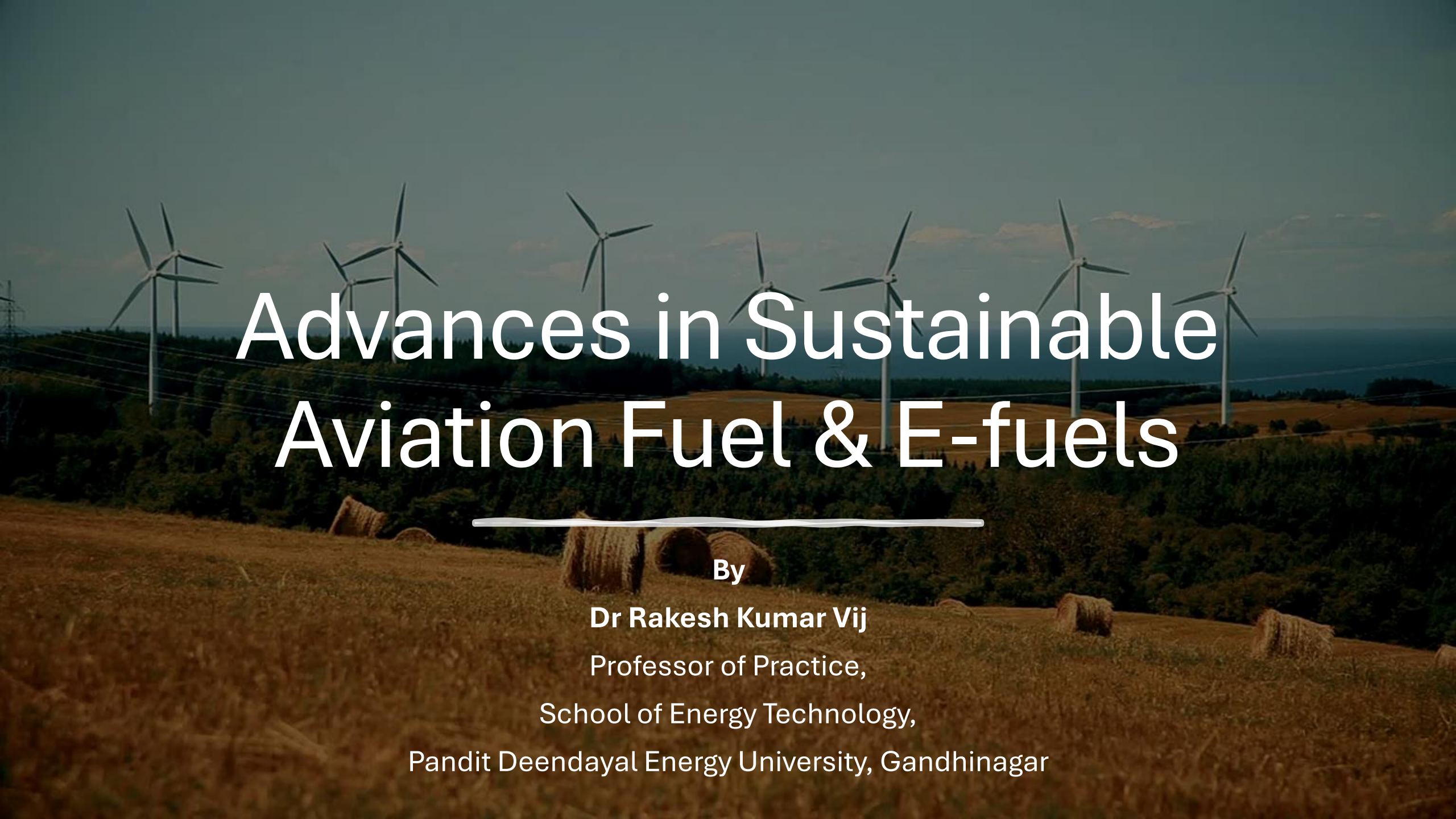

Advances in Sustainable Aviation Fuel & E-fuels

By

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Introduction

- Electro-fuels (or eFuels as they are more commonly known) are types of synthetic fuels produced by synthesizing renewably-produced hydrogen with captured carbon to create a new hydro-carbon fuel.
- eFuels are a high energy dense liquid fuel that can be ‘dropped-in’ as a direct replacement for existing petroleum fuels used in shipping and aviation and, in effect, offer a chemically identical low carbon alterative to replace oil-derived fuels.

