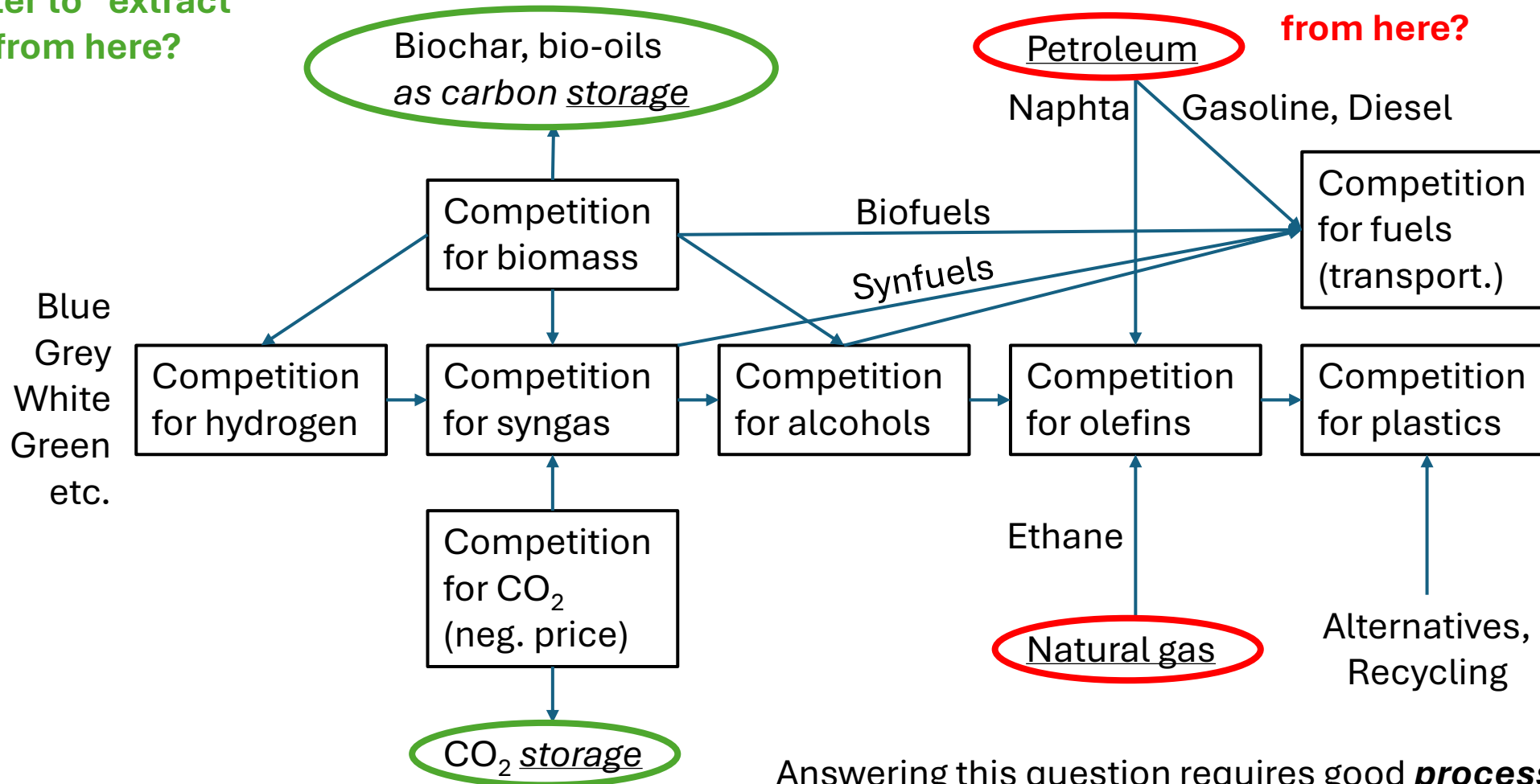


Fuels and Petrochemicals in 2050

Is it better to “extract”
carbon from here?

Or a smaller amount
from here?



