

Growth and sustainable products with biomass-based chemicals



Chemical companies can capitalize on the growing market for sustainability-related products by producing bio-based chemicals.

~70%

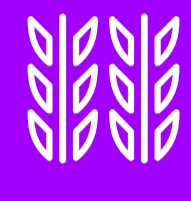
predicted increase in demand for sustainability-related chemical products from 2023 to 2028

11%

compound annual growth rate for sustainability-related chemical products from 2023 to 2028

A viable solution involves using “biomass”—organic waste materials—to make low-carbon chemicals.

First-generation (1G) biomass



Edible biomass

- e.g., sugar beet, sugar cane, wheat, maize, corn

Second-generation (2G) biomass



Non-edible biomass

- e.g., agricultural and forestry residues, lignocellulosic crops, biodegradable municipal solid waste

Third-generation (3G) biomass



Biomass from algae

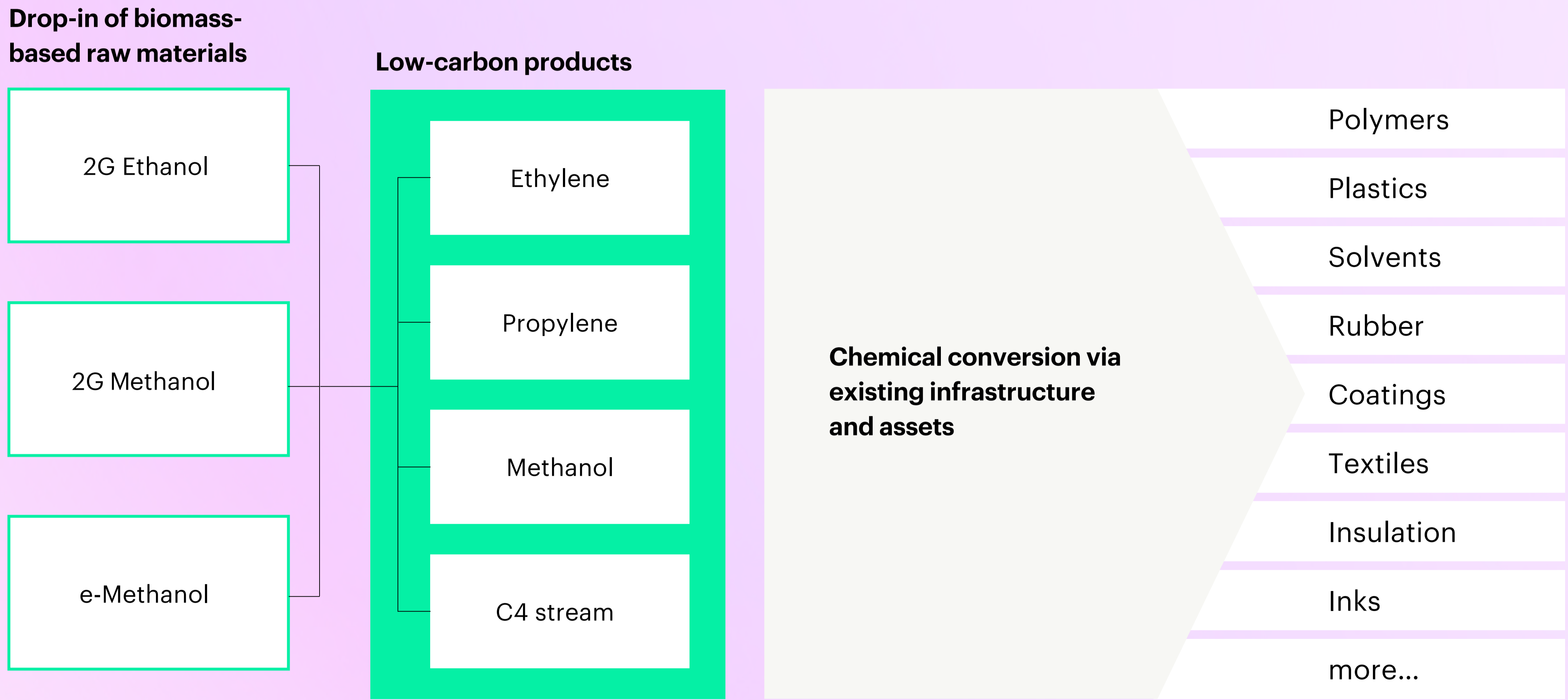
- e.g., macro- and microalgae

Chemical companies can use 2G biomass as an alternative to fossil materials, such as crude oil and natural gas.

We recommend allocating biomass as follows:

- 1 Prioritize the use of biomass for food and animal feed.
- 2 Allocate the remaining biomass for materials (e.g., chemicals).
- 3 For any leftover biomass, employ it for biofuels and bioenergy.

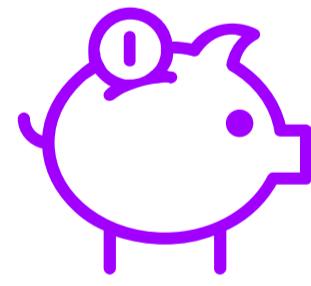
Platform molecules that are made using 2G biomass can be “dropped in” to existing chemical production processes.



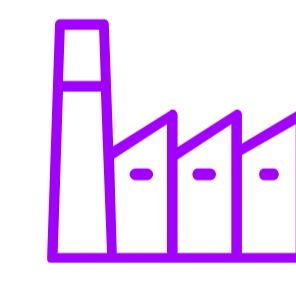
And the drop-in approach provides several benefits:



Decreasing greenhouse gas emissions, avoiding the extraction of fossil raw materials.



Preserving existing infrastructure, minimizing the need for large capital investments.



Mitigating stranded assets, allowing repurposing or phasing out of aging infrastructure.

~1 gigaton of CO_{2eq} yearly

would be cut by switching to biomass-based feedstocks

Chemical companies can capitalize on this promising new market by focusing on five key actions:

- 1 Leverage 2G biomass to produce eco-friendly chemicals.
- 2 Invest in platform molecule production to lower costs—2G ethanol, 2G methanol and e-methanol.
- 3 Establish remote modular plants in markets near biomass sources.
- 4 Collaborate for sustainable biomass management.
- 5 Encourage increased recycling rates and invest in recycling capabilities.



Read more:
accenture.com/biomass