Aviation Fuels

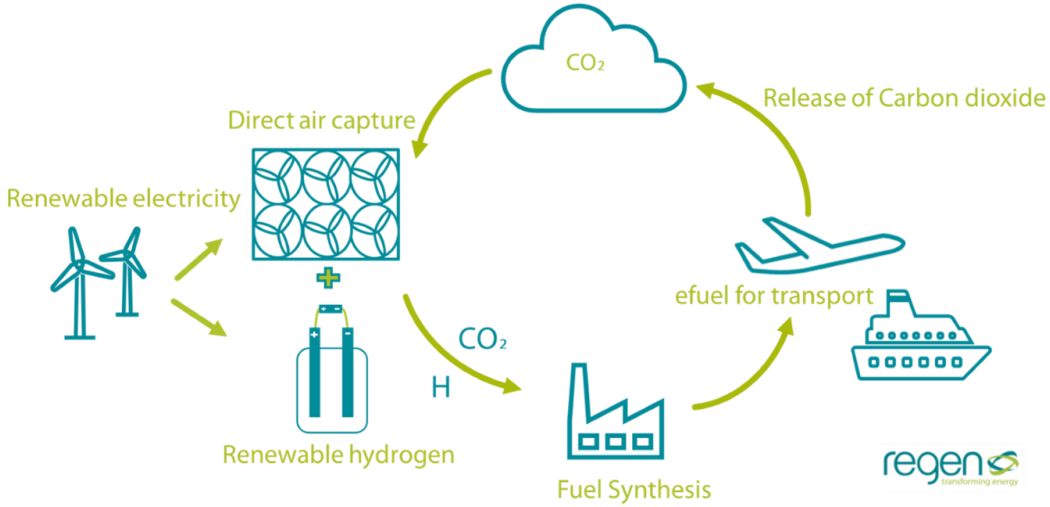
Aviation industry is responsible for the 2 % of global carbon emissions according to International Energy Agency (IEA)

The demand for air travel is increasing year by year mainly in developing countries.

The growth in demand will increase the carbon emissions, unless a low carbon fuels are used.

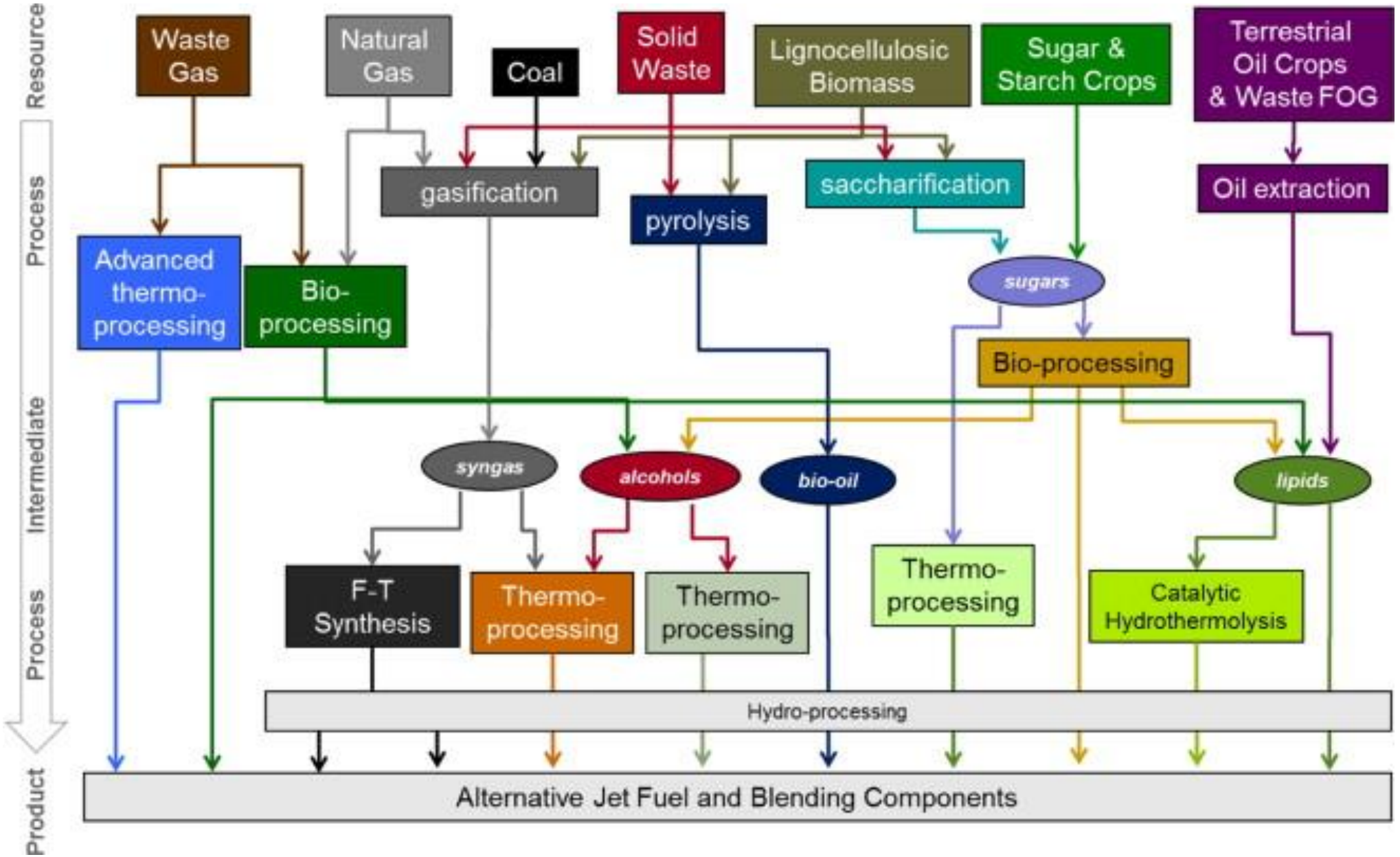
The bio aviation fuels are an alternate option for the aviation fuel but still these fuel have carbon emissions.

