WORLD COAL ASSOCIATION

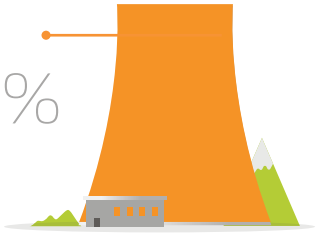
COAL AND AIR QUALITY

CLEANER COAL TECHNOLOGIES

During the burning of coal, emissions can occur that cause concerns about air quality, but technologies exist to address that challenge. The World Coal Association (WCA) supports the use of these technologies in modern coal-fired power stations to reduce emissions.

↓ 90-99.9%

Reduction of pollutants from coal combustion as a result of using cleaner coal technologies.

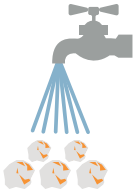


Producing electricity from coal can result in the release of trace elements, such as mercury, selenium and arsenic and varying degrees of oxides of sulphur (SOx) and nitrogen (NOx), which can be harmful to human health and the environment.

Cleaner coal technologies, such as electrostatic precipitators, fabric filters, selective catalytic reduction systems, wet and dry scrubbers, sorbents and activated carbon injection can reduce the emissions of pollutants from coal combustion by between 90% and 99.9% by stripping out the pollutants before they are emitted in the atmosphere through the smokestack.

HOW DOES "WASHING" HELP TO LOWER EMISSIONS?

Coal washing is the procedure where generators use cleaning processes to remove impurities to reduce emissions from coal – not unlike using a washing machine for your laundry. While this is standard practice in many countries, greater uptake in developing countries is needed as a low-cost way to improve the environmental performance of coal.



SOx NOx HOW ARE WE REDUCING SOx AND NOx EMISSIONS?

Technologies exist to significantly reduce SOx and NOx emissions from coal-fired power stations.

Flue gas desulphurisation (FGD) is a group of technologies that, when deployed, reduce sulphur dioxide (SO_2) emissions from coal use.

These typically use a chemical sorbent, usually lime or limestone, to remove SO_2 from the flue gas.

FGD technologies have been installed in many countries and have led to enormous reductions in emissions.

↓ 80-90%

Reduction in NOx emissions from FGD technologies installed in several countries.

PM HOW DO WE CONTROL PARTICULATE MATTER?

Technology has been developed to control the emissions of particulate matter (PM) similar to how the water filter works. These technologies, which are widely deployed in both developed and developing countries, include:

- Electrostatic precipitators (ESP) – the most widely used particulate control technology, ESPs use an electrical field to create a charge on particles in the flue gas in order to attract them to collecting plates
- Fabric filters, which collect particulates from the flue gas as it passes through the tightly woven fabric of the bag.

↓ 99.95%+

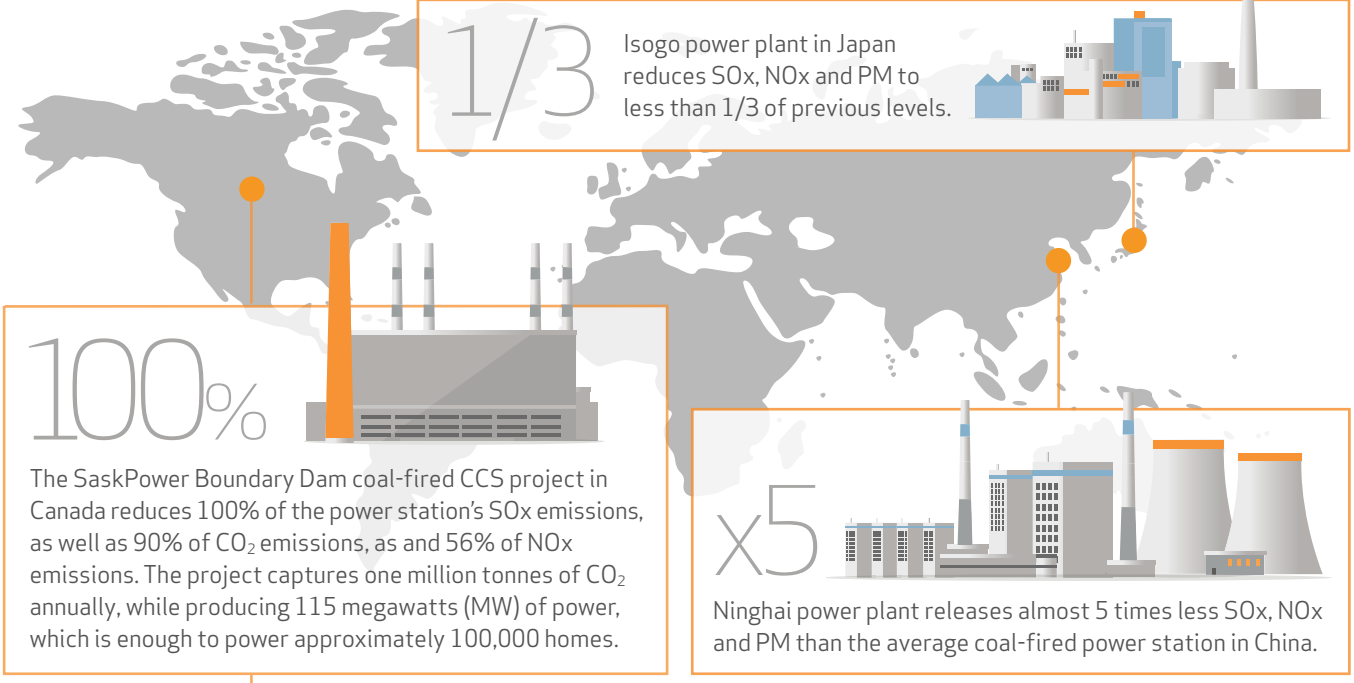
Particulate matter than can be removed by electrostatic precipitators and fabric filters.

