

Putting Safety First in the Energy Transition

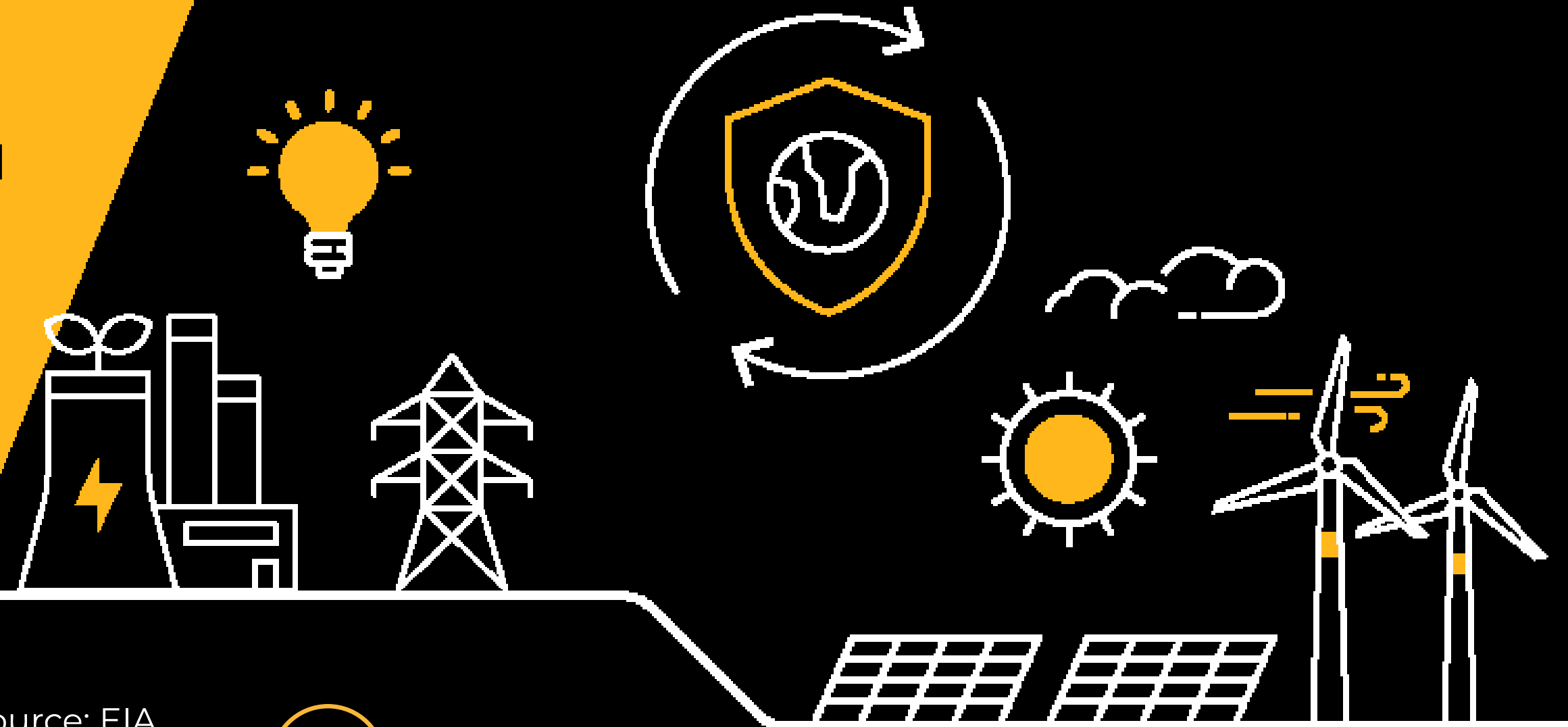


The race to reach net zero and limit climate change is quickly gaining momentum worldwide.

However, with the global population set to reach **9.8 BILLION** by 2050 and energy consumption expected to increase by **50%**, time is of the essence.

Ensuring optimal safety is essential to preventing delays and risks as we advance on the road to a more sustainable energy system.

