil" than "vegetable meal", increasing the oil content of oilseeds is an alternative to increase vegetable oil output without additional demand for farmland.

Forests residues



Policy makers are adopting a sector-by-sector approach to decarbonization, creating competition between different emissions reductions pathways

- Biofuels will compete with other pathways in most end-use sectors

Dominant and emerging decarbonization pathways	Powertrain		Fuel		
	Battery Electric	Hydrogen Fuel Cell	Biofuels	E-fuels	Other low CI fuels*
Car	✓	?	?	x	x
Truck	?	?	?	x	?
Plane	x	x	✓	?	x
Ship	x	x	?	x	✓

✓ Dominant pathway ? Alternative pathway x Low probability pathway

Note: * including liquefied natural gas, ammonia, methanol produced using blue or green hydrogen

The offering and how to purchase

Details of what's included

- Feedstocks for Advanced Biofuel Production publishes in **November 2022**.
- It is published as an extensive slide-deck in a **presentation** PowerPoint format.
- Accompanying **data** in Excel to enable the users to incorporate the forecasts and key assumptions used in the study in their internal analysis.
- **Support** from the authors of the study with questions.

How to purchase?

For details of pricing, and how to purchase, please contact your account manager.

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CONTACT US

The Americas	EMEA	Asia-Pacific	Japan
+1 800 447 2273	+44 1344 328 300	+604 291 3600	+81 3 6262 1887

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