dioxea

We capture CO_2 at the source

Karl Khalil, Co-Founder & CEO
karl.khalil@epfl.ch

Fighting against Climate Change

20 $GtCO_2$

Total Industrial Emissions in 2019

- Industries account for 34% of global CO_2 emissions.
- Emissions from these industries are notoriously difficult to abate.
- In addition to emissions associated with energy use, a significant portion of industrial emissions come from the process itself.

Source: IPCC, 2023

Business Model

divea

Carbon capture unit

Fixed cost per unit
+ Recurring maintenance

Industrial
CO_2 Emitters

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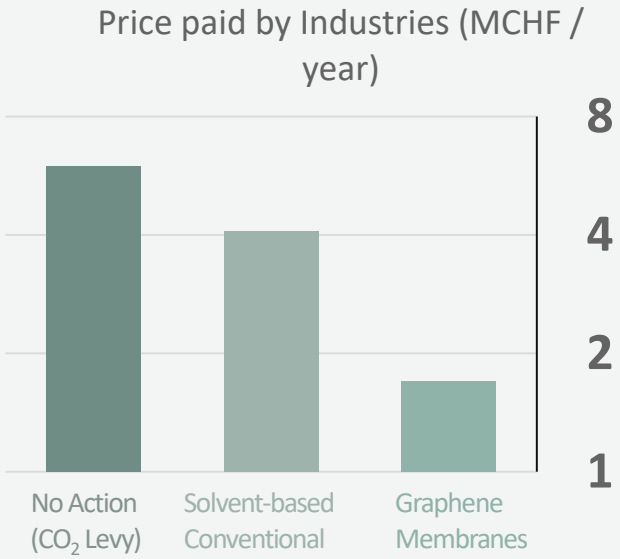

