



future planet 
**Climate Change
 Climate Action**



Innovations framed around climate action seek to accelerate the **adoption of urgent measures to combat climate change and its impacts**. To achieve the goals of the **Paris Climate Agreement** and limit the increase in global average temperatures to well below 2°C, society must reach net-zero emissions of long-lived greenhouse gases by mid-century (2050). This major transformation will only be possible if the productive asset base of the global economy is replaced, on a large scale, by non-polluting technologies. This theme **selects companies that focus on the new technologies and innovations needed to achieve the climate change agreements**. To achieve these goals, very significant investments in new forms of energy production and energy efficiency improvements are required.

The main driver of the sustainable investment boom since 2015 has been the **establishment of the UN Sustainable Development Goals under the Paris Agreement** back at COP21, which has become a global benchmark. Most recently, at COP26, **more than 190 countries reached an agreement, at the UN summit** in Glasgow in November 2021, that aims to accelerate the reduction of greenhouse gas emissions worldwide and reduce fossil fuels. **Signatory countries now comprise more than 80% of global carbon dioxide emissions**. In 2018 that figure was only 15%.

In the United States, the recent framework put forward by the White House through the **Build Back Better (BBB) Act**, still

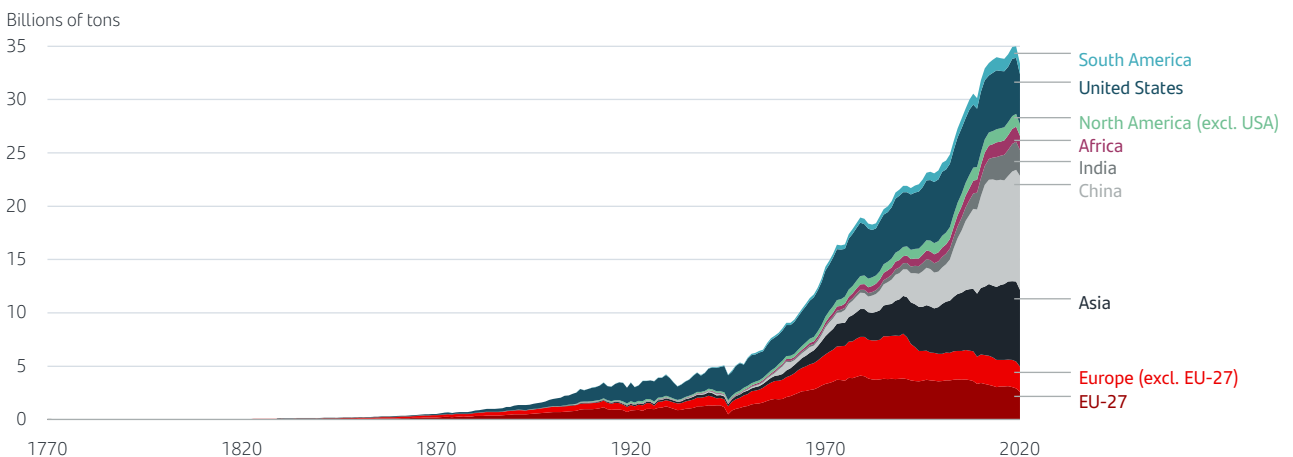
pending approval by the House of Representatives and the Senate, includes **\$555 billion for investments in clean energy and climate change**. This involves a massive allocation of funds **to reduce carbon dioxide emissions such as electric vehicles, green hydrogen production or carbon capture**. It is also a huge opportunity for the financial sector as a driver of change. Along with the already passed Infrastructure Act, which focuses primarily on climate action initiatives, **the Biden Administration's clean energy framework sets out an ambition, as well as a commitment**. Between now and 2030, the world will not only focus on promises, but above all on accountability and delivery.

The same goes for the **EU Recovery and Resilience Mechanism**, the key new generation European instrument to help the EU emerge stronger and more resilient from the current crisis and **make European economies more sustainable, resilient and better prepared for the challenges and opportunities of the green and digital transition**. This is called "Twin Transitions: Green and Digital". Each national plan will have to include a minimum of 37% of expenditure for climate investments and reforms.

Institutional investors, for their part, have begun to adapt their traditional ESG investments to climate objectives, notably by demanding to contribute to the decarbonisation of the economy.

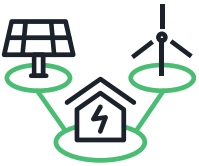
Annual CO₂ emissions by region

Source: Carbon Dioxide Information Analysis Center (CDIAC), Global Carbon Project (GCP)
 OurWorldInData.org





Key trends in climate action



Smart Grids

The first electricity grid in the world went into operation in 1882 in New York City and had 80 subscribers and 400 light bulbs¹. By 2019 90% of the world's population (7.8 billion people) was connected to electricity. A widespread failure in the electricity system today can have a domino effect on economies as it would affect all sectors. Therefore, the type of grid needed requires a **great deal of automation in order to cope with the growing need for electricity coming from digitization and the dependence on technology** that we live in the 21st century.

A **smart grid** is one that can **efficiently integrate** the behaviour and actions of all the users connected to it, **in such a way as to ensure a sustainable and efficient energy system**, with low losses and high levels of **quality and security of supply**.

In the **United States**, the **infrastructure bill** will allocate **\$65 billion to improve energy infrastructure** by building new and resilient transmission lines to facilitate the expansion of renewable energy. It will also invest in research and development of advanced and **smart grid** technologies to achieve greater flexibility and resilience.



Air pollution and emission control

The global emission control technology market size was valued at USD 91.54 billion in 2017 and is projected to reach USD 160,314.9 million by 2025, registering a **compound annual growth rate (CAGR) of 7.3%**²This increase is due to the growing demand for emission reduction, as they are detrimental to both environment and health. **Emission control technologies (ECTs)** help improve air quality by reducing harmful emissions from vehicle exhaust gases.

