

# Information Centre for Climate-Friendly Coal-Fired Power Plants

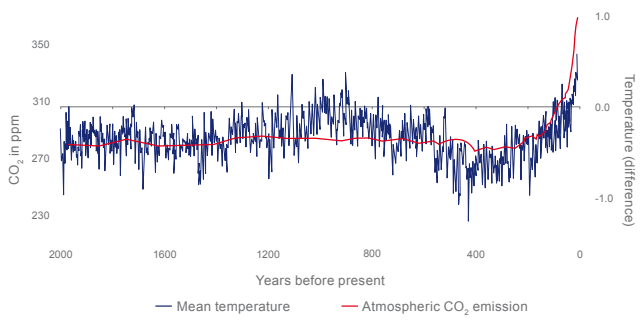
## Our aim is

- to generate awareness of efficient and climate-friendly power plants from which the CO<sub>2</sub> emissions produced can be captured and stored,
- to provide information concerning the environmental, technological and economic capabilities of CCS technology and, in particular, to communicate its capabilities in terms of climate protection,
- to provide impulses for objective and constructive discussion on the issues of the indispensable and climate-friendly use of fossil fuels, above all with regard to securing sustainable power supply,
- to bring together and involve the general public, experts and the decisive areas of politics in a mutual dialogue.

Further information is available on our website at [www.iz-klima.de](http://www.iz-klima.de).

## Development of global CO<sub>2</sub> emissions and surface temperature

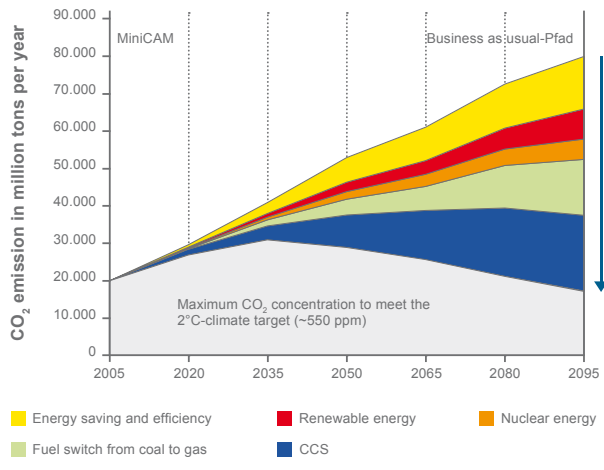
Own illustration | Source: US National Climatic Data Center, UK Climatic Research Institute et al.



Over the last 2000 years the human-caused CO<sub>2</sub> emissions have increased massively. The graph displays the average surface temperature change (compared to the average temperature between 1960 and 1990) in relation to the growth of CO<sub>2</sub> emissions.

## Mitigation Portfolio: Meeting the 2°C-climate target

Own illustration | Source: IPCC



The IPCC's mitigation scenario shows that CCS among other options will be an important instrument for reducing global CO<sub>2</sub> emissions in order to meet the 2°C-target.



„CCS is going to be critically important and it is absolutely essential that the developed countries invest a lot in creating technological solutions related to Carbon Capture and Storage.“

Dr. Rajendra Pachauri, Chairman of Intergovernmental Panel on Climate Change (IPCC) and Nobel Prize for Peace Winner 2007 on an event of the IZ Klima on Mai 7th 2008.

## Imprint

**Publisher:**  
IZ Klima – Informationszentrum klimafreundliches Kohlekraftwerk e.V.  
Markgrafenstraße 35  
10117 Berlin  
Germany

**Please contact us:**  
Phone: + 49 30.20 61 37 890  
Fax: + 49 30.20 61 37 899  
E-Mail: [info@iz-klima.de](mailto:info@iz-klima.de)  
Web: [www.iz-klima.de](http://www.iz-klima.de)

## Climate-Friendly Coal-Fired Power Plants:

# A chance for climate protection.

**IZ Klima – Informationszentrum klimafreundliches Kohlekraftwerk e.V.** is a cross-enterprise communication platform for the development of climate-friendly coal-fired power plants.

**As a partner in the dialogue** with the interested public, IZ Klima provides information about the capabilities of equally efficient and climate-friendly power generation by means of CO<sub>2</sub> emission-low power plants.

**These power plants** work on the basis of so-called Carbon Capture and Storage (CCS) technology. By using CCS, CO<sub>2</sub> emissions from fossil-fuel power plants are captured and subsequently permanently stored in suitable geological formations.

Dear Ladies and Gentlemen,



Since the G8 Summit in Heiligendamm and the awarding of the Nobel Peace Prize to Al Gore and the scientists of the UN climate commission (IPCC), climate change has become a significant issue in the public eye.