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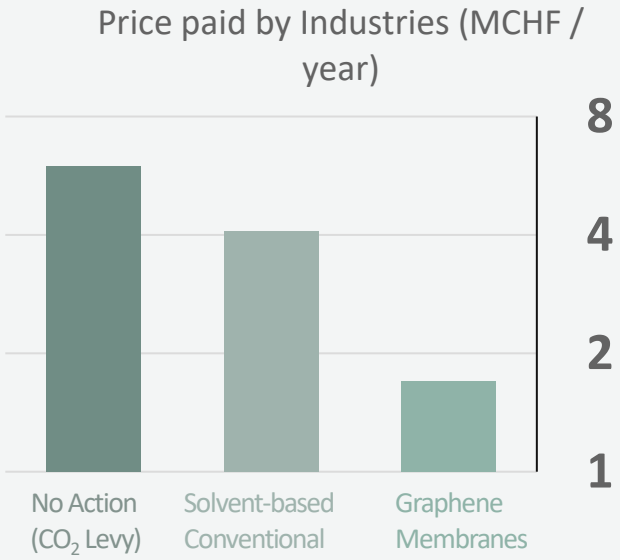
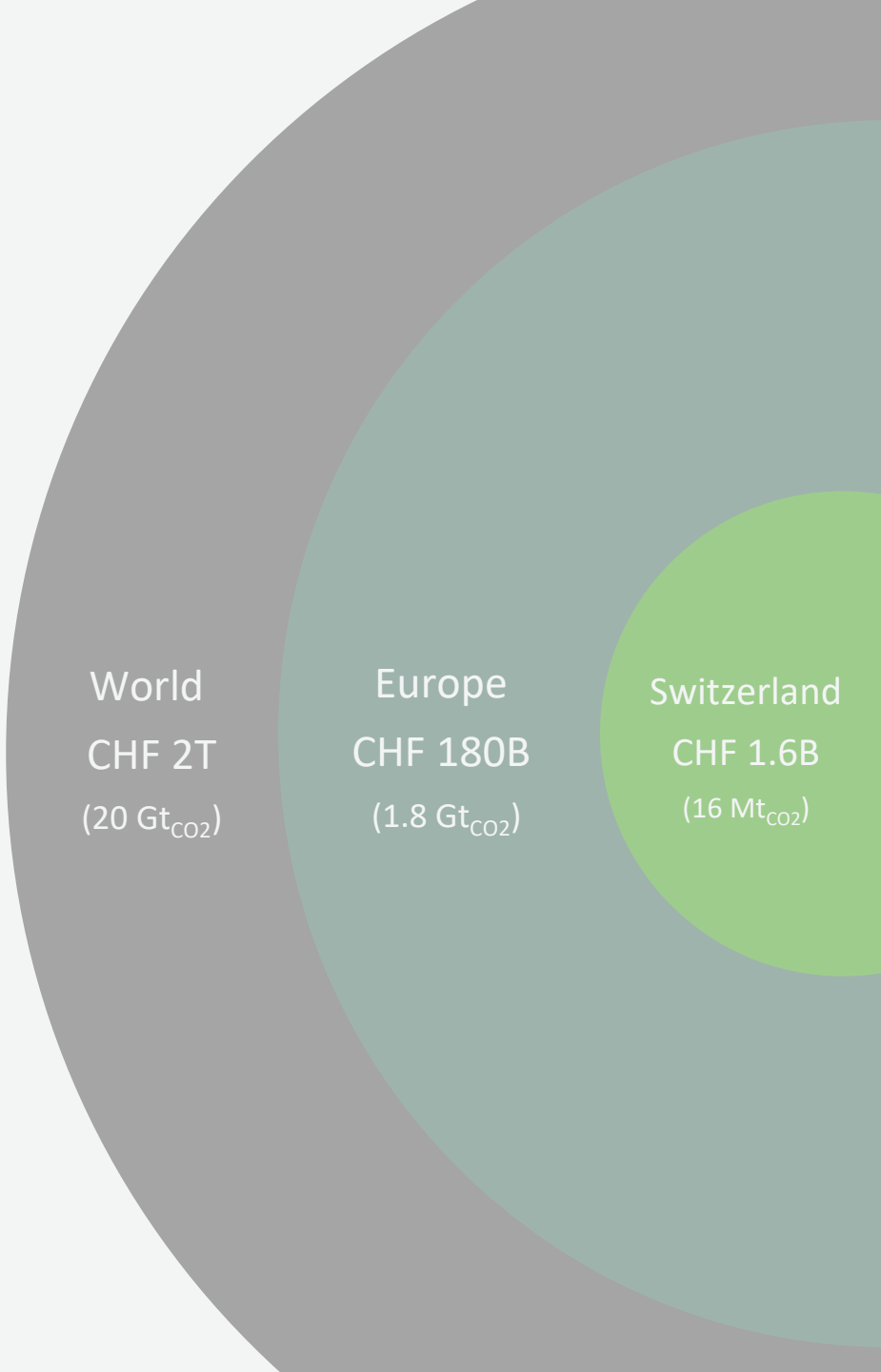


	Specific energy consumption	Capture cost
Commercial	3-4 MJ/kg_{CO2}	50-110 CHF/ton_{CO2}
Graphene Membranes	1.5 MJ/kg_{CO2}	30-40 CHF/ton_{CO2}

Market

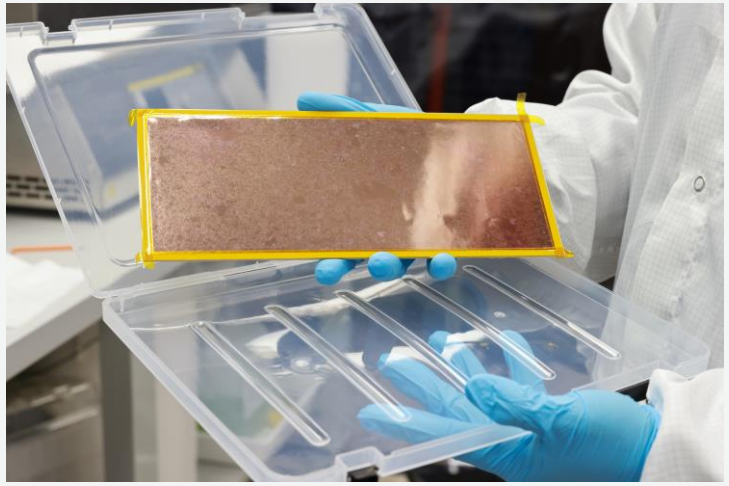
Industrial CO_2 Emitters

Iron & Steel
Aluminium
Cement
Waste Incineration
Pulp & Paper
Chemicals
Natural Gas Cogeneration
Etc.