The **indoor air quality** market in North America is currently between \$6 billion and \$18 billion³, and the potential is even greater for markets in Asia, the Middle East and India. Also, the US Environmental Protection Agency suggests that in North America approximately 30% of commercial buildings have significant air quality problems, but only about 5% have been resolved.



Energy Efficiency

As the world grows in both wealth and population, so does the demand for energy: according to the International Energy Agency (IEA), global primary energy consumption is set to increase by 25% by 2030. At the same time, concerns about **pollution and climate change** are forcing companies and governments to think seriously about how they produce and use energy.

Energy efficiency is a set of activities that make it possible to reduce the energy consumption of a given process while maintaining the same level of production, or the same level of service. Referred to as **the "fifth fuel"** (after coal, gas, nuclear and renewable energies), it can play an important role in helping the world meet its demand for energy and mobility.

The IEA notes that energy efficiency is **consistently highlighted as the most important measure to save energy and greenhouse gas emissions**. For example, energy efficiency could contribute to nearly half of North America's oil self-sufficiency by 2030⁴. Eighteen trillion dollars of global economic growth and fuel savings can be achieved. To do so, \$12 trillion is needed to develop existing energy efficiency technologies.



Examples of relevant companies in climate action



Pentair plc is a global water company, offering a range of **smart, sustainable water solutions** for residential, commercial, industrial, infrastructure and agricultural applications. The company's solutions enable people, businesses and industry to access **clean, safe water, reduce water consumption, and recover and reuse water**. Pentair addresses some of the world's most pressing food, water and energy issues with innovative products, services and technologies.



Ecolab Inc. is a **global provider of water solutions**. It is the world leader in hygiene and infection prevention technologies and services for customers in the food service, healthcare, hospitality, industrial and oil and gas markets. Around the world, companies in the foodservice, food processing, hospitality, healthcare, industrial and oil and gas markets choose Ecolab products and services to keep their environments clean and safe, operate efficiently and achieve sustainability goals.



Linde is an industrial gases and engineering company. The application of industrial gases ranges from hospital oxygen, specialty and high purity gases for electronics or hydrogen for clean fuels. It also **provides gas processing solutions to help customers improve efficiency and reduce gas emissions**. Hydrogen is one of the gases that are part of the product portfolio. They are currently investing in **transforming all production to green hydrogen**, which will contribute to the goal of zero emissions by 2050.



Infineon Technologies AG designs, manufactures and markets semiconductors. The Company offers products including power **semiconductors**, microcontrollers, safety controllers, radio frequency products and sensors. **Power semiconductors play a key role in the generation of energy from renewable sources**. In wind turbines, power semiconductors convert electricity and couple the generator to the grid. A wind energy converter requires power semiconductors of the highest quality.



Roper Technologies

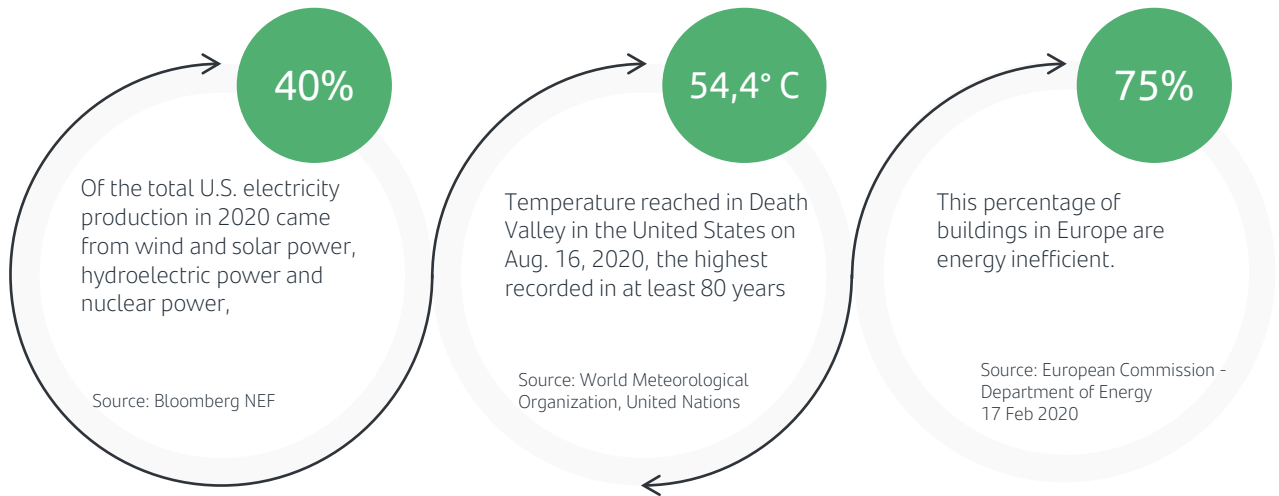
Roper Technologies, Inc. manufactures and distributes industrial equipment. The company offers industrial controls, fluid handling, pumps, medical and scientific devices, **analytical instrumentation products**, radio frequency identification (RFID) communication technology, and software solutions. The company focuses on solutions that reduce emissions by improving the efficiency of traffic flow in transport or vehicle emission measurement systems.



Parker-Hannifin Corporation manufactures motion control products, including fluid power systems, electromechanical controls, and related components. The diversified industrial segment offers products and systems for sealing, shielding, thermal, adhesives, coatings, and **vibration and noise harshness solutions; filters, systems, and diagnostic solutions to monitor and remove contaminants from fuel, air, oil, water, and other liquids and gases**.



Did you know that?



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