

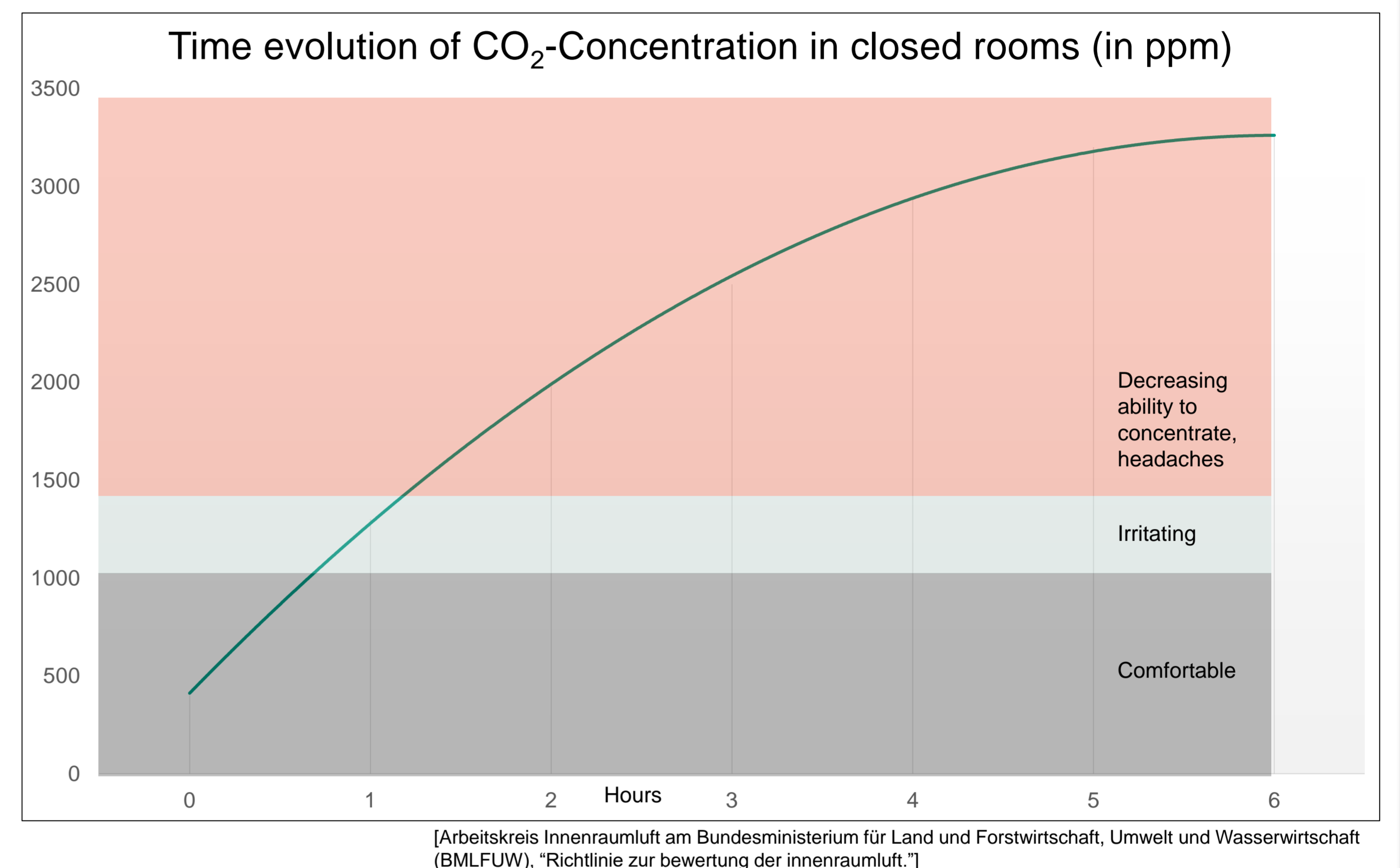


Sparkling DAC

Decentralized, modular and flexibly operated Direct Air Capture Prototype

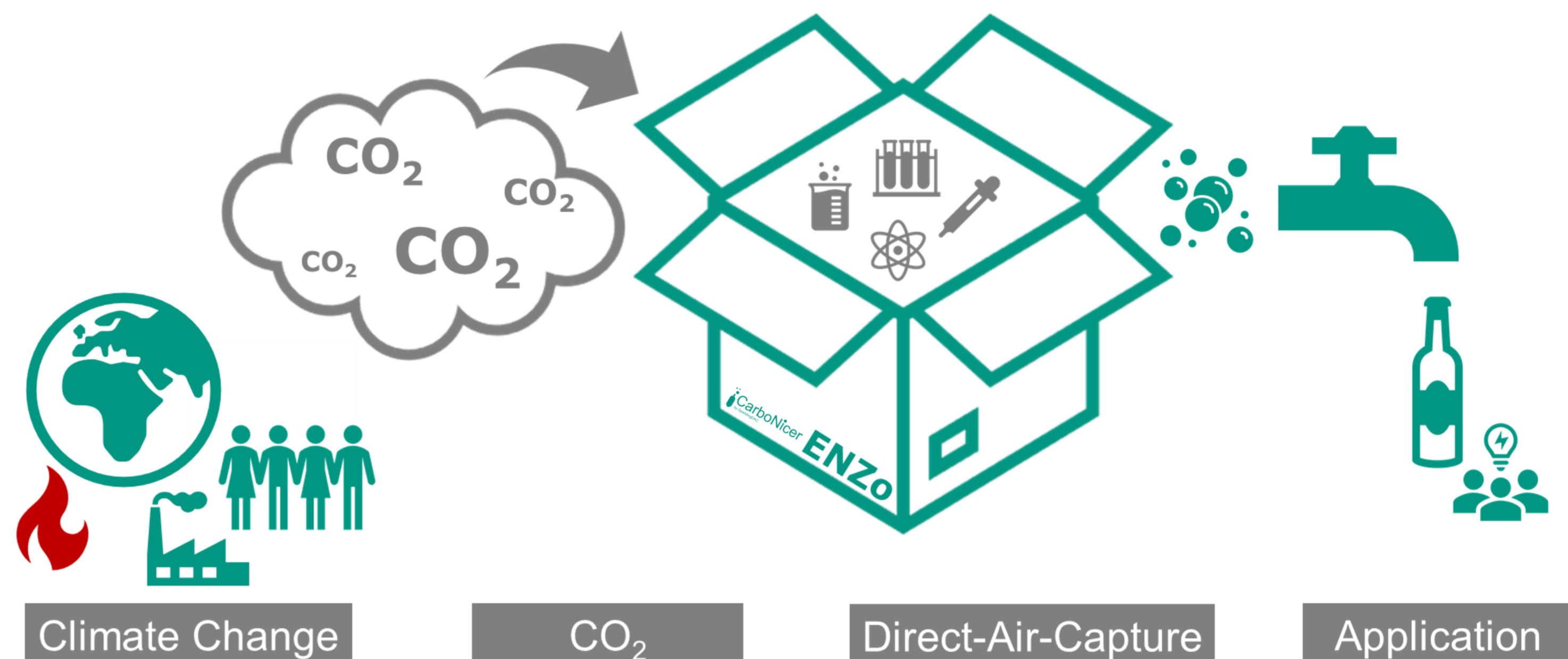
Motivation

- Interdisciplinary ENZO doctoral students project
- CO₂ concentration is steadily increasing
[International Energy Agency, "Net zero roadmap: A global pathway to keep the 1.5 °C goal in reach - 2023 update."]
- If 2050 concentration overshoot → second half of the century with negative Emission Technologies only
- Large increase in CO₂ concentrations in closed rooms (e.g. Offices and apartments)



