



# GETTING TO A ZERO-EMISSION FUTURE THROUGH CLEANER ENERGY

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The world warms more when there is more carbon dioxide in the atmosphere, which functions as the earth's thermostat. Global greenhouse gas concentrations reached 419 parts per million in 2023, about 50% higher than they were prior to the Industrial Revolution. This indicates that compared to 1750, there are around 50% more carbon dioxide molecules in the atmosphere.

2023 was an exceptionally warm year, both on land and in the sea. More than 90% of the excess heat brought on by global warming is absorbed by the oceans. It was even hotter than experts had predicted, making it the warmest year in almost 170 years of records.

According to the research findings, El Niño, a climate trend that tends to elevate global temperatures, contributed to the high heat of 2023. Warm Pacific Ocean currents during El Niño lead to warmer, drier weather in the tropics. Droughts may result from this, which would hinder tree growth and raise the possibility of wildfires. When this occurs, more carbon dioxide ends up in the atmosphere, and the land tends to absorb less of it. According to a number of climate scientists, this could be the reason why carbon dioxide levels rose significantly last year compared to the years before.

Reaching the climate target of keeping global warming to 1.5 degrees Celsius is becoming more and more challenging due to the current high emissions levels. Experts estimate that in order to keep global warming below this threshold, nations must clamp down on emissions and reduce them to almost zero by ten years. To help close the gap, others are even thinking of more drastic technology solutions. We would still be adding carbon dioxide to the atmosphere, resulting in more heat, even if global emissions were cut in half from their current level.

## Cleaner energy systems

Therefore, an urgent necessity arises in each and every sector to achieve zero emissions in the future. The importance of adopting cleaner energy systems by countries can be discussed under different categories. Transitioning to zero-emission policies in the future is imperative for several compelling reasons. Firstly, addressing climate change is one of the most urgent global challenges we face today. The overwhelming scientific consensus confirms that human activities, particularly the burning of fossil fuels, are driving unprecedented levels of greenhouse gas emissions, leading to rising temperatures, extreme weather events, sea-level rise, and other environmental disruptions. By adopting zero-emission policies, we can significantly reduce these emissions and mitigate the worst impacts of climate change, safeguarding the planet for current and future generations.

Secondly, transitioning to zero emissions is essential for public health. The combustion of fossil fuels not only releases carbon dioxide but also emits pollutants such as particulate matter, nitrogen oxides, sulfur dioxide, and volatile organic compounds. These pollutants contribute to air pollution, smog, respiratory illnesses, cardiovascular diseases, and premature deaths. By shifting towards cleaner energy sources and transportation systems, we can improve air quality, reduce health risks, and enhance overall well-being for communities around the world.

Moreover, zero-emission policies offer economic benefits and opportunities for innovation and job creation. Investing in renewable energy, energy efficiency, sustainable transportation, and green technologies

can stimulate economic growth, diversify energy sources, reduce energy costs in the longterm, and create new employment opportunities in clean energy industries. Countries that lead the transition to zero emissions stand to gain a competitive advantage in the global green economy while reducing their dependence on fossil fuel imports and mitigating economic risks associated with climate change impacts.

Furthermore, embracing zero-emission policies fosters energy security and resilience. Relying on finite and geopolitically sensitive fossil fuel resources exposes countries to supply disruptions, price volatility, geopolitical tensions, and environmental risks such as oil spills and pollution. Transitioning to renewable energy and decentralised energy systems enhances energy independence, reduces vulnerability to external shocks, and builds resilience against climate-related disasters, ensuring a more secure and sustainable energy future.

## Environmental stewardship

Lastly, adopting zero-emission policies reflects a commitment to sustainable development and environmental stewardship. By reducing our carbon footprint and ecological impact, we can protect biodiversity, conserve natural resources, preserve ecosystems, and promote sustainable land use practices. This holistic approach to sustainability not only benefits the environment but also enhances resilience to climate change, promotes social equity, and fosters a more balanced and harmonious relationship between humanity and the planet.

Achieving a zero-emission, cleaner energy future requires a multifaceted approach that combines technological advancements, policy frameworks, financial incentives, and societal engagement. Firstly, investing in renewable energy sources such as solar, wind, hydroelectric, geothermal, and biomass power is fundamental. These sources are abundant and sustainable and emit significantly lower or zero greenhouse gases compared to fossil fuels. Expanding renewable energy infrastructure and improving energy storage technologies are key steps towards a cleaner energy future.

Enhancing energy efficiency across all sectors is crucial. This

involves adopting energy-efficient technologies, optimising industrial processes, implementing building codes for energy conservation, and promoting sustainable transportation solutions like electric vehicles (EVs) and public transit. Energy efficiency measures not only reduce emissions but also save costs, improve productivity, and enhance energy security.

Further, transitioning away from fossil fuels requires phasing out subsidies and incentives that support their production and consumption. Redirecting these financial resources towards clean energy projects, research and development (R&D) initiatives, and carbon pricing mechanisms can accelerate the shift towards zero emissions. Implementing carbon pricing mechanisms such as carbon taxes or cap-and-trade systems incentivises businesses and individuals to reduce their carbon footprint while generating revenue for green investments.

Policy frameworks play a pivotal role in facilitating the transition to a zero-emission cleaner energy future. Governments can set ambitious renewable energy targets, establish regulatory frameworks that prioritise clean energy deployment, provide incentives for renewable energy investments, and promote public-private partnerships for sustainable development. International cooperation and agreements, such as the Paris Agreement, foster collaboration and coordination among nations to collectively address climate change and promote clean energy solutions globally.

## New possibilities

Moreover, fostering innovation and research in clean energy technologies is essential. Investing in R&D for breakthroughs in renewable energy, energy storage, grid integration, carbon capture and storage (CCS), and sustainable materials can unlock new possibilities and accelerate the transition to zero emissions. Public and private sector collaboration, academic institutions, and innovation hubs play crucial roles in driving technological advancements and scaling up clean energy solutions. Lastly, raising awareness and promoting sustainable lifestyles among individuals, communities, businesses, and institutions is vital. Education, outreach campaigns, and initiatives that encourage energy conservation, waste reduction, recycling, and sustainable consumption patterns empower people to make environmentally conscious choices. Engaging stakeholders, fostering a culture of sustainability, and promoting green practices create a collective momentum towards a zero-emission cleaner energy future.

Energy is a primary requirement for the functioning of all natural and man-made systems on earth. Different sources of energy produce different levels of emissions in their operations. Therefore, considerable attention should be paid, especially in terms of emissions, before using any energy source since it makes a notable contribution to the emission stocks available in our surroundings. Cleaner energy practices are more important in the creation of a sustainable future, allowing limited access to extreme climate changes.

