

FACTSHEET: History of Uranium and Nuclear Energy

In **1789**, Martin Klaproth, a German chemist, isolated an oxide of uranium while analyzing pitchblende samples from silver mines in Bohemia. For over 100 years uranium was mainly used as a colorant for ceramic glazes and for tinting in early photography. Uranium was produced in Bohemia, Cornwall (UK), Portugal and Colorado and total production amounted to about 300-400 tonnes.

Henri Becquerel discovered radioactivity in 1896. The subsequent discovery of radium in **1898** by Marie Curie led to the construction of a number of radium extraction plants processing uranium ore (radium is a decay product of uranium). In recognition of her work, Marie Curie became the first woman to win the Nobel Prize in 1903, which she shared with her husband Pierre and Henri Becquerel. The group's research later proved decisive for the development of nuclear energy. Prized for its use in cancer therapy, radium reached a price of 750 000 gold francs per gram in **1906** (US\$ 10 million). It is estimated that 754 grams were produced worldwide between **1898** and **1928**. Uranium was first found in Namibia in **1929** southeast of the Rössing Mountain.

With the discovery of nuclear fission in **1938** by Otto Hahn, Lise Meitner and Otto Fisch, the uranium industry entered a new era. In December **1942**, the first controlled nuclear chain reaction was achieved in Chicago. Although nuclear fission was first used for military purposes, the emergence of civil nuclear power reactors in the **1950s** demonstrated the enormous potential of nuclear fission for power generation. Electricity was first generated by a nuclear reactor in December **1951** when a test reactor in the USA lit up 4 light bulbs.

The Obninsk nuclear plant in Russia, which commenced power generation in **1954**, was the first to supply electricity to a grid system, it did so for 48 years. Calder Hall, at Sellafield, UK, was the World's first industrial-scale nuclear plant, and was operational from **1956** to **2003**. Grohnde, a German nuclear plant, first produced power in **1984**, and has generated over 376 billion kWh of electricity, more than any other reactor. With a cumulative load factor of 93.6% since first power in **2007**, the Cernavoda 2 nuclear plant in Romania leads the way on lifetime performance, followed by Germany's Emsland nuclear plant. However, there were also well-known set-backs for the industry with the **1979** Three-Mile-Island accident, the **1986** Tschernobyl accident, and the **2011** Fukushima accident.

In Namibia, the Rössing Mine came into production in **1976**, followed by the Langer Heinrich and Trekkopje Mines in **2007**. The Husab Mine first produced in **2016**, and by output is the 2nd largest uranium mine in the World.

Today, nuclear energy provides about 10% of the World's electricity from 445 nuclear power plants in 32 countries. After hydroelectric power, nuclear energy is the World's 2nd largest source of low-carbon power, contributing 29% to low-carbon generation. Nuclear energy can therefore play a vital part in the successful transition to a clean energy future, which is required to mitigate the effects of climate change.

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Source: NUA, WNA