



Where can we capture CO₂ ?

At large stationary emission sources

Stabilizing man-induced greenhouse gas emissions in order to avoid upsetting the climatic balance would, according to IPCC experts (Intergovernmental Panel on Climate Change), entail retrieving an immense volume of CO₂ from the atmosphere, of the order of 3.7 billion tonnes per year between now and 2025, and up to 14.7 billion tonnes thereafter. These figures are enormous: to gain a better idea of their true meaning, this amount produced yearly corresponds to a volume of liquefied CO₂ that could fill Lake Lemman 45 times over. With our current state of knowledge, the objective seems too far from reach. At present, only industrial emissions from large stationary sources can be captured. Most of these come from power stations - CO₂ is released as energy is produced from fossil sources - and from industrial production units, notably when certain products are manufactured. Transport and energy consumption by residential and tertiary sectors also generate CO₂, but their associated emissions are diffuse and difficult to capture. These will need to be reduced by other means, notably through the use of clean fuels (including hydrogen produced in a pollution-free manner) and energy conservation.

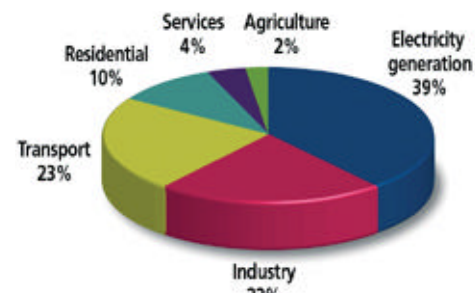
CO ₂ emissions	in GtC
Iron and steel production ⁽¹⁾	0.393
Cement production ⁽¹⁾	0.308
Oil refining ⁽²⁾	0.188
Petrochemical industry ⁽²⁾	0.142
Other industries ⁽³⁾	0.360
Total for industry exclusive of power plants	1.391
Power plants ⁽³⁾	2.091
Total for industrial sources	3.482

Annual CO₂ emissions in GtC for the main industrial sources.

Sources: (1) IEA GHG (1994-1996).

(2) OECD Environmental Data for 1997.

(3) IAE World Energy Outlook for 1998.



Distribution of world CO₂ emissions by sector
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Concerned industrial sites

Power plants today account for 40% of CO₂ emissions throughout the world, in other words, 7 billion tonnes of CO₂ per year. Among the types of fossil fuel used, coal and natural gas head the list. Power stations fed with coal - the fuel with the highest carbon content - are the ones most concerned by CO₂ capture at the source. The decarbonization of fossil fuels emerges as a necessity when one realises that notably China and India, both big coal producers, have every intention of using this resource to support their development. Generally speaking, the Earth's coal reserves could provide the answer to the problem of the depletion of oil and gas reserves with which we will be confronted before too long. If we could succeed in decreasing or even eliminating emissions related with this fuel altogether, it might recover its social status and respond more readily to global economic and environmental challenges.

Four industrial sectors could also have recourse to CO₂ capture: iron and steel production (the manufacture of one tonne of steel generates an average 1.8 tonnes of CO₂), cement production, the refining of oil products and the petrochemical industry. These four activity sectors combined release over 3.7 billion tonnes of CO₂ each year. Lastly, in certain industries like ammonia production and the processing of natural gas, the techniques involved already entail separating out CO₂. Today, this is released into the atmosphere, whereas it could easily be recovered for storage.

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