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INDUSTRIES & MARKETS

Nuclear energy in Canada

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CHAPTER 01



Leading countries in nuclear energy generation worldwide in 2023 (in terawatt-hours)

Global nuclear power production 2023, by leading country

Energy production in terawatt-hours



3 Description: In 2023, the United States generated around 775 terawatt-hours of nuclear energy. That year, the U.S. was the main producer of nuclear power worldwide, followed by China and France. Accordingly, the U.S., France, and China were also the countries with the largest operable nuclear power capacity at that time. Note(s): Worldwide; 2023 Source(s): Ember

Leading countries in nuclear energy consumption worldwide in 2023 (in exajoules)

Global nuclear energy consumption 2023, by leading country

Consumption in exajoules (input-equivalent)



Number of operable nuclear power reactors worldwide as of May 2024, by country

Operable nuclear power reactors worldwide 2024, by country



5 Description: As of May 2024, there were 440 nuclear reactors in operation in 32 countries around the world. The United States had the largest number of nuclear power reactors in operation at the time, at 94 units. Operable nuclear reactors refer to those that are connected to the grid. Read more Note(s): Worldwide; May 2024 Source(s): EIA; IAEA; World Nuclear Association

Ranking of leading nuclear power plants worldwide as of June 2024, by capacity (in megawatts electric)

Leading nuclear power plants worldwide 2024, based on capacity

Capacity in megawatts electric



6 Description: As of June 2024, 10 out of the 15 largest nuclear power plants in the world based on capacity were based in Asia. Their production capacity ranged between 6.5 gigawatts electric in the largest Chinese plants to almost eight gigawatts electric in the Kashiwazaki-Kariwa power plant in Japan. Read more. Note(s): Worldwide; as of June 2024 Source(s): IAEA; RankRed

Number of planned nuclear power reactors worldwide as of May 2024, by country

Planned global nuclear power reactor additions 2024, by country

Number of nuclear reactors



Read

Number of small modular reactor (SMR) designs in development worldwide in 2024, by country

Number of SMR designs in development worldwide 2024, by country

Number of SMR designs



8 Description: In 2024, 25 out of the 98 global small modular reactor (SMR) designs were being developed in North America, of which the majority in the United States. Russia followed, with 17 SMR designs in different stages of development, while the Asian countries of China, Japan, and South Kore accounted for 19 SMR projects. Read more Note(s): Worldwide; 2024 Note(s): Worldwide; 2024 Source(s): Royal Bank of Canada (Climate Action Institute); World Nuclear Association CHAPTER 02



Operable nuclear power capacity in Canada in selected years from 2000 to 2023 (in megawatts electric)

Nuclear energy capacity in Canada 2000-2023



Read more

Capacity of nuclear power plants in Canada in 2022 (in megawatts)

Nuclear power plants' capacity in Canada 2022



11 Description: In 2022, the Darlington nuclear power plant in Ontario achieved a capacity of approximately 3,700 megawatts. The electrical output of Bruce A and Bruce B was also above 3,000 megawatts. These three power plants have four units. In comparison, Point Lepreau plant had a capacity of around 700 megawatts, but this plant accounts for one single reactor. Note(s): Canada; 2022 Source(s): NRCan

Electricity generation from nuclear power in Canada from 2005 to 2022 (in terawatt-hours)

Nuclear energy generation in Canada 2005-2022



12 Description: Nuclear reactors are a great contributor to electricity generation in Canada. In 2022, nuclear steam turbines were responsible for producing 82.3 terawatt-hours of electricity in Canada. Hydraulic turbines, however, are the main source of electricity generation in the country. <u>Read more</u> Note(s): Canada; 2005 to 2022; nuclear steam turbine generation Source(s): StatCan

Nuclear share of total electricity generation in Canada from 2010 to 2023

Share of nuclear electricity in Canada 2010-2023



CHAPTER 03



Nuclear power generation in Canada in 2020 with a forecast until 2050, by reactor technology (in gigawatt-hours)

Nuclear energy production in Canada 2020-2050, by technology



15 Description: As of 2024, Canada was planning the construction of Small Modular Reactors (SMRs), an advanced type of nuclear reactor with a capacity of approximately 300 megawatts. According to a recent forecast, the generation capacity of conventional nuclear power plants will remain below 90 terawatt-hours over the next 25 years, while SMR electricity generation will reach 160 terawatt-hours by 2050. Note(s): Canada; 2023; Forecast according to Canada net-zero scenario, which follows IEA's Announced Pledges Scenario. Source(s): Canada Energy Regulator

Capacity of Small Modular Reactor (SMR) projects under development in Canada as of 2023, by company (in megawatts electric)

Capacity of SMR projects in Canada 2023, by company

Capacity in megawatts electric



16 Description: As of 2023, SaskPower, Moltex, and OPG in collaboration with GE Hitachi were the main developers of advanced nuclear reactors in Canada. The utilities were planning the construction of three Small Modular Reactors (SMRs), each with a capacity of 300 megawatts electric, with operations starting by the early 2030s. The SMR projects in Canada represented only five percent of the total SMR designs that were being developed in the world. Note(s): Canada; as of February 2023; Does not include feasibility studies. *In megawatts. Source(s): House of Commons Canada 以上内容仅为本文档的试下载部分,为可阅读页数的一半内容。如 要下载或阅读全文,请访问: <u>https://d.book118.com/97531231413</u> <u>4012004</u>