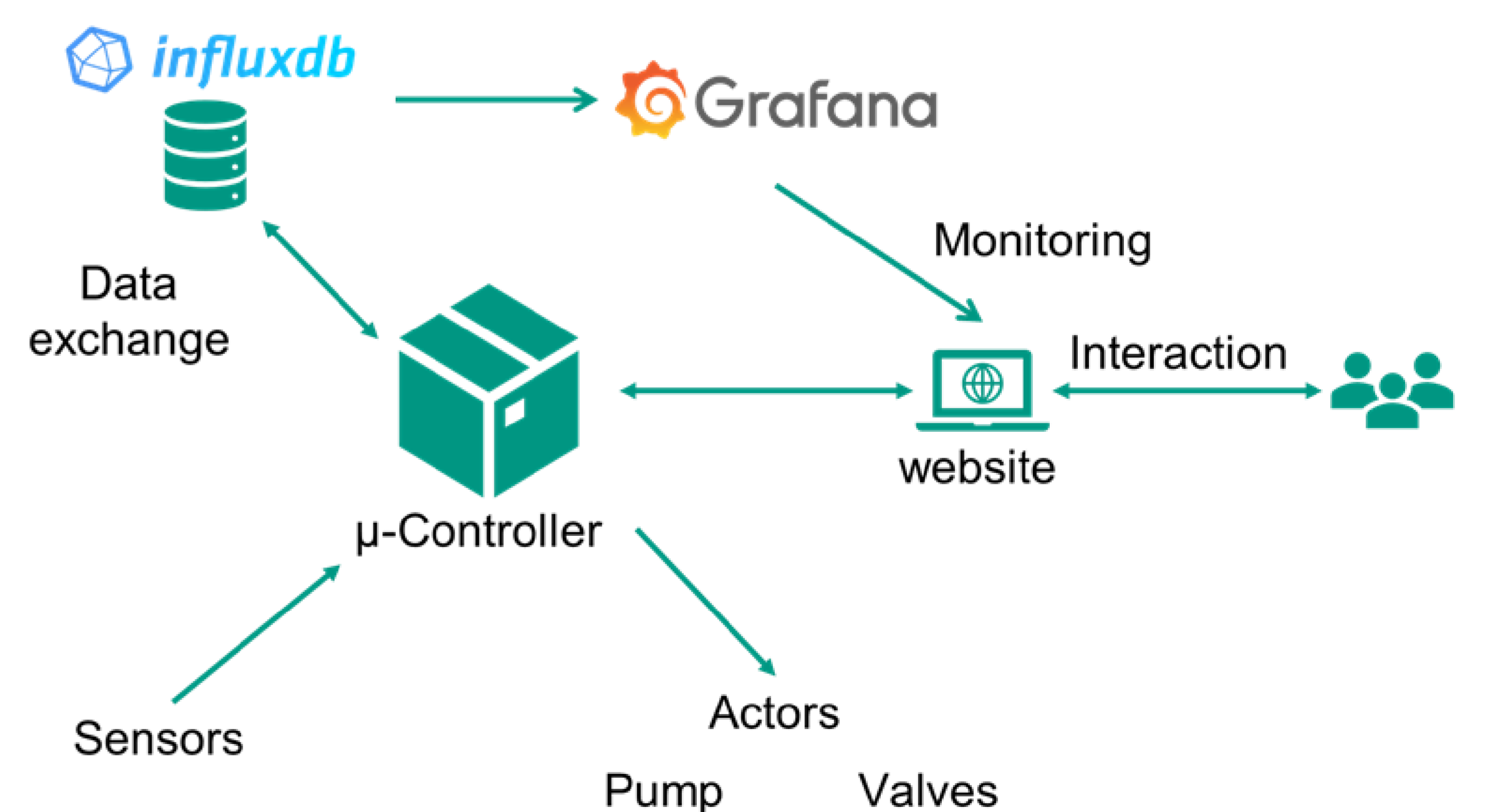
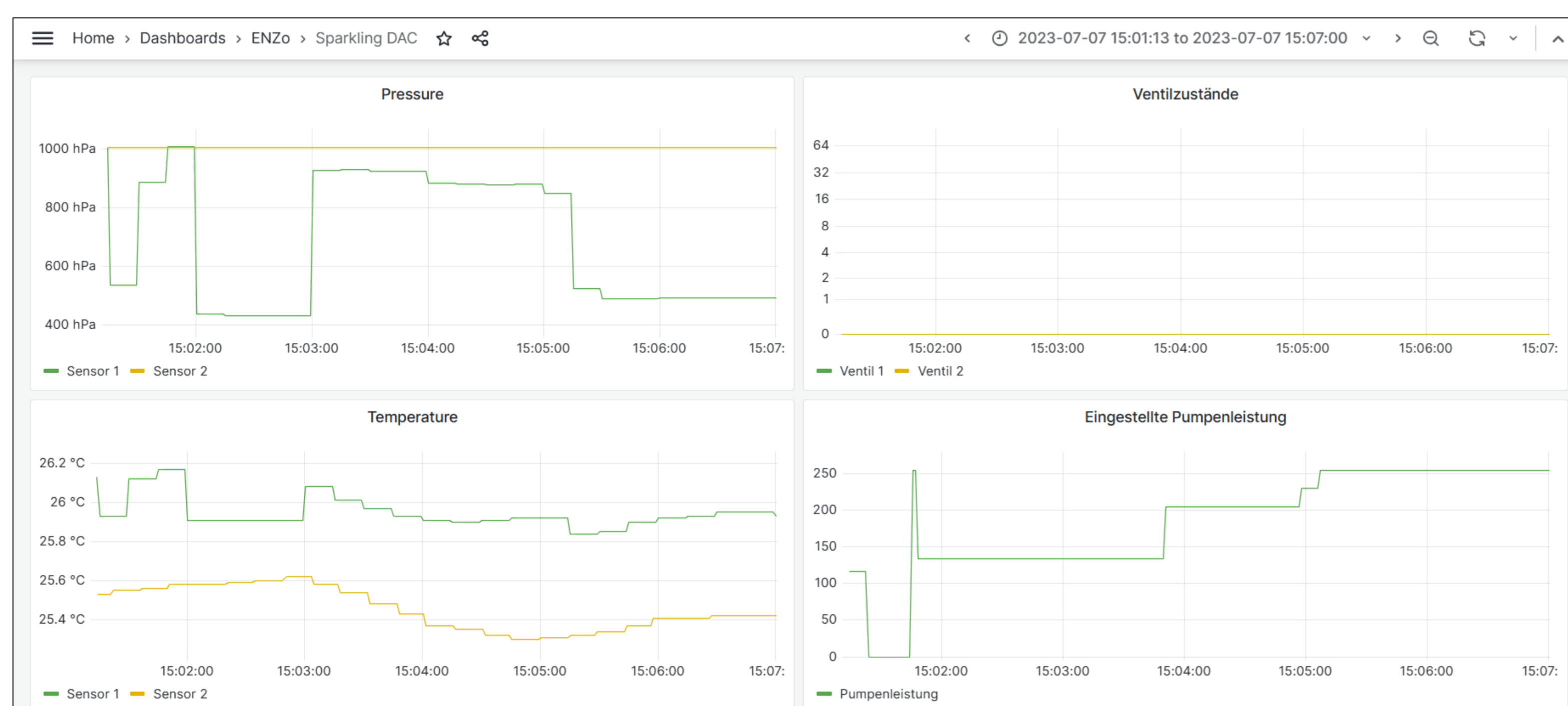
