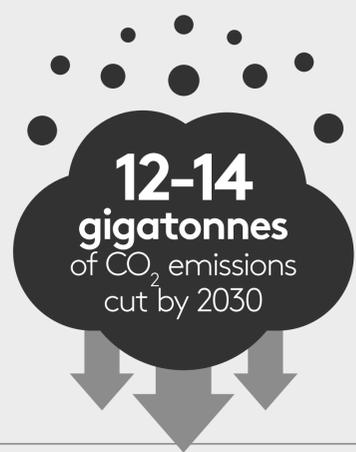


Steel is the Springboard to Sustainability

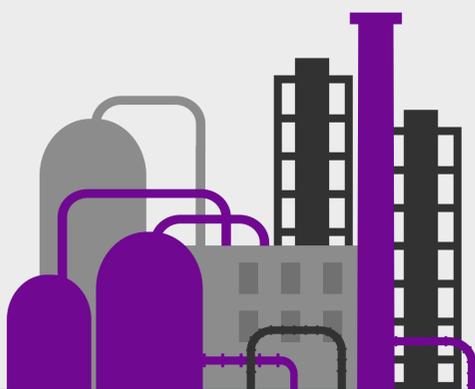


Sustainability starts with renewable energy

To sustain planet Earth and combat the advance of global warming, scientists calculate that the world must cut greenhouse gas, or carbon dioxide (CO₂) emissions by **12 to 14 gigatonnes by 2030** to keep temperature increases below a targeted 2°C. The large-scale implementation of renewable energy technologies—solar, wind, tidal and geothermal—is critical to reaching that goal.



Renewable energy starts with steel



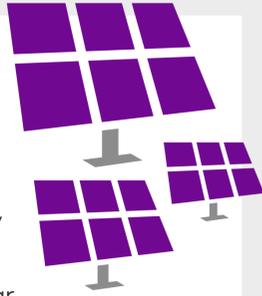
Whether used to construct the tower and nacelle of wind turbines, the foundation and supports of tidal turbines, key components of ground source heat pumps, or the base for solar panels, pumps, tanks and heat exchangers, carbon and stainless steel, steel alloys and iron castings are the essential building blocks of renewable energy technologies.



Harvesting the infinite resources of planet Earth

SOLAR

The amount of sunlight that strikes the earth's surface in an hour-and-a-half is enough to supply the world's energy consumption for a full year.

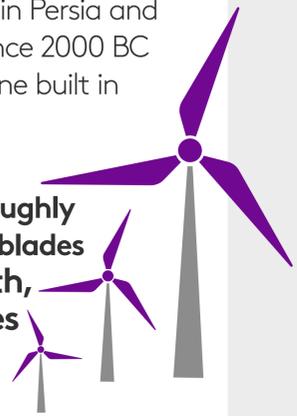


Corrosion-resistant stainless steel mirrors and support structures and thin-walled sheets formed into complex shapes maximize heat transfer in photovoltaic cells or collectors that harness power and heat from the sun's radiation. **By 2030, solar energy could meet 13% of global power needs** and by 2050 could be the world's largest source of electricity.

WIND

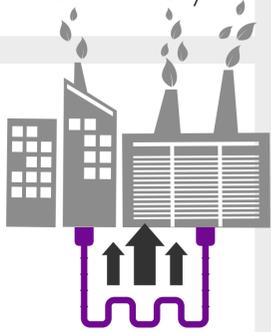
Wind mills, first developed in Persia and China, have been in use since 2000 BC with the first modern turbine built in the 1940s in Vermont.

The average utility-scale **wind turbine contains roughly 8,000 parts, including blades up to 250 feet in length, and contains 140 tonnes of steel** used in the fabrication of the tower, nacelle that houses the generator components, and the rotor.



GEOHERMAL

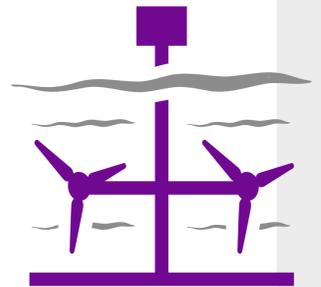
Heat tapped from geothermal energy production occurs 4,000 miles within the core of the earth, where temperatures might reach 9,000° Fahrenheit. The most famous geothermal system on the globe is Yellowstone National Park, with geothermal features there numbering about 1,000 and including 250 geyser eruptions every year.



By 2050, geothermal electricity generation **has the potential to generate 1,400 TWh (terawatt hours) annually**, displacing 800 megatonnes of CO₂.

TIDAL

An emerging technology, tidal (or "blue") energy is generated by and sourced from changing sea levels or ocean currents and tides. Estimates indicate **there is one terawatt or 1 million megawatts, of technically harvestable tidal energy** around the world. Stainless steel plays a key role in such applications by providing protection from ocean water corrosion, biofouling and abrasion in such applications.



The world's largest tidal turbine is installed in Scotland.

A forever "green" path to the future

Under the sun, in the atmosphere, deep below the Earth's crust and on the ocean floor, renewable energy technologies rely on steel to ensure sustainability.