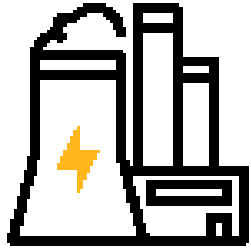
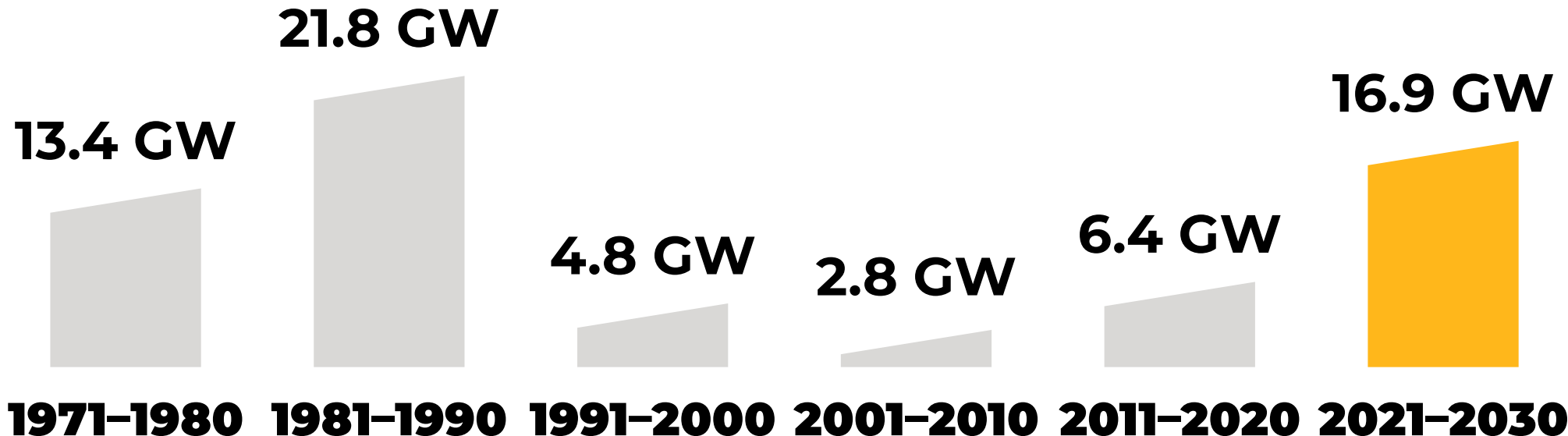
Source: EIA



Securing a Safe Future for Nuclear Energy

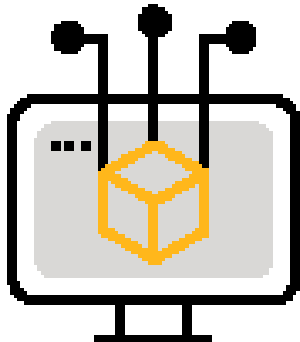
Many governments worldwide previously aimed to **phase out nuclear plants** due to safety and nuclear waste concerns. However, the energy crisis and the drive to reduce emissions have led to a **renewed interest in nuclear energy**.

Global nuclear power capacity additions in the Net-Zero Scenario between 1971 to 2030



To reach net-zero targets by 2050, nuclear power capacity will have to increase by **165%** over the next decade.

Simulation software ensures the safe and reliable maintenance and upgrade of long-life assets and accelerates the development of modular reactors.



The software satisfies stringent nuclear industry quality standards including **IEC 60880**.



Oil and Gas Bridge Gap

Oil and gas production still generates 50% of global energy so **optimizing operations** is critical while developing alternative sources.

Assuring **high safety standards** in the industry is necessary, especially considering the fatality rate is on average seven times higher than it is in other industries in the US.

Human error and equipment failure are often the cause of serious incidents, which can be reduced through **digital technologies.**

Simulation solutions help analyze the root causes of any issue, optimizing safe operations and the design of safe and efficient products.

Ansys Twin Builder allows the implementation of complete virtual prototypes of real-world systems, by managing the entire lifecycle of products and assets.

Digital twins can provide prognostics and health management enabling system optimization and predictive maintenance.



