Explainer

The Climate Tech Ecosystem

Technology and innovation will be key levers of action in the fight against climate change, helping to support system transitions. The sector of climate technologies is currently gaining momentum, providing a vast array of potential solutions on the road to net zero.

Climate tech, cleantech, deeptech

'Cleantech' refers to all the practices, technologies or economic models that have a lower environmental impact than current standards. To a certain extent, climate tech can be considered as a subset of this broader category, focusing more specifically on climate impacts.

The emergence of low-carbon technologies relies heavily on innovation processes. Such technologies, especially for activities that are difficult to decarbonize (e.g. heavy industry, transport or agriculture), might require disruptive innovations, which constitutes the focus of the deeptech sector.

Defining climate tech

There is no consensus on the definition of climate tech as it is a relatively new and complex sector. Yet, a rather broad definition can be given so as to incorporate a wide array of technologies and the industries in which they are applied to. Thus, climate technologies can be defined as those that explicitly focus on:

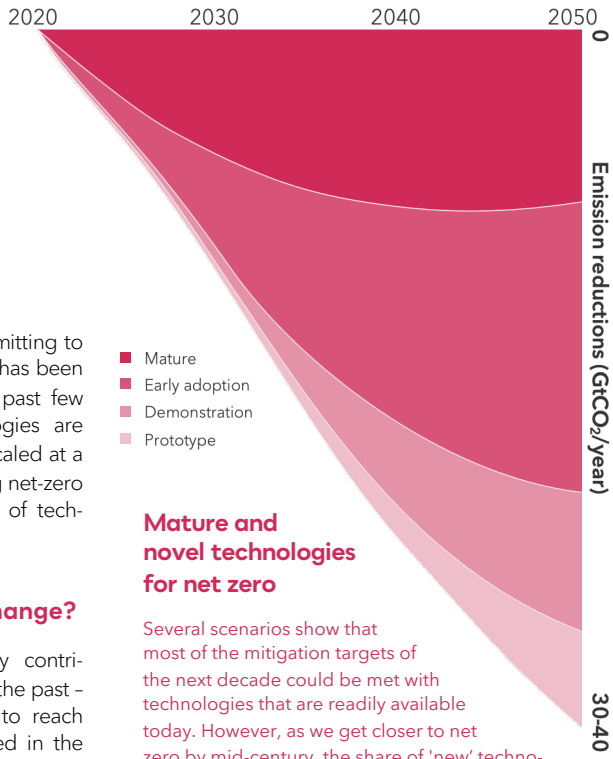
- **Reducing GHG emissions**
- **Removing CO_2 from the atmosphere**
- **Improving human adaptation to the impacts of climate change**

As more and more countries are committing to net-zero pledges by 2050, the market has been showing a strong growth along the past few years. Indeed, while some technologies are already mature and only need to be scaled at a faster pace (e.g. solar panels), reaching net-zero will also require the widespread use of technologies that are still in development.

Innovation against climate change?

Technological innovation has largely contributed to climate change mitigation in the past – e.g. by allowing solar photovoltaics to reach large-scale deployment. As highlighted in the IPCC's 6th Assessment Report, climate action will rely on a broad variety of strategies including stringent policies, demand-side transformations or social innovation, as well as technological innovation, which will play a crucial role in strengthening the other levers of action.

Understanding and rethinking innovation in order to align it with the imperatives of climate action is necessary: innovation strategies should follow a systemic approach that encompasses all forms of innovation (technological, social) and that assesses negative externalities in a comprehensive way. Identifying possible lock-ins and bottlenecks is also of primary importance, and can help to set clear priorities without neglecting the other, non-technological vectors of decarbonization.



Mature and novel technologies for net zero

Several scenarios show that most of the mitigation targets of the next decade could be met with technologies that are readily available today. However, as we get closer to net zero by mid-century, the share of 'new' technologies in the yearly mitigation potential increases. This graph shows an illustrative pathway inspired by the IEA's Net Zero by 2050 scenario, in which technologies that are currently at early stages of development constitute a consequent part of the emissions reductions by mid-century.

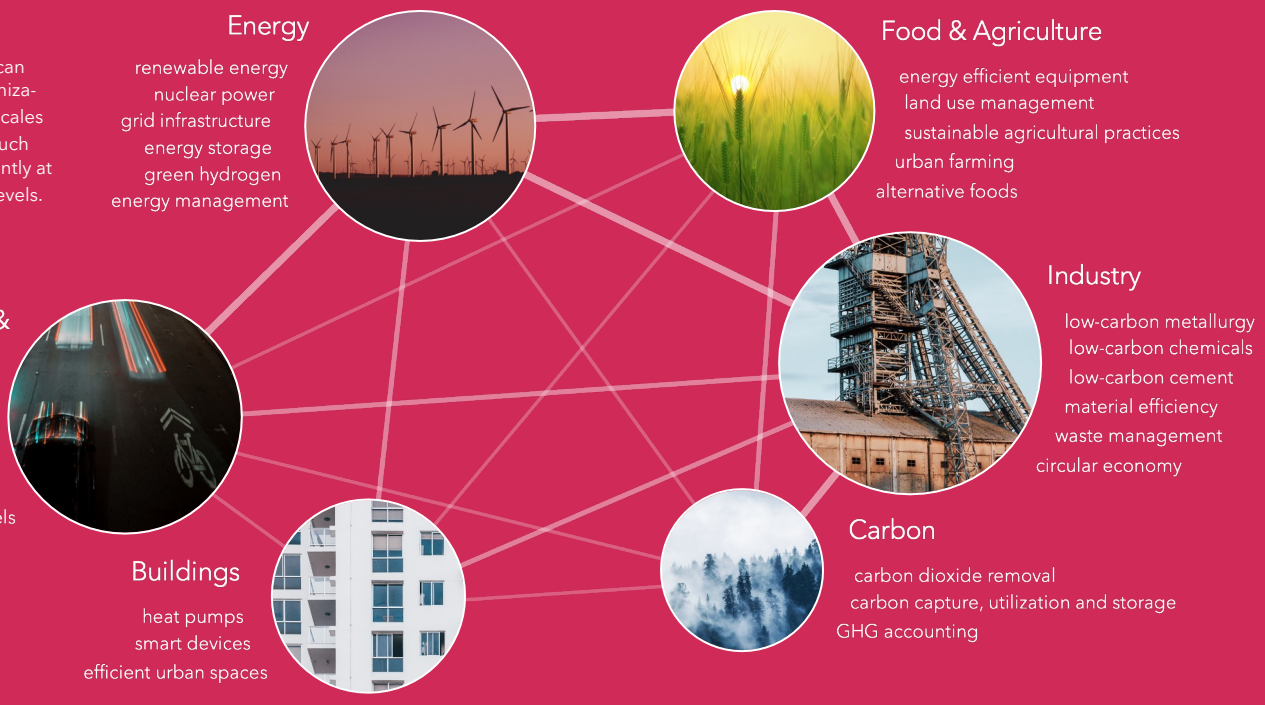
« Rapid, large-scale deployment of improved low-carbon technology is a critical component of accelerated mitigation pathways. »

IPCC 6th Assessment Report, Working Group III

ZenYn Research

An overview of climate tech

Climate technologies can contribute to decarbonization efforts at various scales in all activity sectors. Such technologies are currently at very diverse maturity levels.



References: PwC 2022, State of Climate Tech 2021 / IEA 2020, Special Report on Clean Energy Innovation / IPCC 2022, 6th Assessment Report, Working Group III