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IPCC REPORT: THE ROLE OF CARBON CAPTURE AND UTILISATION (CCU) TO MITIGATE CLIMATE CHANGE

26TH OF APRIL 2022, 2-5PM (CET) - HYBRID EVENT

The event will be starting soon…

PRESS CLUB BRUSSELS EUROPE
95 Rue Froissart, Brussels (BE)

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WELCOME

IPCC report

The role of Carbon Capture and Utilisation (CCU) to mitigate climate change

Dr Célia Sapart

Director Communications and Climate Science

Celia.Sapart@co2value.eu

Agenda

1.30 pm	Welcome Coffee
2-2.15 pm	**Introduction: CCU in the IPCC AR6 WG3** Dr Célia Sapart, CO_2 Value Europe, Belgium
2.15-2.30 pm	**Where do we stand today in terms of CCU technologies?** Dr Deepak Pant, VITO, Belgium
2.30-2.45 pm	**The role of CCU in the Energy systems** Prof Jan Mertens, UGent/ENGIE, Belgium/France
2.45-3 pm	**The role of CCU in the building sector** Dr Paula Carey, Carbon8Systems, UK
3-3.15 pm	**The role of CO_2 feedstock in the chemical industry** Prof. Angela Dibenedetto, University of Bari, Italy
3.15-3.30 pm	**Q&A**
3.30 pm	Coffee Break
3.50-4.05 pm	**The importance to assess the impact of CCU technologies** Prof Andrea Ramirez, TU Delft, The Netherlands
4.05-4.20 pm	**The importance of Social and Policy Acceptance** Prof Katrin Arning, Ansbach University of Applied Science, Germany
4.20-4.35 pm	**Conclusion and Perspective** Prof. Volker Sick, Global CO_2 Initiative, University of Michigan, USA
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5 pm	End of event

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Questions?

