



CLEANER FOSSIL FUELS PROGRAMME

At the Gleneagles Summit in July 2005, the G8 leaders stated “...we will support efforts to make electricity generation from coal and other fossil fuels cleaner and more efficient by:

(a) supporting IEA work in major coal using economies to review, assess and disseminate widely information on energy efficiency of coal-fired power plants; and to recommend options to make best practice more accessible;

(b) inviting the IEA to carry out a global study of recently constructed plants, building on the work of its Clean Coal Centre, to assess which are the most cost effective and have the highest efficiencies and lowest emissions, and to disseminate this information widely; ”

Responding to that request, the IEA Secretariat has undertaken a number of activities under its G8 Cleaner Fossil Fuels programme. Working in conjunction with the IEA Clean Coal Centre (CCC), IEA Coal Industry Advisory Board (CIAB), and the IEA Working Party on Fossil Fuels (WPF), the work broadly included the following areas:

- gather information on coal-fired power plants worldwide
- complete case studies on recently constructed coal and gas-fired power plants
- assess information on efficiency reporting methodologies in different parts of the world, and rationalise these to a common basis
- assess potential of upgrade and/or replacement of older coal-fired power plants in major coal using economies
- assess potential of future technology development leading to higher efficiencies
- disseminate the technical information as reference for decision makers

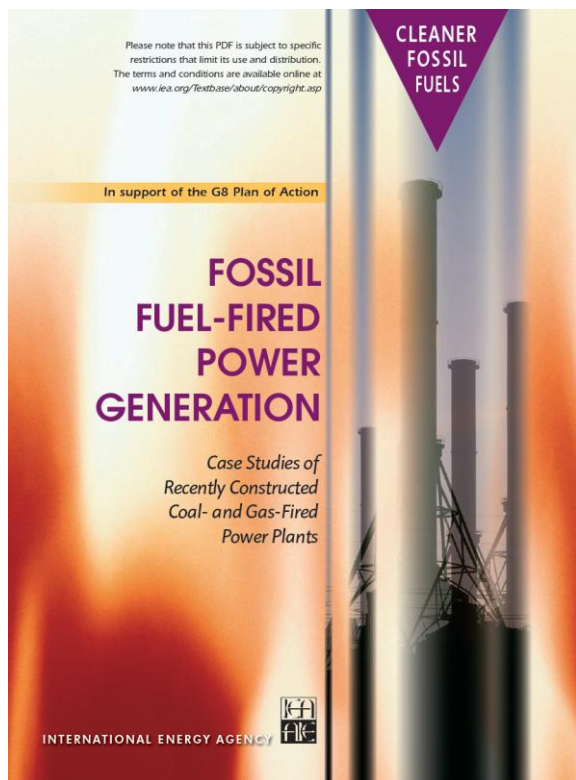
The work led to the development of IEA’s policy recommendations for improvement in efficiency of global coal-fired power fleet and reduction in associated CO₂ emissions. These recommendations were published coinciding with the G8 summit in Hokkaido in July 2008, and are available here.

At the 2007 Heiligendamm summit, the G8 leaders reaffirmed their commitment by inviting the IEA to work “...in order to foster the diffusion and adoption of best practices along the entire fossil fuel process chain with a focus on fuel treatment as well as new and existing power plants ...”

One report has been published and several others are under preparation based on the Gleneagles and Heiligendamm mandate.

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PUBLISHED REPORT



The series of case studies in this report were conducted to illustrate what efficiency is achieved now in modern plants in different parts of the world using different grades of fossil fuels. The plants were selected from different geographical areas, because local factors influence attainable efficiency. The case studies include pulverized coal combustion (PCC) with both subcritical and supercritical (very high pressure and temperature) steam turbine cycles, a review of current and future applications of coal-fuelled integrated gasification combined cycle plants (IGCC), and a case study of a natural gas fired combined cycle plant to facilitate comparisons. The results of these analyses show that the technologies for high efficiency (low CO₂ emission) and very low conventional pollutant emissions (particulates, SO_x, NO_x) from fossil fuel-fired power generation are available now through PCC, IGCC or NGCC at commercially acceptable cost. This report contains comprehensive technical and indicative cost information for modern fossil fuel-fired plants that was previously unavailable.

These publications are expected to serve as sourcebooks for policy makers and technical decision makers contemplating decisions to build new fossil fuel-fired power generation plants.

REPORTS IN-PROGRESS

Potential of upgrade and replacement of older coal-fired power plants in major coal using economies

This report explores the following issues:

Intra-country, inter-country and inter-regional variation in operating efficiency, the likely number of units that might require upgrade or replacement to bring them at par with benchmark, potential reduction of CO₂ emissions and coal consumption and the effect on coal reserves in individual countries resulting from such upgrade and replacements, necessary investments, barriers to such upgrade or replacements and policy measures required to overcome the barriers.

Developments in coal-fired power generation: their potential for higher efficiency

This report assesses the potential of ongoing developments in materials, process instrumentation, process technology and drying, and their effects on future coal-fired power generation. The report also contains a section prepared by the IEA CIAB; this section assesses different efficiency reporting methodologies used in different countries. This can be used to rationalize the efficiency figures which often have different basis, and therefore are difficult to compare.

Case studies on recently constructed supercritical or ultra-supercritical coal-fired units

This report provides information on operation and performance of eight recently built supercritical or ultra-supercritical units, and the policies that facilitated their deployment.

Assessment of full coal process chain for efficiency improvement in power generation

This report includes case studies and analytical work assessing best practice along the full coal process chain, with emphasis on coal upgrading, to reduce coal use in power generation. It also uses the analysis to make policy prescriptions to stimulate investments in efficient coal-fired plants.