

# VISION TO REALITY: HOW THE EU CAN ACHIEVE -90% EMISSIONS BY 2040

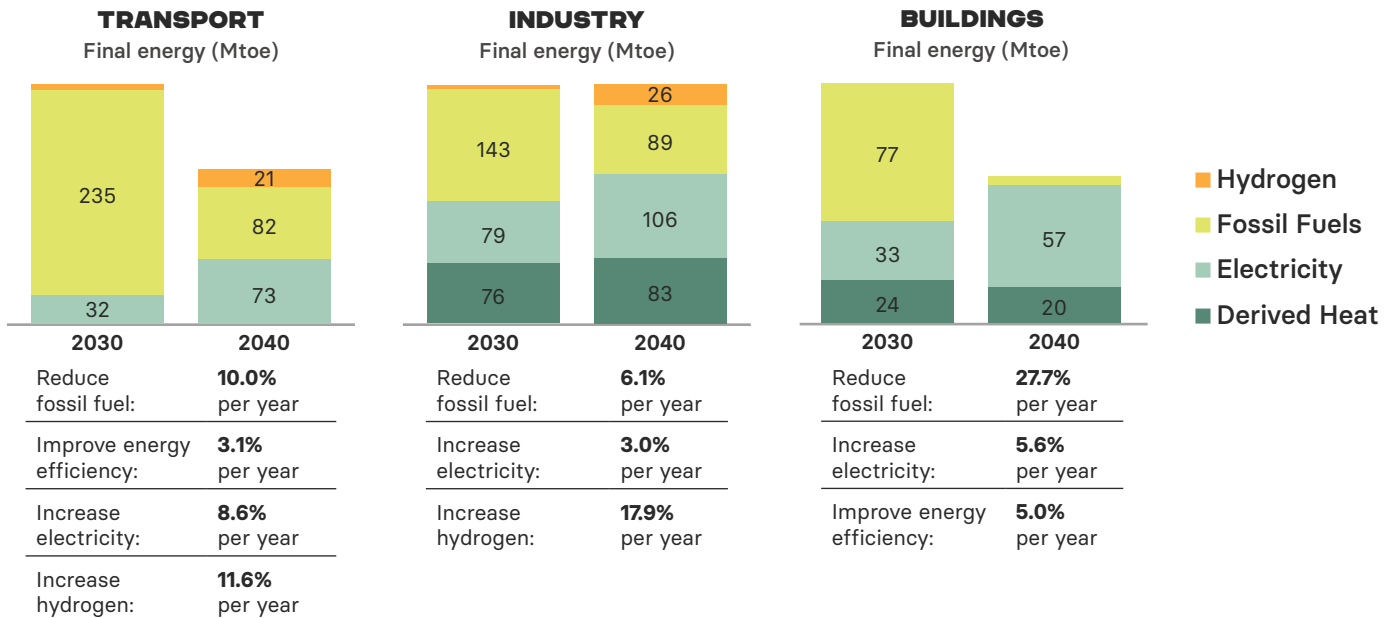
Carbon-Free Europe's Energy Systems Modelling discloses in detail what a goal of **90% GHG reduction by 2040** means for the **European Union**, from how individual sectors need to transition to what clean infrastructure and emergent technology needs there are.

## ECONOMY-WIDE ENERGY CONSUMPTION:

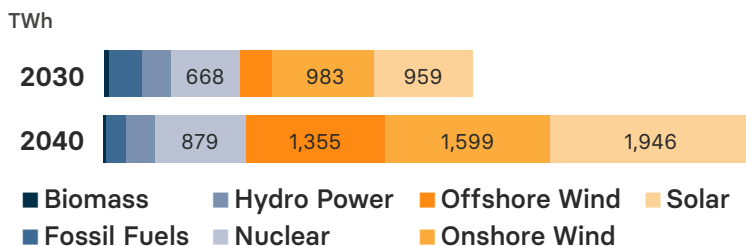
- **Annual energy upgrade (2024-2030):** EU needs modest yet impactful **1.4% reduction per year**.
- **Accelerated momentum (2030-2040):** Even more ambitious **2.2% reduction per year**.