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INTRODUCTION

IPCC report

The role of Carbon Capture and Utilisation (CCU) to mitigate climate change

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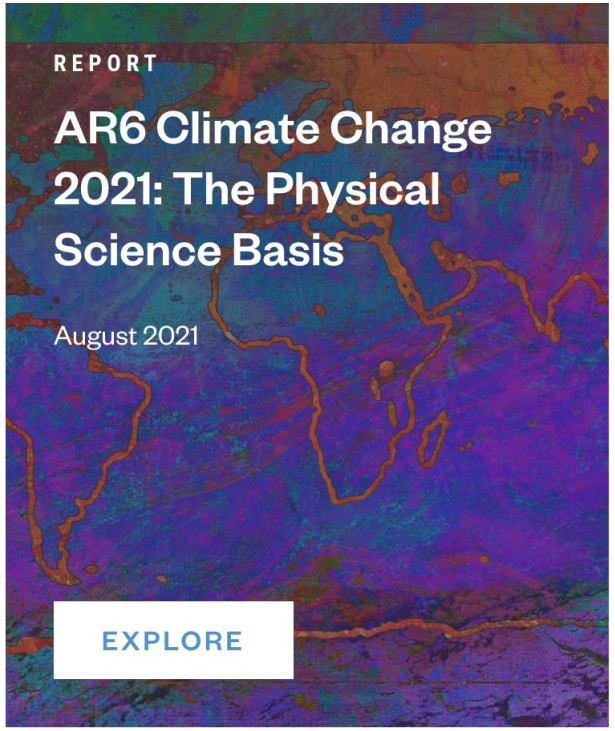
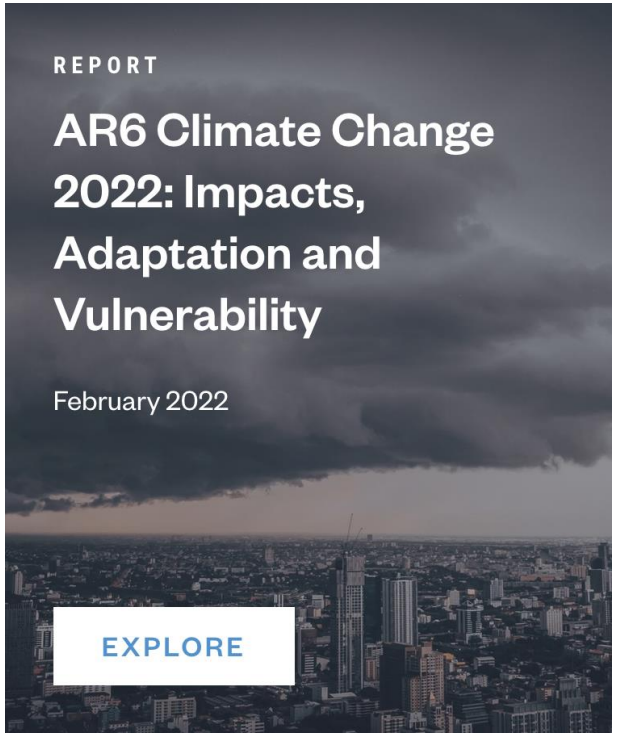
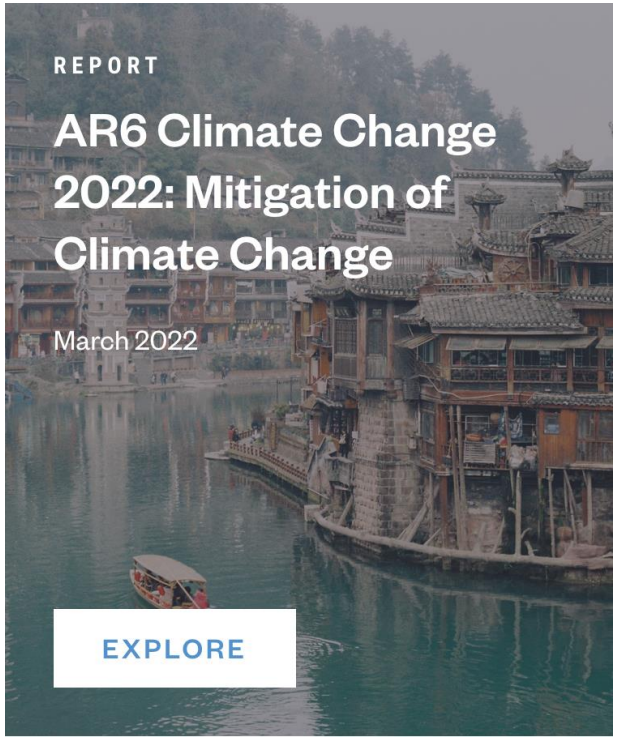
Intergovernmental Panel on Climate Change (IPCC)

6th Assessment Report released in 2021-2022







IPCC provides objective and comprehensive scientific information on human-induced climate change, incl. the natural, political, and economic impacts and risks, and possible response options.

Intergovernmental Panel on Climate Change (IPCC)

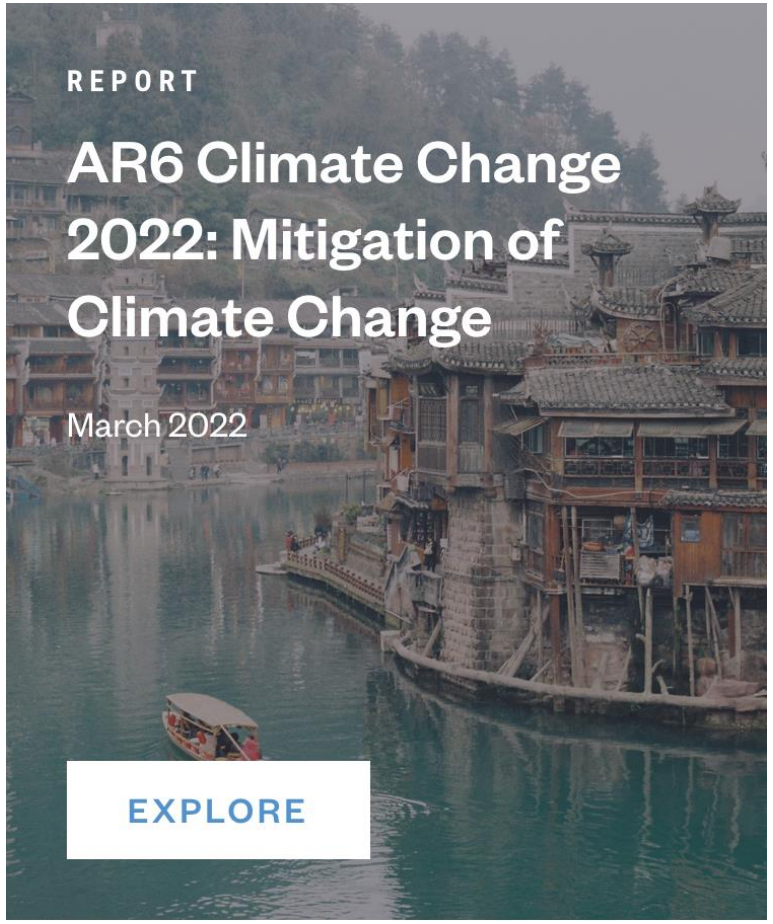
6th Assessment Report released in 2021-2022