Hg HOW DO WE DEAL WITH MERCURY AND OTHER TRACE ELEMENTS?

A number of technologies are used to limit the release of trace elements including coal washing, particulate control devices, fluidised bed combustion, activated carbon injection and FGDs.

WORLD COAL ASSOCIATION

WHAT IS HAPPENING TODAY?



1/3

Isogo power plant in Japan reduces SOx, NOx and PM to less than 1/3 of previous levels.

100%

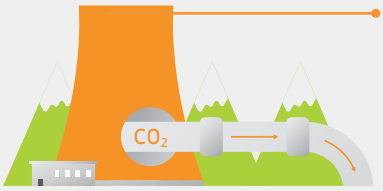
The SaskPower Boundary Dam coal-fired CCS project in Canada reduces 100% of the power station's SOx emissions, as well as 90% of CO_2 emissions, as and 56% of NOx emissions. The project captures one million tonnes of CO_2 annually, while producing 115 megawatts (MW) of power, which is enough to power approximately 100,000 homes.

x5

Ninghai power plant releases almost 5 times less SOx, NOx and PM than the average coal-fired power station in China.

THE ROLE OF CARBON CAPTURE AND STORAGE (CCS)

CCS is an integrated suite of technologies that can capture up to 90% of the CO_2 emissions produced from the use of fossil fuels in electricity generation and industrial processes, preventing the CO_2 from entering the atmosphere. The technology is also effective in capturing other emissions.

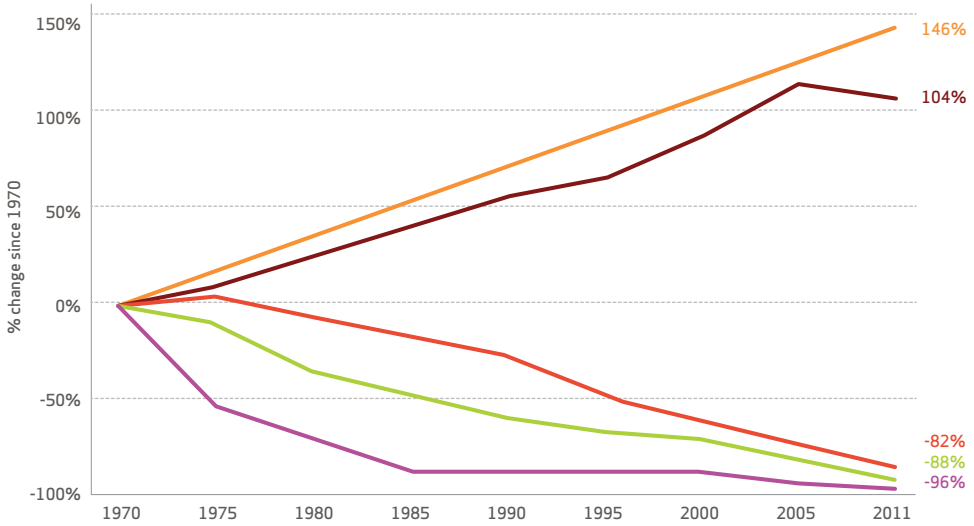


90%

Amount of CO_2 emissions that could be captured through CCS technologies.

WHAT HAS BEEN ACHIEVED?

Evolution of coal demand and emissions of pollutants in the US since 1970



↓82-96%

The reduction of emissions of NOx, SOx and PM in the US since 1970, while coal consumption increased by 146% – a positive example of what can be achieved.

Source: Loftus Peter J., Cohen Armond M., Long Jane C. S., Jenkins Jess D.. A critical review of global decarbonization scenarios: what do they tell us about feasibility? WIREs Climate Change 2015, Volume 6, Issue 1, pages 93-112, DOI: 10.1002/UCC.324