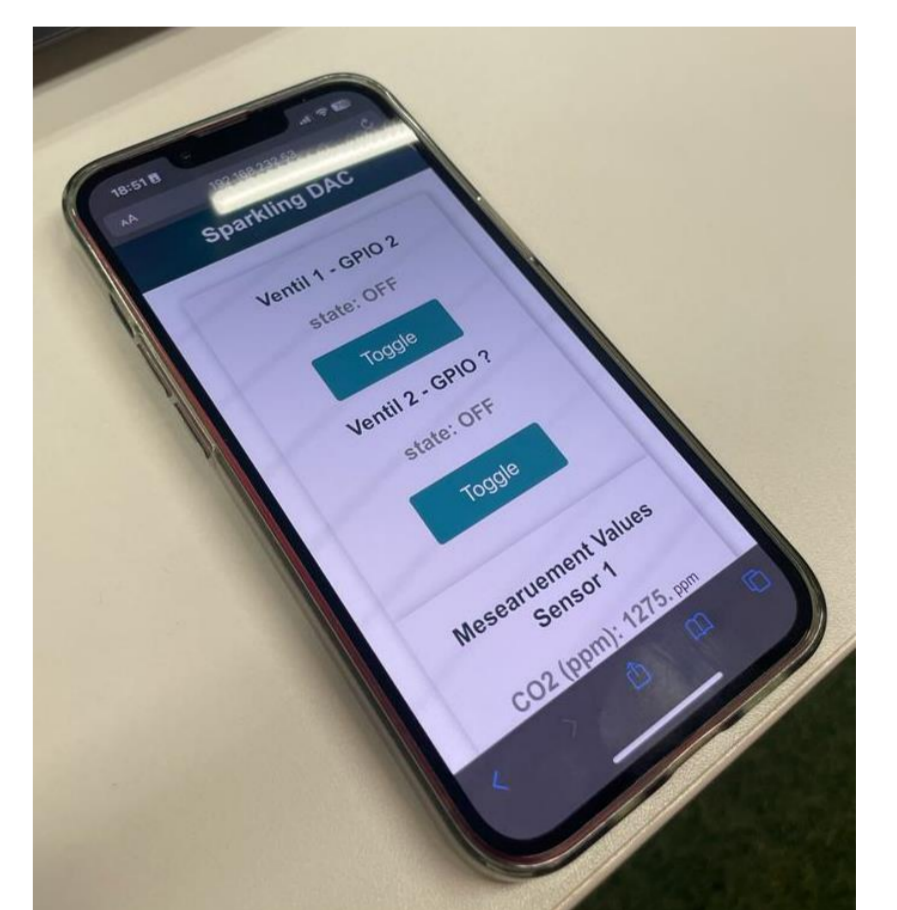
Proposed Solution