Some numbers

- IPCC is composed of 195 member states
- First assessment report was published in 1990

IPCC AR6 WGIII

- More than 600 international authors from 65 countries
- 18,000 scientific publications have been assessed
- 3,000 pages including Summary for Policy Makers and Technical Summary
- About 60,000 comments during the expert review



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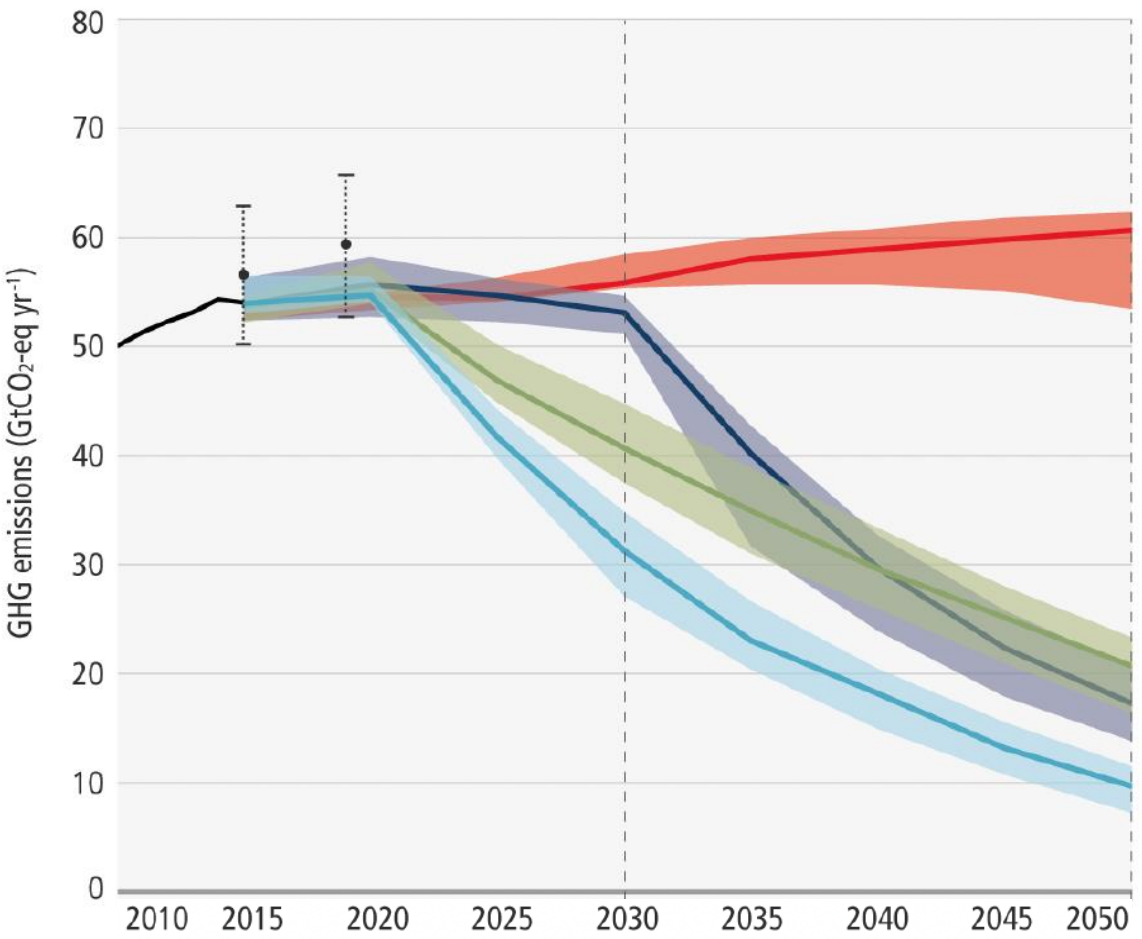
General messages of the IPCC AR6 WG3

