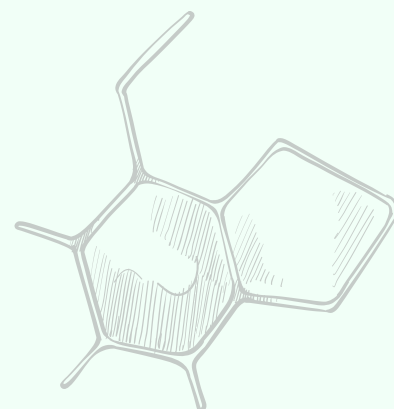
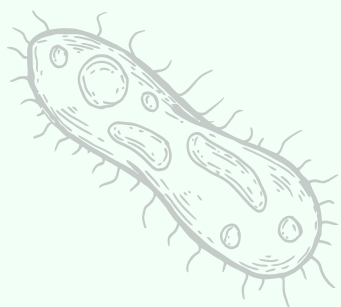
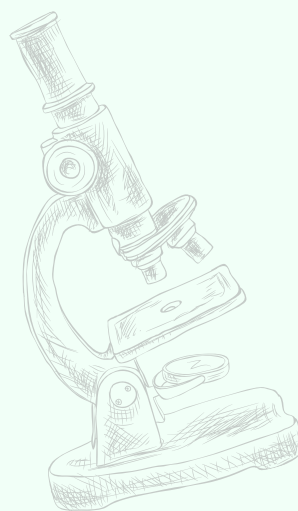
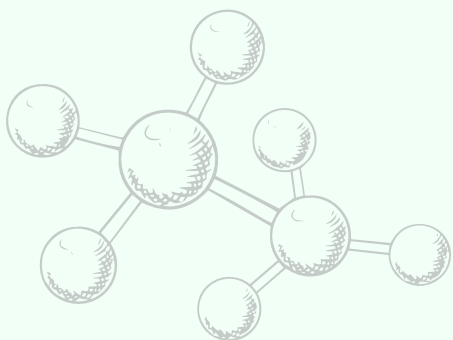
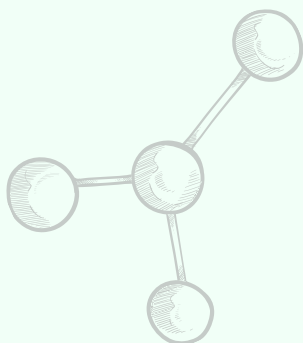
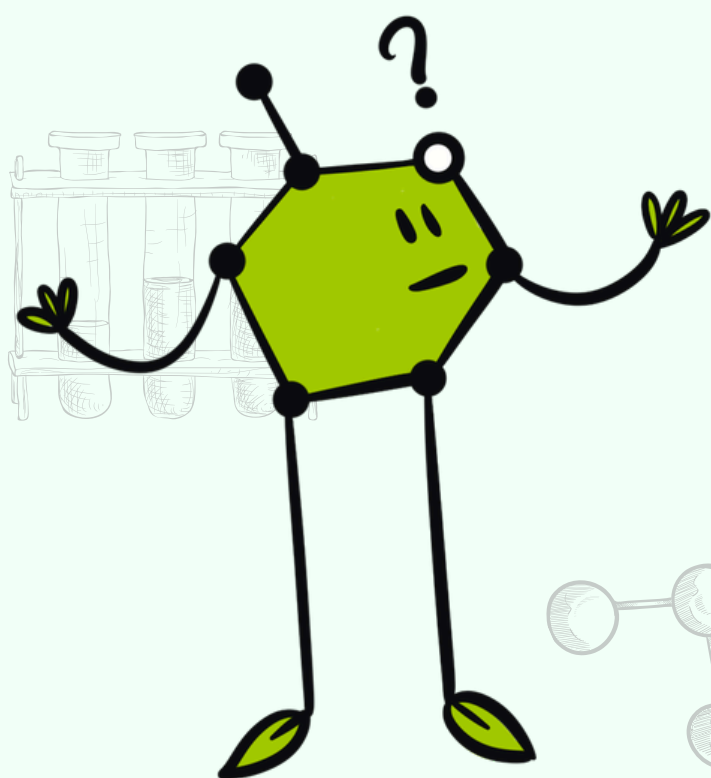




A CLOSER LOOK AT BIOFUELS



The different generations of biofuels

1st generation

SOURCE: Food crops (maize, rapeseed, sunflowers, beetroot, etc.)