- Decentralized approach
- Small, modular and easy to use unit for home use
- On-site extraction of CO₂ for use or trade



Current State of Development

- Vacuum Temperature Swing Adsorption
- Typical SmartHome integration with e.g. MQTT
- Monitoring and data acquisition
- Possibility of process control of the user through simple dashboard



Further Ideas

- Direct coupling with the end application e.g. sparkling water or air purifier
- Integration in EMS for peak shaving functionality
- Higher degree of automation
- Trading system for industrial CO₂

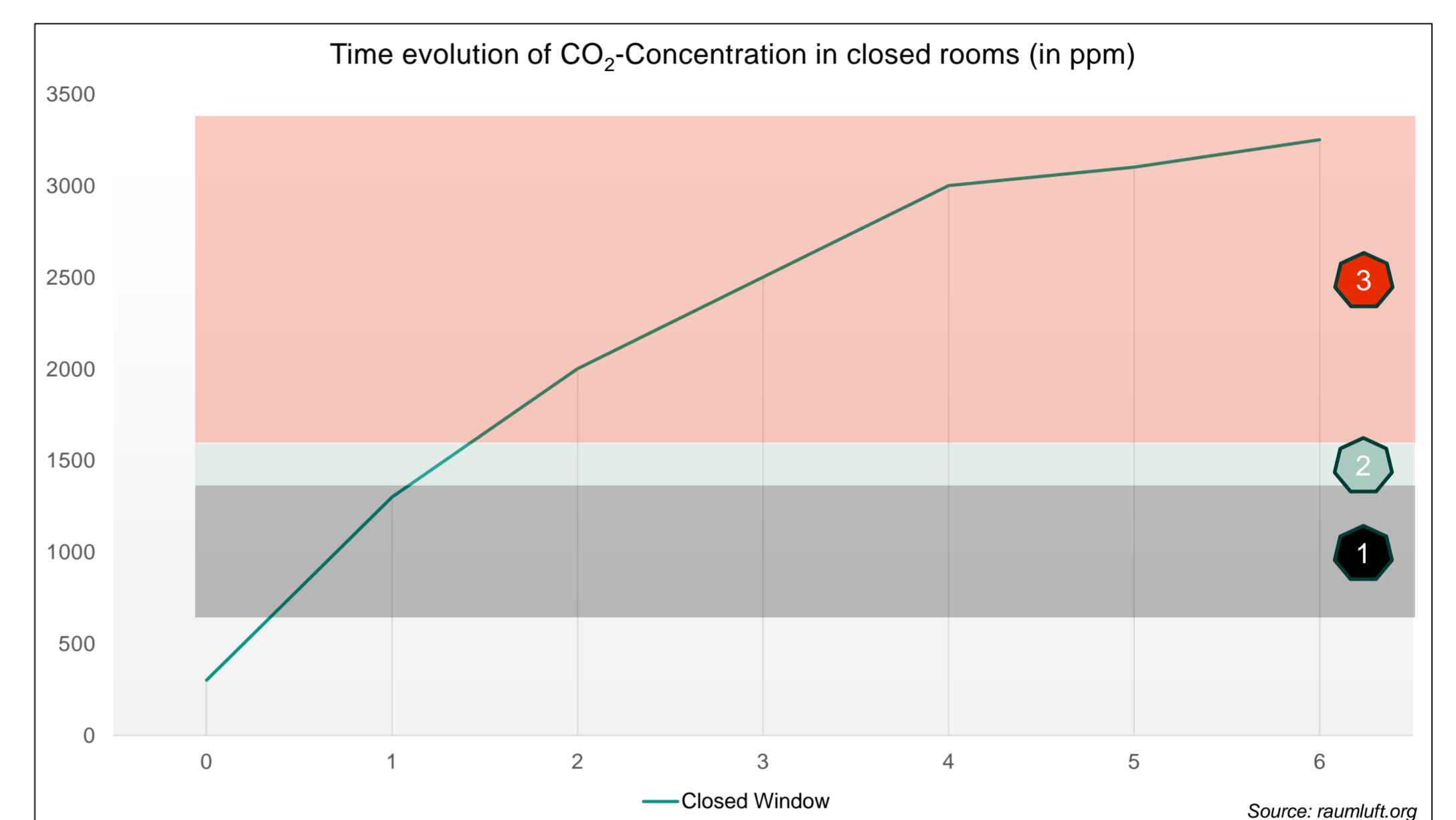