Human-induced GHG emissions have never been as high as today.

To prevent a massive degradation of Life on Earth, we need to limit global warming to 1.5°C.

This implies:

- inverting the emission trend by 2025
- halving our emissions by 2030
- reaching carbon neutrality by 2050



Current policy trend (+ 3degC).

Intermediate (+ 2 degC)

Ultimate objective (+ 1.5 degC)

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General messages of the IPCC AR6 WG3

"Mitigation pathways that limit warming to 1.5°C, or 2°C, involve deep, rapid, and sustained emissions reductions. Net zero GHG emissions are only possible through systemic climate mitigation actions at all levels of the society"

General messages of the IPCC AR6 WG3

- **Solutions currently exist in all sectors** to at least halve GHG emissions by 2030.
- Solutions should be based on **sobriety**, **energy efficiency** and **circularity** of goods, wastes and resources
- **Action will cost far less than inaction** and as early we start less it will cost in money, but also in human lives, health issues and discomfort.
- **Industrial symbiosis and Intersectoral partnerships are the keys to success.**
- **Enough capitals are available globally**, but the money flows towards the transition should be multiplied by 3 to 6.
- **No more investment on fossil carbon infrastructures are compatible with reaching climate objectives.**

Urgent need for more low carbon energy sources, but also for alternative carbon feedstock

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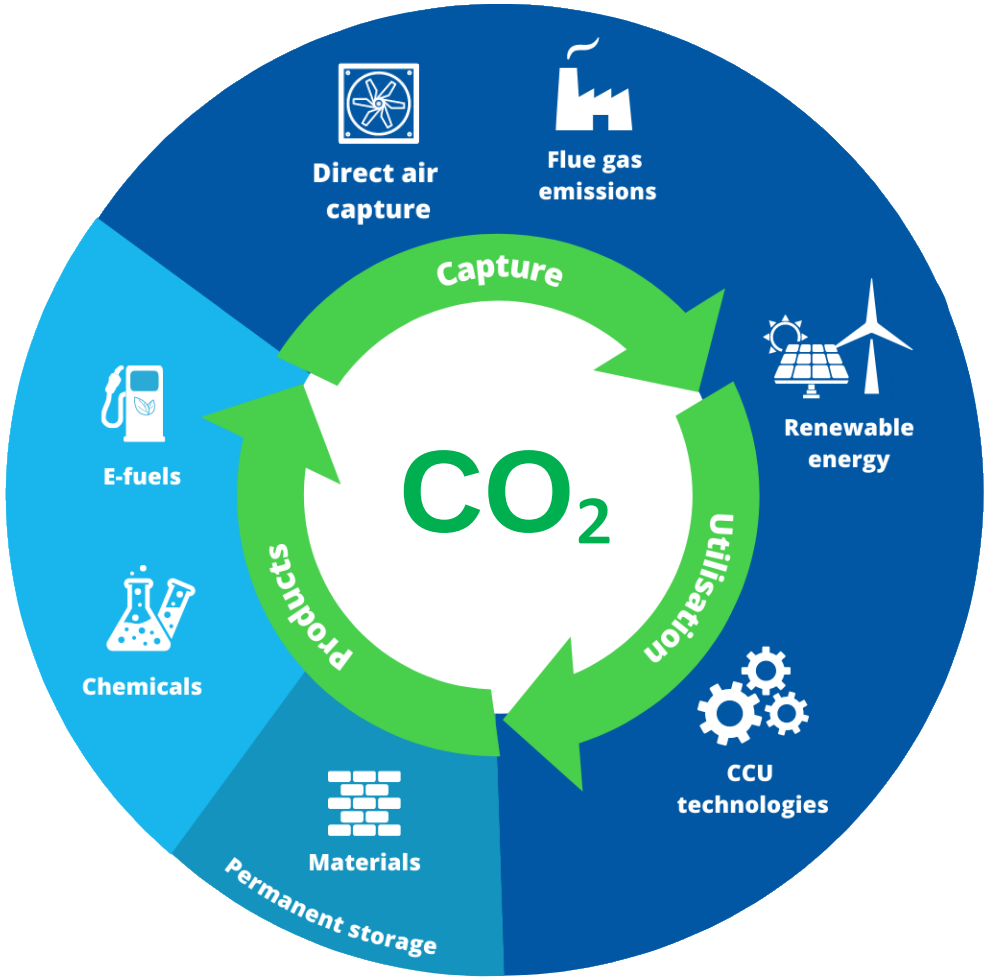
General messages of the IPCC AR6 WG3