## SECTOR-SPECIFIC ENERGY CONSUMPTION REDUCTION FROM 2030 TO 2040

The **2030-2040 window** is pivotal for net-zero by 2050, allowing transformative policies and tech implementation. **Targeted sector approaches** accelerate the overall energy transition, reflected in graphs aligning with the EU 2040 targets.



## ELECTRICITY GENERATION AND CAPACITY BUILD-OUT



Solar:	<b>58.9 GW</b> per year
Onshore wind:	<b>20.1 GW</b> per year
Offshore wind:	<b>23.2 GW</b> per year
Nuclear:	<b>5.1 GW</b> per year

Electricity demand is skyrocketing which requires a swift build-out and unparalleled investments while fossil-based energy types are phased-out.

The next page outlines the imperative steps and transformative investments needed for this crucial transition.

# WHAT CLEAN INFRASTRUCTURE GROWTH IS NEEDED TO ACHIEVE THE TARGET BY 2040 STARTING 2024?

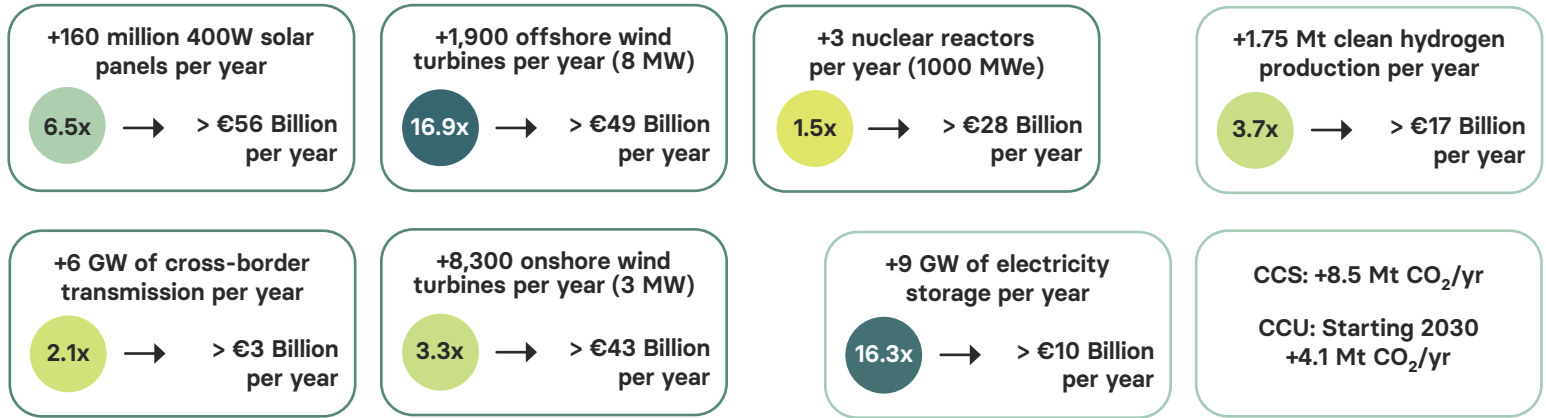
To meet the 2040 emissions reduction target, critical clean infrastructure growth demands **substantial investment** in clean energy, grid, and storage, **acknowledging emergent technologies** like CCU and CCS.

Factor shows capacity needed compared to 2024



## Established Technologies

## Emergent Technologies



## IMPACTS ON GREENHOUSE GAS EMISSIONS

A monumental clean infrastructure expansion, electrification, tech adoption, and unprecedented investments will **turn the 2040 target into reality**. These efforts lead to substantial **GHG reductions**, reinforcing the EU's net-zero commitment by 2050.

### GHG emissions by sector over time (Mt CO<sub>2</sub>)

