Energy
Energy from Fossil Fuels

In 2024, 82% of the world's energy came from fossil fuels.

Source: ourworldindata.org/energy-mix

Energy
Energy from Renewable Sources

In 2024, 15% of the world's energy came from renewable sources like wind, solar, and others. This source is growing.

Source: ourworldindata.org/energy-mix

Energy
Energy from Nuclear Power Plants

In 2024, 4% of the world's energy came from nuclear power plants. This source is shrinking.

Source: ourworldindata.org/energy-mix

Data
Data from the AI User

Questions asked of a chat bot or a facial recognition program, for example, are inputted into the AI. There are ways to change or trim the data.

Data
Training Data

AI tools must be trained on vast amounts of data in order for machine learning to happen. Some researchers are working on low-energy systems for training AIs.

Data
Storage Data

Users increasingly keep their information on the cloud, or in large online servers.

Data
Data Produced by the AI

AI tools output data to answer the queries of users. This data can be shortened or changed to reduce energy use.

Cooling
Water Used by Data Centers

Water is more efficient in cooling data centers, which generate an enormous amount of heat, than air conditioning.

Cooling
Air Conditioning

Cooling data center infrastructure with air uses a lot of energy, increasing the use of fossil fuels.
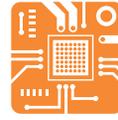
Cooling
Innovative Liquids

Next generation liquids that do not transmit electricity can immerse data center infrastructure to cool them efficiently.
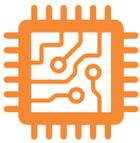
Cooling
Free Air Cooling

Free air cooling is highly efficient and uses minimal water, but is only effective in cold climates like Norway and Sweden.

Specialized Chips
Innovative Data Processing Chips

Advances in specialized, high-performance processors can make AI tools faster, but might also demand more energy.

Ordinary Chips
Data Processing Chips

The slower the processor, the more energy it is likely to use. These are also more costly.

Data Center Infrastructure
Changing Pathways and Structures

It is possible to alter data centers' neural pathways to make them more efficient and reduce their energy use. Researchers have tried using AI to detect where those changes should be.

Algorithms
Short Algorithms

Use of shorter 8-bit integers instead of 32-bit integers can reduce the memory and processing requirements.

Algorithms
Normal Algorithms

Use of 32-bit floating point numbers in the math required for AI processing is more accurate for training results.

Software
Efficiency in Applications

Modern software can include millions of lines of code. Integrating energy efficiency into programs that run our cars or our social media programs is a key way to reduce carbon emissions.

Measuring and Tracking
Energy Use Legislation

Companies can be compelled to report the energy they are using to develop their AI models.

Measuring and Tracking
Crowdsourcing

Experts can track the speed and efficiency of different AI models in order to measure their energy use.

Land
Data Center Development in Urban Areas

Many data centers are currently being built in areas where land is already scarce and property prices are high because companies seek to be closer to data consumers.

Land
Data Center Development in Remote Areas

Data center construction in remote areas can threaten wildlife and natural habitats.to data consumers.

Emissions
Heat Emissions from Data Centers

Data centers emit heat as they process information. This heat can be used for other purposes or it can do harm if not mitigated.

Emissions
Noise Pollution from Data Centers

Generators and processors in data centers generate significant noise pollution that affects both people and animal life in the vicinity.

Emissions
Light Pollution from Data Centers

Data centers are often brightly lit, creating light pollution that negatively affects people and bird migration patterns.

Wild Card
Your ideas on parts of the system

Wild Card
Your ideas on parts of the system