"There is growing interest in creating a "**circular carbon economy**", wherein CO_2 is converted into reusable materials. This is especially relevant for the transitions of economies dependent on fossil fuel revenue"

The role of Carbon Capture and Utilisation (CCU)

IPCC definition:

CCU refers to a process in which CO_2 is captured and the carbon is then used in a product. **The climate effect of CCU depends on the product lifetime, the product it displaces, and the CO_2 source (fossil, biomass or atmosphere).** CCU is sometimes referred to as Carbon Dioxide Capture and Use, or Carbon Capture and Utilisation.“



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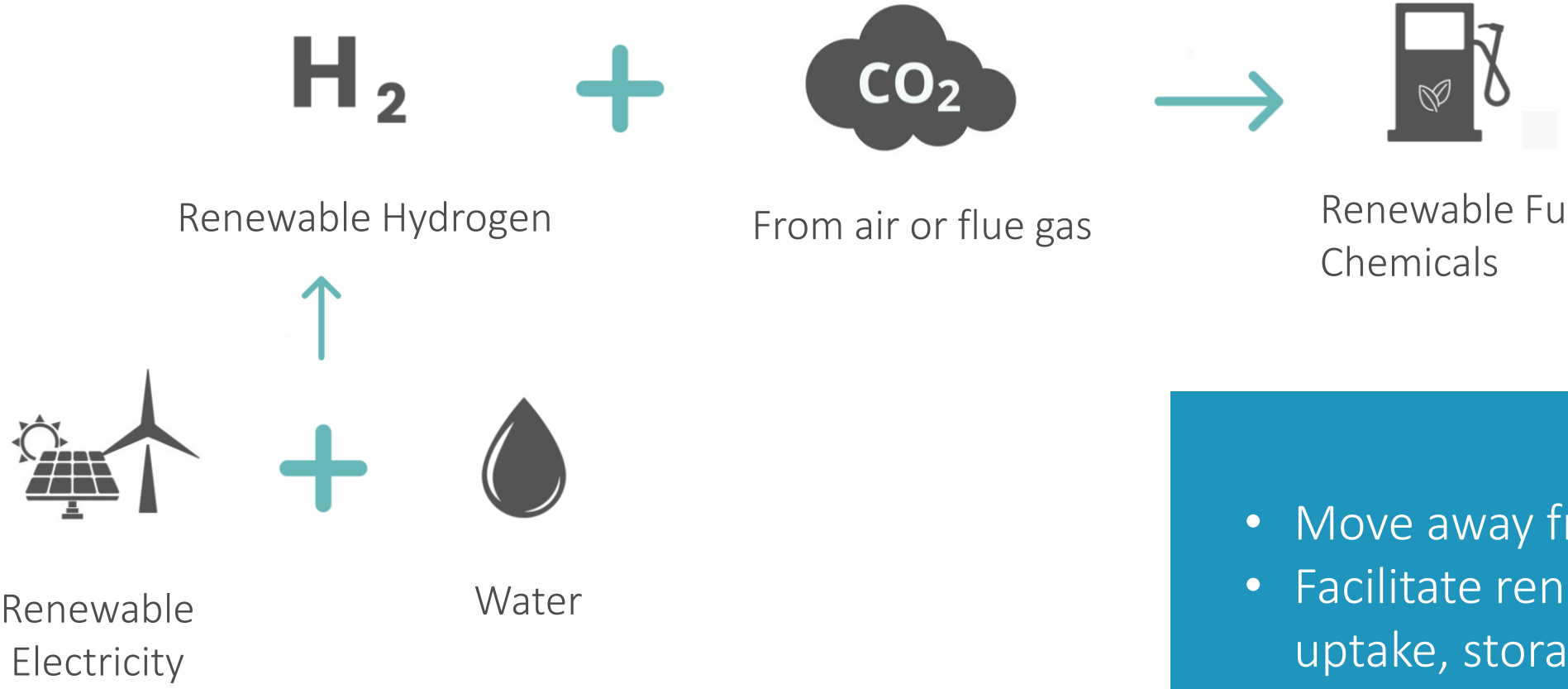
The role of Renewable Fuels and Chemicals