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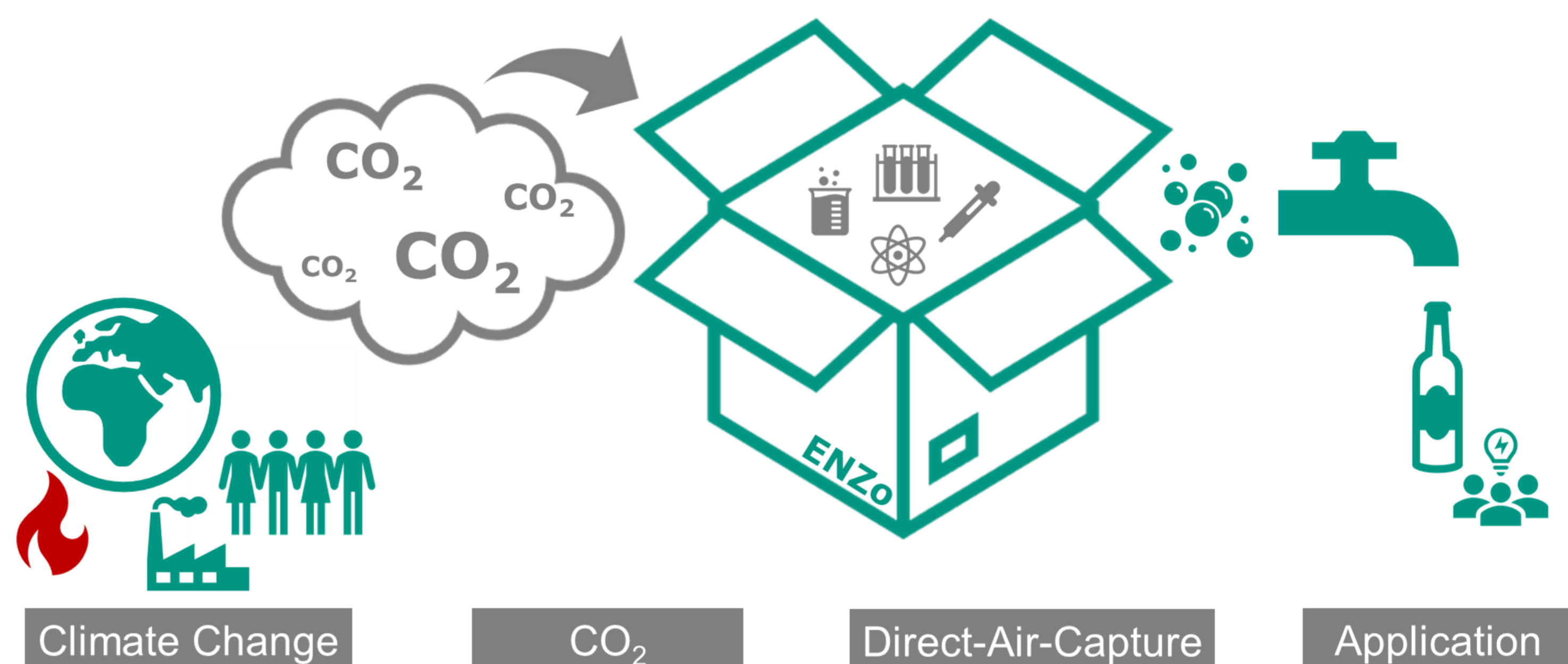
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(Quelle Internationalen Energieagentur (IEA))
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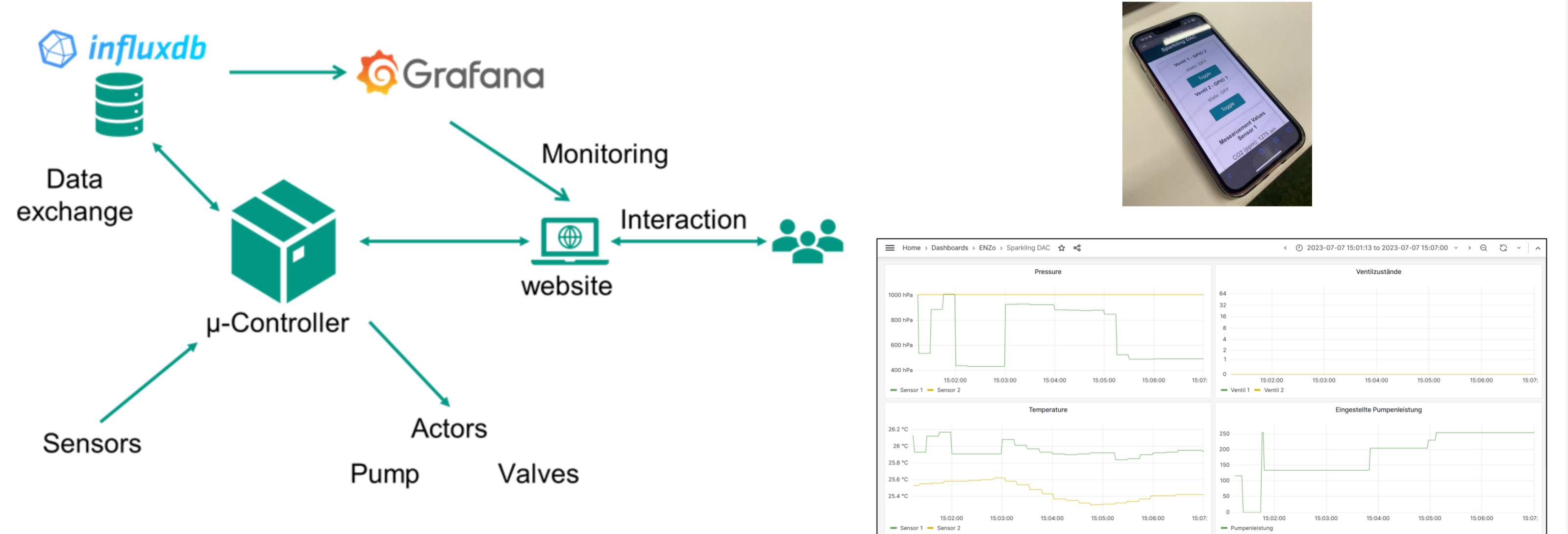
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