→ Risk of competition with food uses and land use



2nd generation

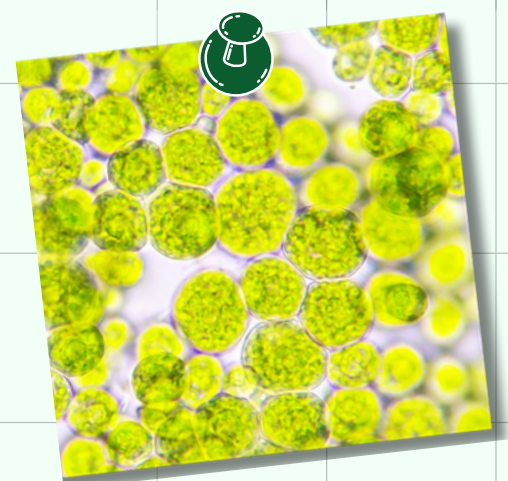
SOURCE: Agricultural and forestry waste, used oil

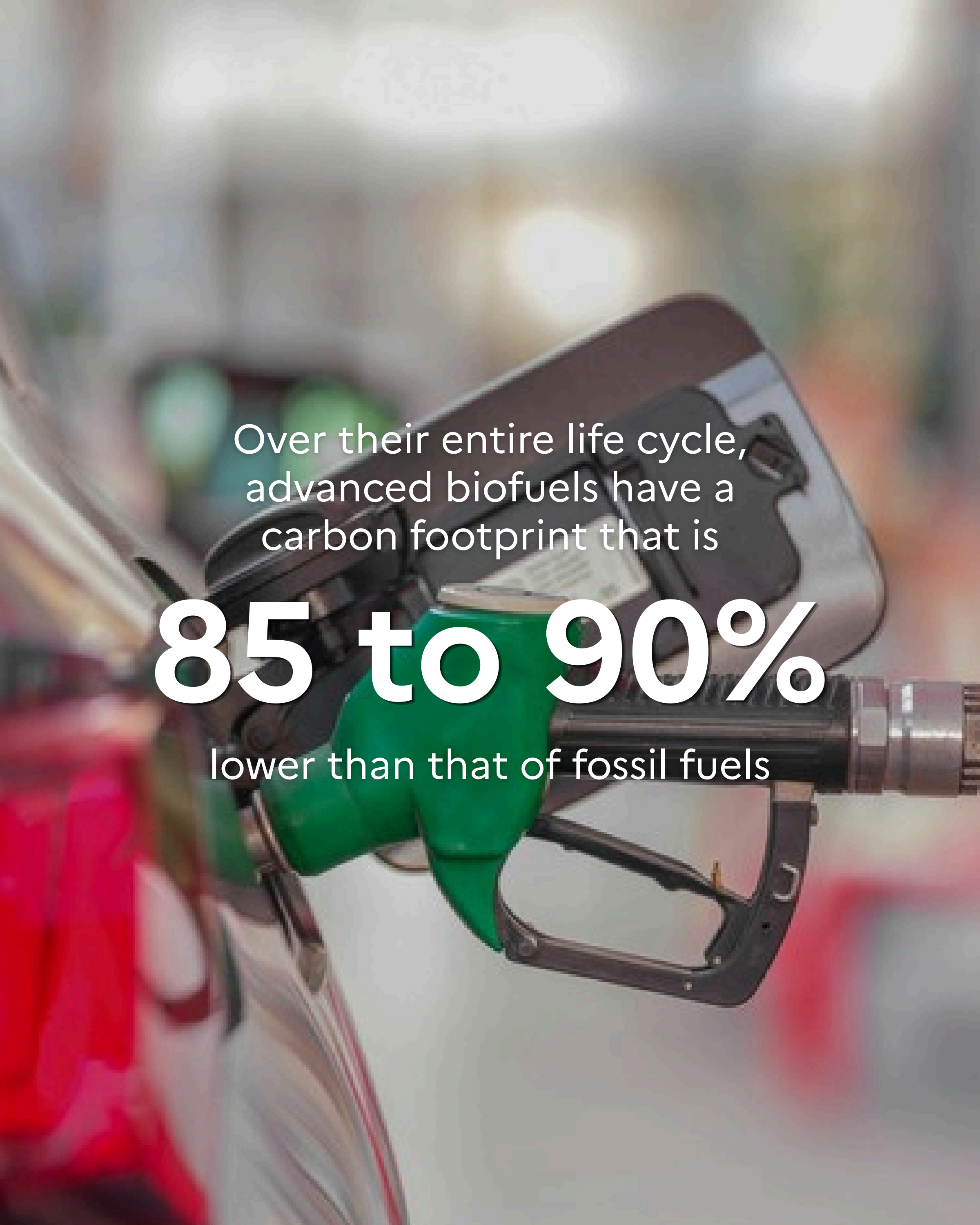
→ Utilisation of non-food resources



3rd generation

SOURCE: Microalgae and other microorganisms





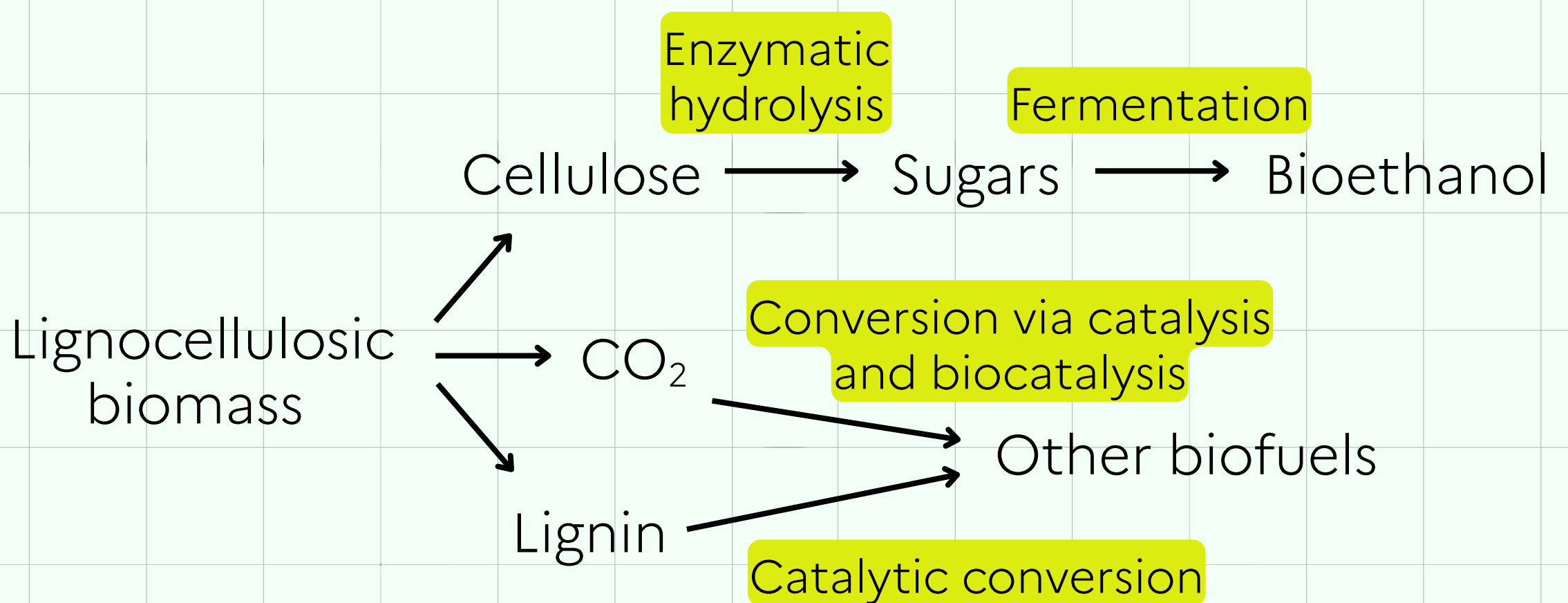
Over their entire life cycle,
advanced biofuels have a
carbon footprint that is

85 to 90%

lower than that of fossil fuels

From biomass to biofuels

Lignocellulosic biomass (straw, wood, etc.) contains molecules that must be extracted in several stages in order to produce **Biofuels**



Note:

SP95-**E10** fuel: contains **10 per cent** bioethanol
E85 superethanol: contains **85 per cent** bioethanol



The challenge of scaling up

The Optisfuel project aims to improve the efficiency of biorefineries by focusing on:

1.

Improving
fermentation
yields

2.

The conversion
of CO₂ through
catalysis and
biocatalysis

3.

The conversion
of lignin into
biofuel

An innovative strategy based on combining areas of expertise

The Optisfuel project explores the complementary nature of biocatalysis and chemical catalysis.

Biocatalysis

The use of enzymes or microorganisms to carry out chemical reactions

High selectivity under mild conditions

Chemical catalysis

The use of catalysts such as metals, acids, bases or oxides

High responsiveness



Spotted at the 2026 Science Festival

📍 Musée des Arts et Métiers, Paris