- Move away from fossil fuel
- Facilitate renewable electricity uptake, storage and transportation
- Reduce CO_2 emissions

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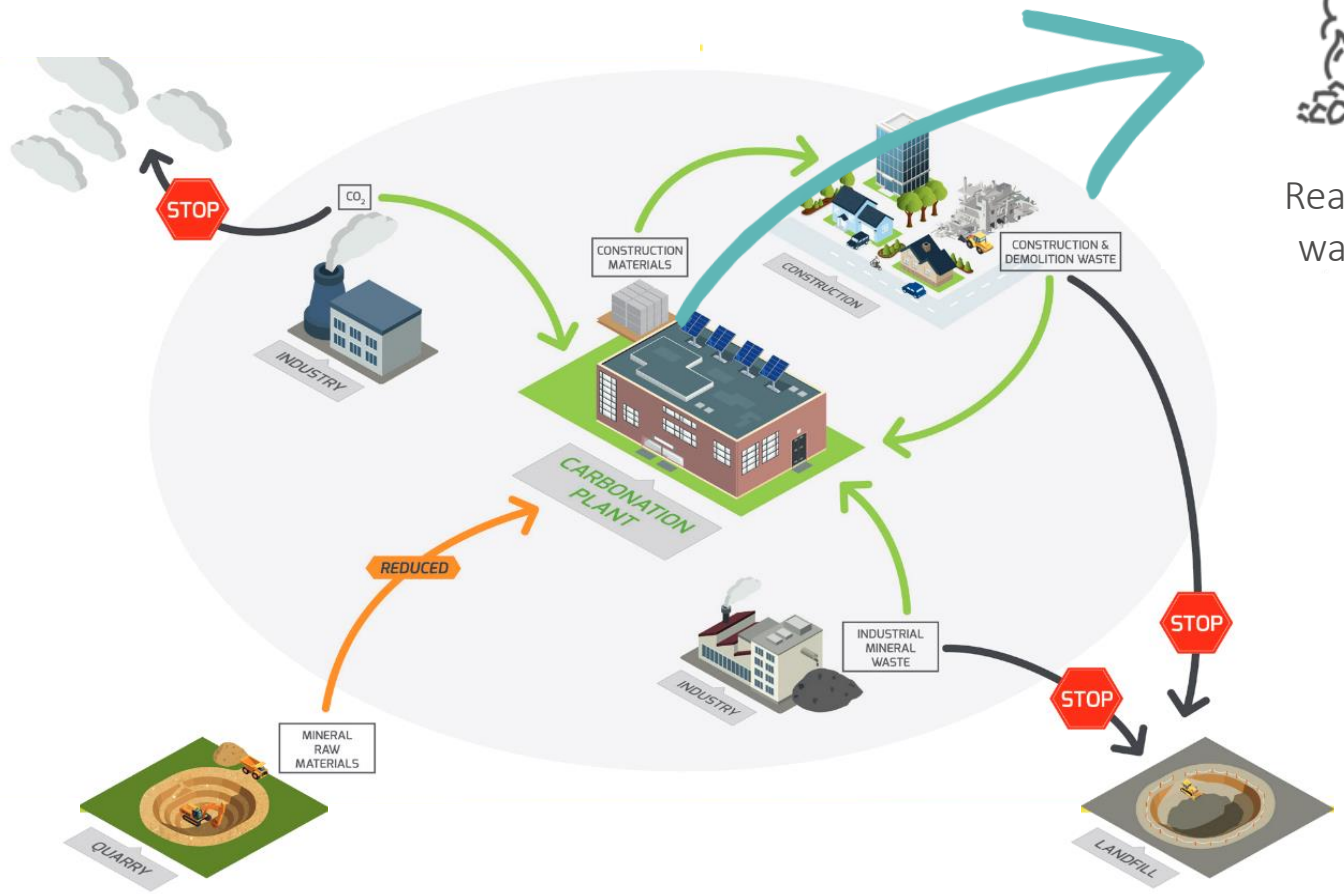
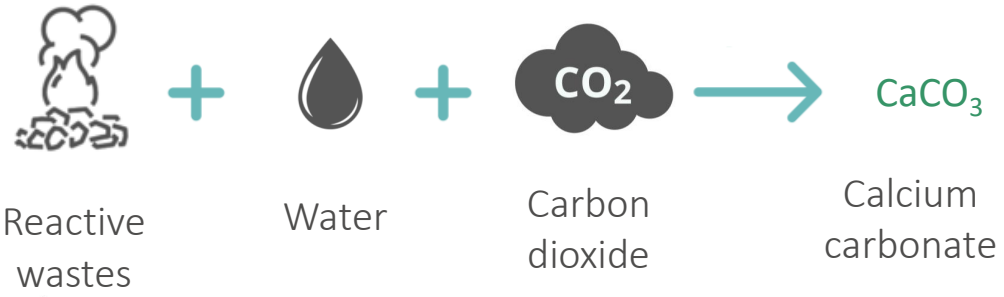
The role of CO_2 mineralisation