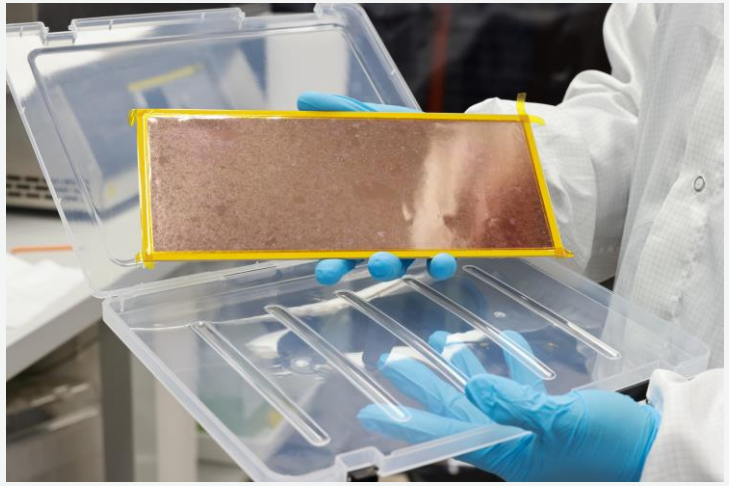
Market Size is calculated by considering a tax of 100 CHF/$tonne_{C2}$

Technology: Graphene Membranes



Picture of single-layer graphene on copper synthesized in our laboratory.

Technology: Graphene Membranes



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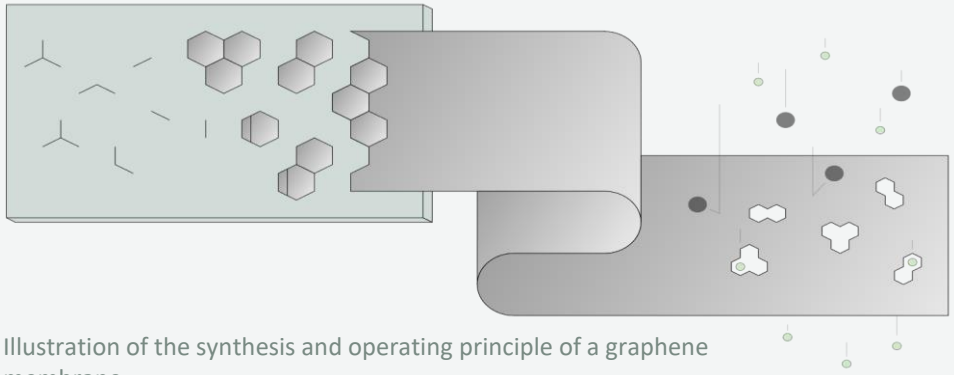

Illustration of the synthesis and operating principle of a graphene membrane.

Scaling up efforts

2018

0.01 cm^2

2021

1 cm^2

2022

10 cm^2

2023

100 - 250 cm^2

In Development

5’000 cm^2

(10 kg/day)

Roadmap

2018

Development of a new method to capture CO_2 based on graphene membranes

Development of a new synthesis methods to scale-up the membrane from millimeter to centimeter scale

2023

Prove robustness in industrial settings

Scale up the production towards meter scale

~2028+

Mass Manufacturing & Commercialization

Founding Team

Karl Khalil

CEO
BSc in Microengineering
at EPFL

Dr. Mojtaba Rezaei

CTO
PhD in Material Chemistry
at EPFL

Prof. Kumar Agrawal

Technical Advisor
Associate Professor
at EPFL

Join our mission!

We want to help in the fight against Climate Change by pushing the physical limit of what is possible with membrane science.

You can contact me at karl.khalil@epfl.ch