facts and figures

Geological storage of CO_2

How much CO_2 do we emit?

Million tons per year (Mt/y)
Global Carbon Atlas (2017)

To naturally absorb these emissions, it would take a growing forest with an equivalent surface area of:
IGN (2018)

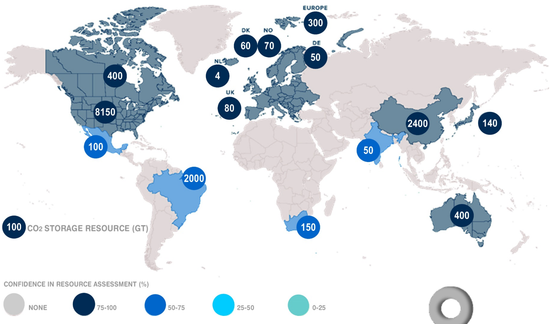
36,000*	2/3 of the world's land
3,550	Geographical Europe
280	Spain, Portugal and UK
2	8 x Madrid

1 modern gas power plant (780 MW)

*more than 100 x natural emissions (330 Mt/y) from active geological sources (e.g. volcanoes)

How much and where can we store CO_2?

Estimated **global storage capacities** in deep (> 1km) reservoirs



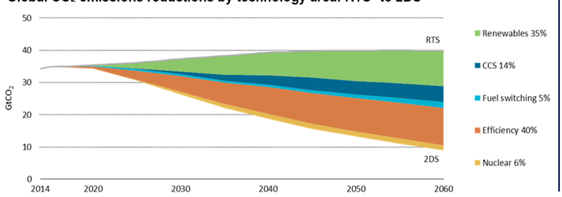
Global CCS Institute, 2018. The Global Status of CCS: 2018. Australia

Investigated storage capacity **in Europe** is:

i.e. more than double the amount of pore space needed to meet the world's 2°C scenario (2DS) between now and 2050.

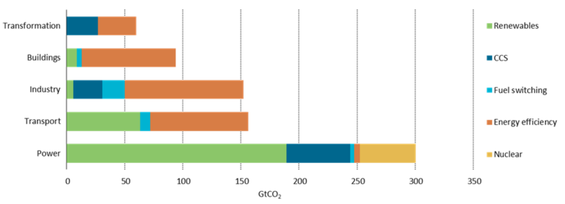
How can we reach the Paris Agreement targets?

Global CO_2 emissions reductions by technology area: RTS* to 2DS



What role can CCS (CO_2 Capture and Storage) play?

Cumulative CO_2 emissions reductions by sector and technology: RTS* to 2DS



**RTS (Reference Technology Scenario) taking into account today's commitments by countries to limit emissions (International Energy Agency, Energy Technology Perspectives 2017, OECD/IEA, Paris)*

- We need **all technologies, working together in synergy**, to reach net zero emissions by 2050
- CCS is only one part of the just transition from our current fossil-fuel-dependent reality to a sustainable climate-neutral future
- Without CCS, the cost of reaching 2DS would be 2.5 times more expensive *(IPCC – Intergovernmental Panel on Climate Change)*
- When **combined with bio-energy**, CCS can reduce CO_2 levels in the atmosphere

- CCS is the only technology that can reduce **CO_2** emissions from many **industrial processes** (cement & steel industries, etc.)
- Main sources of **industrial emissions** in the European Union:

Cement (clinker and lime): 117 Mt/y

Iron and Steel: 200 Mt/y

Perilli D., Global Cement, 2019

Borkent and Beer, 2016

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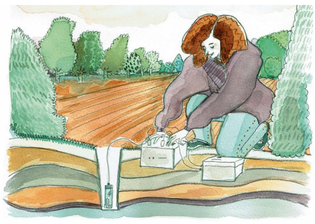
How do we know it works and is safe?

- 18 large-scale facilities in operation, 5 in construction, over 9 countries (USA, CAN, NOR, NLD, GBR, AUS, CHN, JPN, URE)
  Almost 40 Mt of CO_2 captured per year and 230 Mt already injected safely underground
- Study of natural subsurface CO_2 accumulations show that the CO_2 can remain trapped underground for millions of years
- The first CO_2 storage site: Sleipner in Norway that has been safely storing 1 Mt of CO_2 per year since 1996, i.e. 23 Mt in total
- 50 years of CO_2 injection and subsurface monitoring experience within the oil & gas industry



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