- Reduction of **landfill**
- Reduction of **mineral raw material use**
- **CO_2 is stored permanently** in building material
- **Stronger and more sustainable** material

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CCU key statements from the IPCC AR6 WGIII (Opportunities)

- CO_2-based fuels and feedstocks such as synthetic methane, methanol, diesel, jet fuel and other hydrocarbons from **CCU represent drop-in solutions** with limited new infrastructure needs.
- **CCU has the technical potential to decouple chemical production from fossil resources, reducing annual GHG emissions by up to 3.5 Gt CO_2-eq in 2030.**
- Some technological development for several CCU pathways are still in the laboratory, prototype, and pilot phases, while others have been fully commercialized.
- There are clearly **strong interactive effects** between low carbon electrification, switching to biomass, hydrogen, ammonia, CO_2-based fuels and CCS.

CCU can provide CO_2 Removal (CDR) solutions when atmospheric or biogenic CO_2 is durably stored in products.

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CCU key statements from the IPCC AR6 WGIII (Challenges)

- There may be a highly unpredictable competition between fossil, biogenic and direct air capture carbon to provide highly uncertain chemical feedstock, material and fuel needs.
- CCU has been envisioned as part of the "circular economy" but conflicting expectations on CCU and its association or not with CCS leads to different and contested framings.
- Risk perception and public acceptance on CCU are today difficult to assess as many people may not have formed stable attitudes regarding these technologies.
- The net GHG mitigation impact of CCU depends on numerous factors which are not easy to assess.

The role of CCU as climate mitigation solutions needs to be determined by life cycle analysis in a systemic way

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Thank you!

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