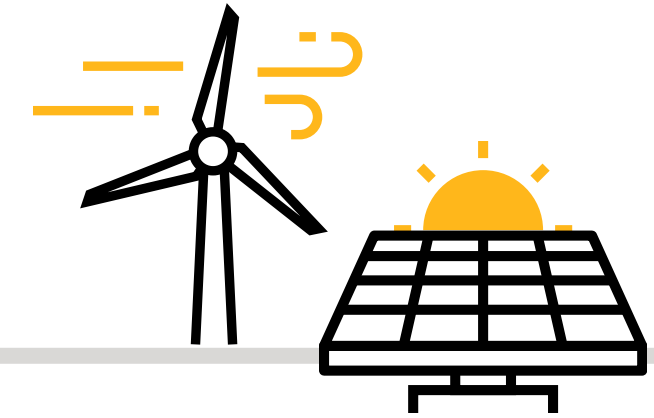
Source: Ansys, Axora, CDC, IEA



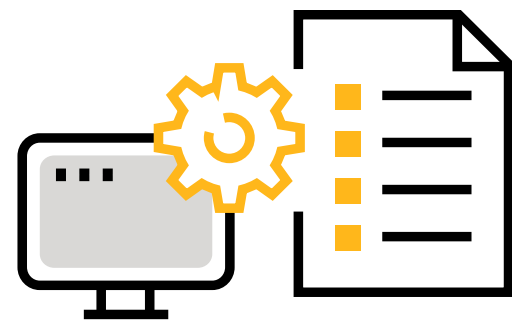
Renewable Energy Powering the Future



Renewable energy accounted for almost **29%** of electricity in 2020, but significant expansion of up to **60%** is necessary to reach net-zero emissions.



The **12.7 MILLION** employees in the renewable energy sector put themselves at risk maintaining solar panels in remote locations, climbing wind turbines, and handling flammable biofuels.



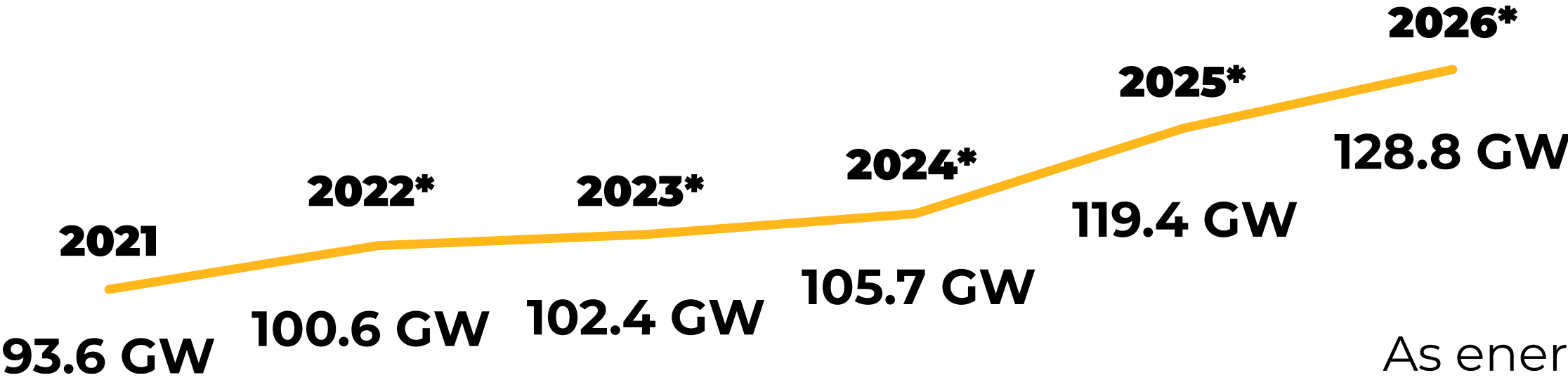
Simulation solutions support the engineering of **risk-free equipment** and implementation of **regular maintenance**.

Source: EP online, IEA, International Labour Organization

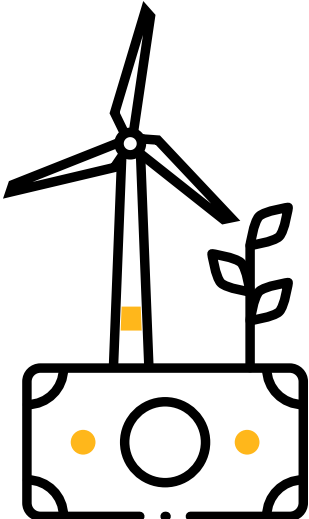


Simulations Propel Wind Power to Safety

Projected global annual wind power capacity of new installations



Wind farms attracted huge investments of **USD 139 MILLION** between 2018 and 2020.

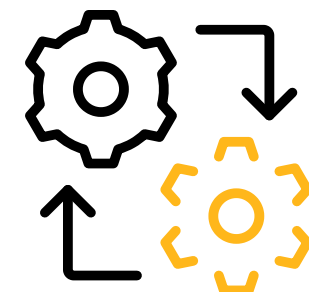


As energy demand and investments increase, **engineering larger wind turbines** to operate in harsher environments is becoming increasingly necessary.

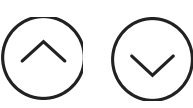


* Forecasted
As more wind turbines are constructed, the **number of accidents** during their maintenance and repair has also increased.

The **digital twin** of a wind turbine can be generated to optimize performance and maintenance requirements and scheduling.



Source: Ansys, Bio Energy Consult, Statista





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