

Workshop 2 : CO₂ Valorization

The basis assumption that we made was to consider CO₂ not as a waste anymore but as a raw material for further applications. Amongst various applications, the main ones were to use CO₂ as

- Solvent (EOR, supercritical extraction)
- Syngas (energy/chemistry)
- Agriculture (fertilization/greenhouse)
- Algae
- Food industry (Champagne)
- New materials (cement, ...)



Based on the future potential of those technologies, we've decided to select three of them. The results of our technology evaluation is presented in table.

Application	Quantity potential	Temporary or permanent storage?	Added value/ Advantages	Bottleneck / Drawbacks
Syngas Energy Chemicals	+++ +	T P	- Carbon is used 2 times! - Flexibility	- High CAPEX - Technical challenges (Catalyst)
Algae	—	T / P	- Diversity of products - Green process	- High CAPEX - Land use - Slow process
New materials	+	P	- Improve material properties	- Research on-going

This work has given us another insight about CO₂, so that we see it should not be considered as a waste anymore, but its potential applications are varied and numerous.

However, the amounts of CO₂ emitted are still very large so that those applications will not be sufficient to consume all the CO₂. But in the framework of a society with decarbonated energy sources, it must be envisaged amongst other alternatives:

- CO₂ storage
- Emission reductions
- Buying permits on the CO₂ European Trading system

In this context, political decisions are of crucial importance.