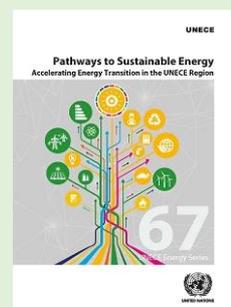




## Energy for Sustainable Development

Energy is critical for assuring quality of life and underpins attainment of the 2030 Agenda for Sustainable Development (2030 Agenda). The role that energy plays in modern society is recognized, but there remains an important disconnect between countries' agreed energy and climate targets and what they are doing in reality. UNECE member States therefore conceived a project to help countries develop, implement and track national sustainable energy policies to mitigate climate change and contribute to sustainable development. [Pathways to Sustainable Energy Publication.](#)



## Attaining Sustainable Energy in the UNECE region is Mission (Im)Possible

Based on the analysis, the current sustainable energy framework is out of balance, showing that sustainable energy in the UNECE region cannot be achieved unless there are some trade-offs. The region has focused on energy security with the environmental and quality of life issues taking second place. Countries will make their own decisions and there will be necessarily a mosaic of choices across the region.

Attaining sustainable energy is a complex social, political, economic and technological challenge. UNECE countries have not agreed how collectively they will achieve sustainable energy. The dialogue alone constitutes an important step forward for countries by highlighting trade-offs and synergies between 2030 Agenda goals and targets, national energy security concerns, quality of life and social aspects, and environmental and economic objectives.

## The Region is Overdependent on Fossils

Today, roughly 80% of the energy mix is fossil fuel-based. Many countries across the region benefit from fossil energy, and coal, oil and gas remain vital for their energy security and economic well-being. In addition, the number of people whose livelihoods depend on fossil energy is vast and it cannot be expected that they easily sacrifice their quality of life ambitions in favor of a 2°C target, for example.

## Current NDCs are not Ambitious Enough

After many years of debating climate change, the world is still on a path to global average temperatures that are 4-6°C above pre-industrial levels. Current NDCs will result in uncomfortably high levels of global warming. Countries in the UNECE region need to cut or capture at least 90Gt of CO<sub>2</sub> emissions by 2050 to meet the 2°C target. To limit global warming to 2°C, the UNECE region will need to reduce its dependence on fossil fuels from over 80% to around 50% by 2050, and to undertake to achieve significant negative carbon emissions.

## Invest to Accelerate Energy Transition Pathways

The longer structural and policy reforms are delayed, the more expensive these reforms will become. Society will, eventually, need to pay the price. Today, we estimate that the UNECE need to invest USD 23.5 trillion in the energy system by 2050. Changing the policy to meet a 2°C target by 2050 results in additional investments of only USD 200 billion per year higher for the entire region. Well planned and thought through national strategies can achieve sustainable energy with limited impact on energy prices.

Accelerated decarbonisation of the energy sector coupled with technology change and close subregional and regional cooperation will enable us to attain sustainable energy in the UNECE. The investments need to be distributed across a broader range of technologies, including zero emissions technology options, and across all subregions, to benefit from a deep, holistic transformation of the energy sector in the UNECE region. All the energy stakeholders in the region need to join forces to explore all possible solutions to stop rising GHG emissions, to protect mankind and to attain sustainable energy.

# Solutions to Attain Sustainable Energy

## Immediate Action Stop Growing the Problem & Limit GHG Emission

### Improve System Efficiency

Production, transformation, delivery, and use of resources can be improved to deliver quality of life with a much lower environmental footprint.



### Transform the Buildings Sector to High Performance

Buildings account for 40% of CO<sub>2</sub> emissions from the energy services they require. High performance buildings promote sustainable urban development, address affordability, improve the efficiency, and support climate action.



### Stop Excluding Options. All Technologies Play a Role.

Modernising and optimising the existing fossil-based infrastructure and integrating renewable energy based-infrastructure is essential to achieve sustainable



### Invest Seriously in Carbon Capture and Storage

Investing in CCS is the only way, near term, to reconcile the reality that 80% of the energy mix today is fossil based, with the species-threatening reality that the world is on a pathway to a 4-6°C rise in temperatures.



### Address Methane Emissions from the Extractive Industries

Methane is a potent GHG with a high global warming potential (GWP). Based on a 20-year timeframe the GWP of methane is 80 times that of CO<sub>2</sub>. Over 100-year timeframe the figure falls to 36 (IGU 2017, GECF 2019). Atmospheric concentrations of methane have been rising, and most emissions make economic and environmental sense to control.



## Midterm Action Implement New Policies & Champion Technology Winners

### Just Transition

Change will occur if individuals and communities are engaged and committed to the change and if there is a proper set of solutions that integrate social, environmental, and economic needs and challenges.



### Invest in Low Income Countries

The United Nations and all governments in the region need to target investments towards lower-income countries in order to accelerate energy transition in eastern subregions, e.g. the Caucasus, Central Asia, East and South East Europe.



### Accelerate the Interplay between Renewable Energy and Renewable / Decarbonised and Low-Carbon Gases

The legacy infrastructure is suitable for the region to enhance the interplay between renewable energy (electricity and gas) and gas and, then, further embrace the potential of renewable / decarbonised and low carbon gases.



### Lessons Learnt from the Project and Going Forward

- A unique vehicle for a much needed, informed collaboration on sustainable energy within the UNECE region and beyond.
- Each country will pursue its own path based on their economic circumstances and natural endowments. Regardless of the approach, countries will need a mechanism for a common, informed dialogue at the regional and subregional level.
- As regional trade and mutual energy independence are not straightforward, there is need for partnerships, inclusive dialogue and closer cooperation on both subregional and regional levels.
- As the green revolution grows, we should look at the history of energy transitions and learn the lessons on how to achieve it in a cost-effective way, minimise social disruption and involve all stakeholders as early in the process as possible.

## Long-term Action Embrace Sustainable Energy Based on Circular Economy and Nexus Approach

### Promote Sustainable Resource Management

Sustainable resource management practices that embrace circular economy principles and that integrate the full spectrum of the 2030 Agenda should be on the forefront of countries' strategies.



### Monitor Battery Storage Solutions

Monitor developments of battery storage technologies that need to be promoted to support fluctuating renewable energy systems. Securing the raw materials for this approach will become a strategic issue.



### Embrace Water-Energy-Food Nexus Approach

Renewable energy technologies could address trade-offs between water, energy and food production, with substantial benefits in all three sectors. Integrated management of natural resources such as energy, raw material and water resources would improve efficiencies, reduce environmental footprints and eliminate waste.



*A project of the UNECE Sustainable Energy Division under the Committee on Sustainable Energy and its expert network.. Work with us, if interested, please contact us* Website: <https://www.unece.org/energy/pathwaystose.html> Contact: [stefanie.held@un.org](mailto:stefanie.held@un.org); [iva.brkic@un.org](mailto:iva.brkic@un.org)