The battle against global warming will become the greatest challenge of the 21<sup>st</sup> century. The international community must find solutions to this global problem now. The production of greenhouse gases must be drastically reduced and the growth of emerging economies like, for instance, China and India, must be released from their deadly spiral of constantly increasing emissions. The mission is clear: low carbon technologies are essential in order to satisfy the globally increasing demand for energy. For precisely this reason, leading enterprises in the energy and power generation segment are already forging ahead with the research and development of innovative technologies like Carbon Capture and Storage (CCS) technology. The consequence would be a decisive reduction in the emissions of CO<sub>2</sub> from fossil-fuel power plants on a global scale. Experts unanimously agree that coal will maintain its importance as a globally significant source of energy in the coming decades. However, in the future, CSS technology may well succeed in ensuring not only climate-friendly power generation with coal-fired power plants, but may also contribute considerably to the protection of our biosphere.

IZ Klima is dedicated to the provision of information about the capabilities of CCS technology. It is our expressed intention to establish ourselves as a platform and forum for a constructive and objective dialogue between the general public, experts and the decisive areas of politics, to ensure a sustainable future with climate-friendly power generation.

Klaus von Trotha

Chairman,  
IZ Klima e.V.

## The climate-friendly power plant

The combustion of fossil fuels in power plants releases carbon dioxide (CO<sub>2</sub>), a greenhouse gas that is recognised as one of the main contributors to global warming.

CCS technology appears to be a promising solution for a considerable reduction of future atmospheric CO<sub>2</sub> emissions from fossil-fuelled power plants. Future power plants employing CCS will be in a position to capture and permanently dispose of around 90 percent of the CO<sub>2</sub> emissions resulting from the combustion process. This is made possible by various different methods that capture the CO<sub>2</sub> during the combustion process or subsequently wash it out of the flue gases. The CO<sub>2</sub> 'captured' by these means no longer enters the atmosphere and can no longer contribute to global warming.

## Storage and transportation

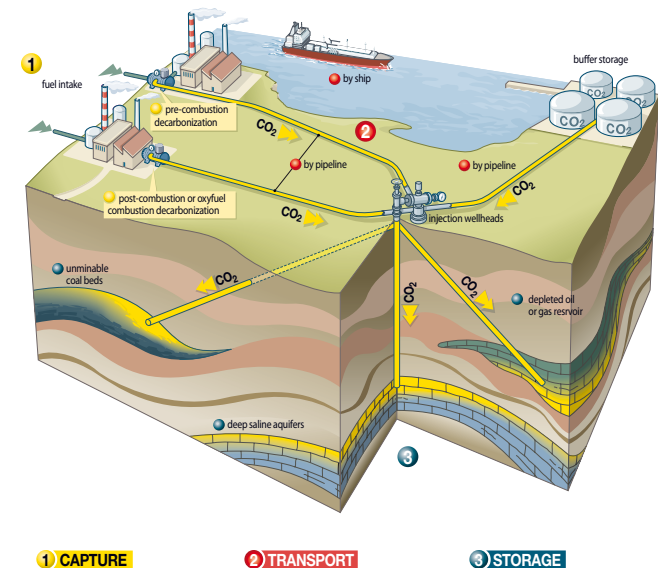
It is essential that the CO<sub>2</sub> captured during the power generation process is stored safely and permanently. Appropriate geological storage repositories could be depleted oil and gas fields that have already served as natural storage facilities for millions of years. In the natural gas production process, successful projects are already in operation for the separation and disposal of CO<sub>2</sub>. At the same time, however, further research into the safe and permanent storage of enormous volumes of CO<sub>2</sub> remains essential.

A further storage option for CO<sub>2</sub> is offered by deep porous rock saturated with brine. As a consequence of the immense pressures at such great depths, the CO<sub>2</sub> injected can be stored permanently into the pores of these geological formations known as saline aquifers. As most power plants are not located close to such storage options, the captured CO<sub>2</sub> is liquified under pressure and transported by pipeline, similar to the transportation of natural gas, to the storage sites.

Current research projects are intensively investigating the geological, legal and economic issues involved in capture and storage technology. The current target is to make the first CCS power plants commercially available by the year 2020 including cost-effectiveness. From a long-term perspective, it is self-evident that CCS technology also engenders costs which must be minimised and have to be considered under the European Emissions Trading Scheme (ETS).

### Capture, transport and storage of CO<sub>2</sub>

Source: Total AG



The illustration displays the full process of the CCS technology. The storage of CO<sub>2</sub> can be realised among others in brine-bearing porous rock, a so-called saline aquifer.