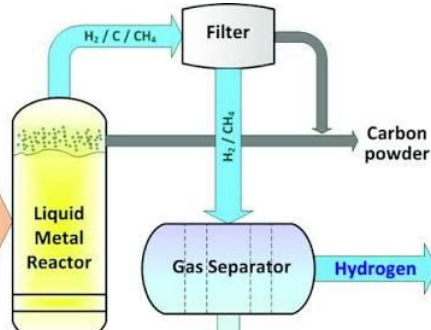
Answering this question requires good **process modelling**
supporting good, economy-wide **energy systems modelling**

Pyrolysis: potentially attractive but underrepresented in energy systems models

Intermittent electricity

Heat storage

Heat Power



C

Carbon Removal Credits (bio-solids)

2H_2

Natural gas CH_4

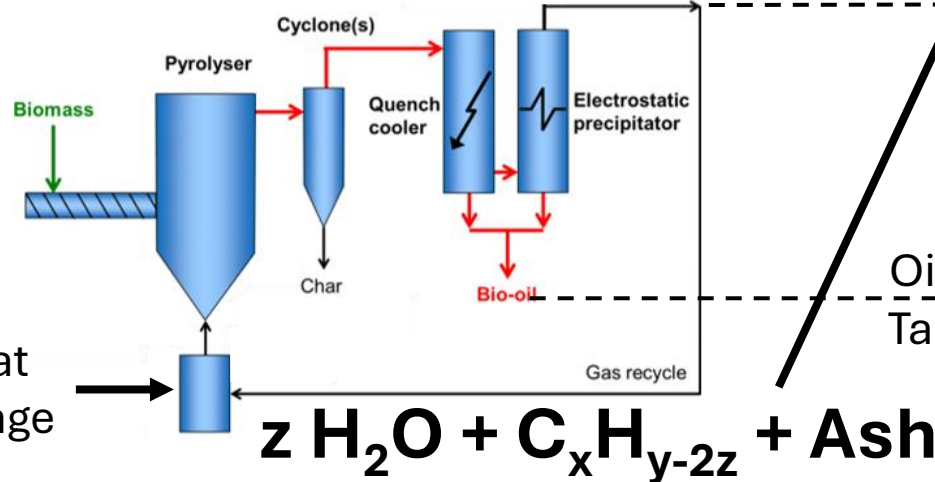
Inputs

Biomass

$\text{C}_x\text{H}_y\text{O}_z + \text{Ash}$

Intermittent electricity

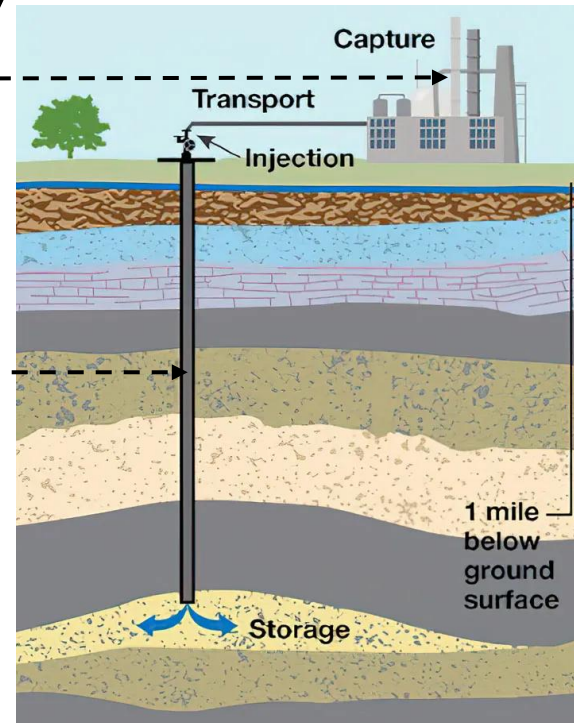
Heat storage



Gases

Oils
Tars

$z\text{H}_2\text{O} + \text{C}_x\text{H}_{y-2z} + \text{Ash}$



Outputs

Carbon Removal Credits (bio-liquids & bio- CO_2)

Everything else "bio" diverts carbon from storage, puts oxygen in the wrong place (CO , CO_2), and will NOT help decarbonize anything because it is (indirectly) just coal-to-X?