The next gen aviation fuel with net zero emission is Hydrogen

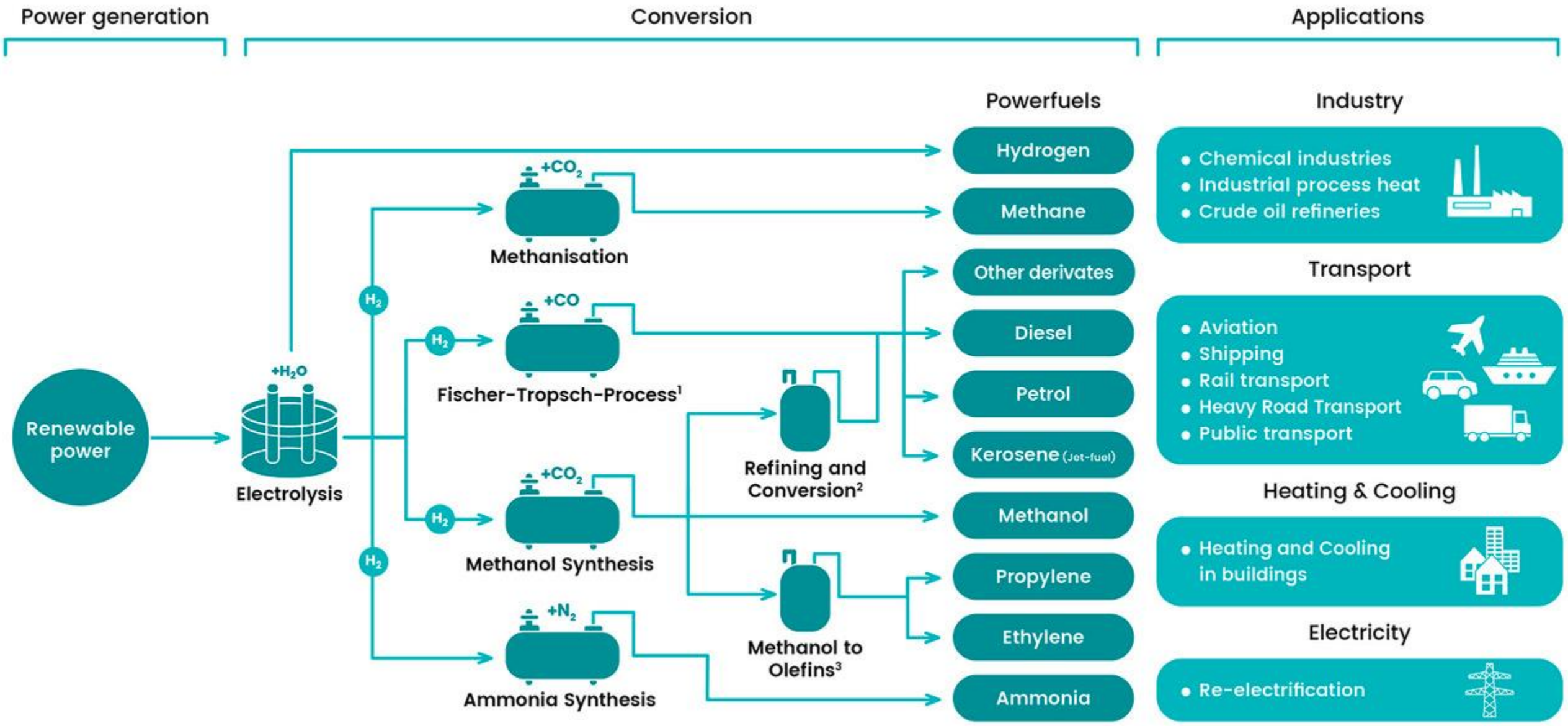


Fuel Lifecycle

Aviation fuel (biojet fuel) production pathways



eFuel Production Pathways and Its application



❶ Includes: Fischer-Tropsch synthesis, hydrocracking, isomerization and distillation.

❷ Includes: DME/OME synthesis, olefin synthesis, oligomerisation and hydrotrating.

❸ Methanol-to-olefins process.

Conclusion

- The aviation sector contributes to 2% of GHG emission.
- Hydrogen can be the viable green energy for the commercial jets, with a zero pollutants depending on the hydrogen production process.
- Lack of infrastructure and storage concerns, and the production cost.
- The entire cost of changing the aircraft construction was huge and have many downsides.
- Hydrogen is a the future fuel for ambitious net-zero policy in the Aviation and other sectors