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Technology and Costs

Biorenewable Insights: Biofuels for Land and Sea

Biofuels for Land and Sea is one in a series of reports published as part of NexantECA's 2018 Biorenewable Insights program.

Overview

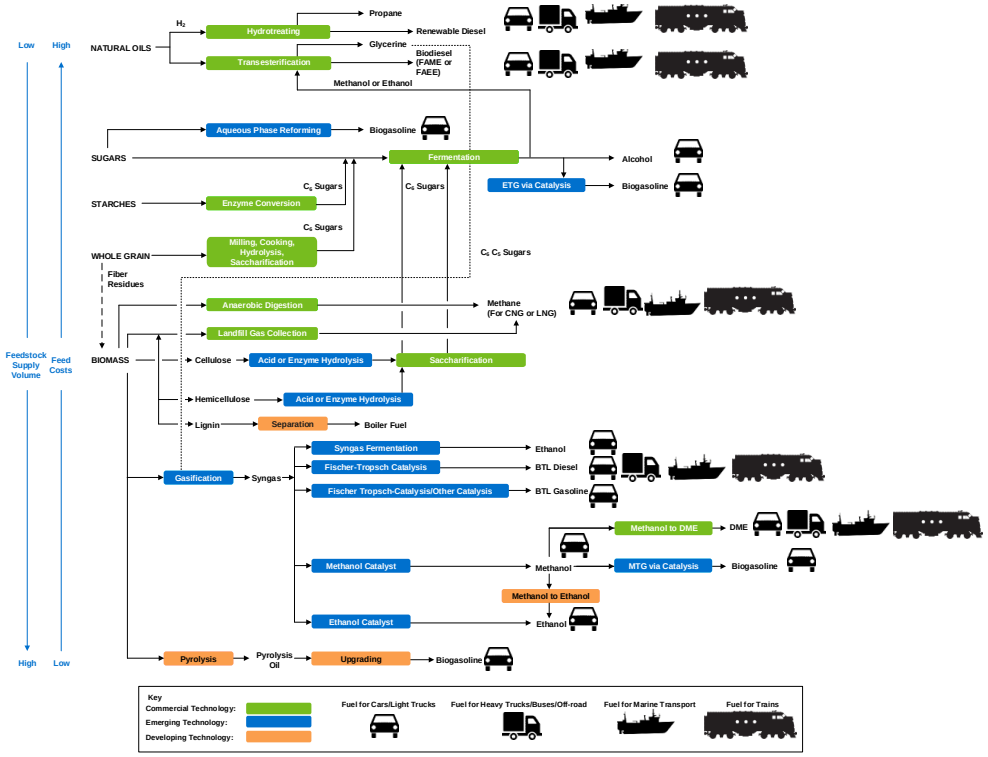
While there are many issues and drivers behind the development of biofuels, maybe the most important driver is the mitigation of a number of environmental problems from local toxic chemicals risks to climate change. There are many cost competitive options currently for reducing GHG emissions for both land and marine transport, even with challenging economic conditions, as concluded by the analyses in this study.

Land vehicle and marine engine systems have very different contexts, for example, electric drives are a major threat to all fuel demand in land transportation, conventional and bio-based, but not so much for ships. Shipping faces drastic reductions in allowable sulfur content of their fuels ("bunkers") by 2020, but land vehicle fuels have long had low sulfur specs. Land fuel use is dictated by local policy, logistics, and other conditions, while choice and supply ocean marine fuels is a global consideration. Scrubbers are an option, though an onerous one, for continuing to use high sulfur bunkers in ships.

The specifications for bunkers are otherwise much looser than for land internal combustion engines, and ships often carry several different fuels onboard. This BI report provides an overview of drivers, technological, and economic aspects of several relevant biofuels for land and sea including bioethanol, biodiesel, renewable diesel (HVO), biogasoline, bioreformate, LNG, CNG, biomethanol, bioDME, biobutanol, and bio-isobutanol.

Some of the following issues addressed in this report include:

- What are the major technologies for biofuels production? What technologies are still available? What players have exited the business?
- How do the process economics compare across the various biofuels and different geographic regions (e.g., USGC, China, Brazil, and Western Europe)?
- Who are the current players in the biofuels sector? What type of biofuels are planned in the short term? Where will new capacity be added?



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Technology and Costs comprises the Technoeconomics – Energy & Chemicals (TECH) program, the Biorenewable Insights program (BI), and the new Cost Curve Analysis. These programs provide comparative economics of different process routes and technologies in various geographic regions.

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