

Emitted 53.4 million short tons²⁹ of CO₂-eq greenhouse gases in year 2000 from power plants, all of which comes from coal. (Fuel mix³⁰ end-2000: 51% Coal 48% Nuclear 1% Hydro) emissions substantially up from previous year, due to more electricity production.

Ranked 11 of top US coal consumers among power companies 2000 by USDOE EIA.³¹

Coal Power's present stations³² should account for most of accumulated carbon emissions:

Allen (Belmont, North Carolina 1140 MW from 1957

Belews Creek, North Carolina 2240 MW from 1974

Buck, North Carolina 329 MW from 1926

Cliffside, North Carolina 760 MW from 1940

Dan River, Eden, North Carolina 276 MW from 1940

Lee, Pelzer, North Carolina 370 MW from 1951

Marshal, Terrell North Carolina 2090 MW from 1965

Riverbend, Mt Holly, North Carolina 454 MW from 1940

Electricité de France

www.edf.com

Headquarters Paris, France.

Total coal CO₂ emissions: rough guess 15 MtC in France, Germany, China, UK.

EDF is the biggest electricity company in Europe, with 470 TWh generation, 103 GW capacity in France and 34 GW outside France, and 7 GWth (district heating). EDF is owned by the French government. Though best known for its large nuclear capacity, it also operates a large capacity of old coal and oil power stations, run to balance the nuclear power. This capacity is used or unused due to availability of nuclear and hydropower and for peak capacity.

EDF France produces 25 TWh "thermal", i.e. mainly coal. If all were coal, that would mean about 7 MtC. (Does not correspond well to the IEA figure 18.9 Mtce coal for heat and power 2000, or 14.3 MtC emissions.)

As for the non-French power stations, the information is very scarce. Some of it is coal power. EDF's environmental reports are very uninformative.

The new **EDF Trading** imported 10 Mt coal year 2000.³³

EDF recently acquired EnBW (Energie Baden-Württemberg AG), which used 2.7 Mtce of hard coal and 0.9 Mtce of

lignite in year 2000.³⁴ (EnBW publishes good environment reports)

Also has a 2000 MW coal power plant in the UK, and some in Poland.

EDF has financed and built a 2x350 MW coal power station in China together with Alstom (coal & other power plant engineering company), on a build-operate-transfer basis, meaning that the French companies get paid by the first 15 years sales of electricity, while they operate the plant.

EDF is committed to "clean coal", and is developing clean coal combustion at Carling and Gardanne in France and Puertollano in Spain.

It should also be noted, however, that some important projects internationally (e.g. in Egypt and China) focus on combined-cycle natural gas, and that there is some effort on wind power.

Delta Electricity

www.de.com.au

Headquarters: Sydney, Australia.

Produced 21.2 TWh 2000³⁵, all of it from coal power stations. The 1996 emissions was 15 Mtons with an emission rate of 890, which (to judge from diagrams) is essentially unchanged and should mean 5.1 MtC.

Has vague ambitions to move away from coal to gas and renewables.

Ontario Power

www.opg.com

Headquarters Canada.

Emissions from coal power year 2000: 37.64 Mt³⁶ i.e. 10.3 MtC. Trend since 1998: strong increase.

Big company: total generation 150 TWh/year about 30 per cent of Canada consumption, most nuclear, then hydro and coal.

TXU

ex. Texas Utilities Electric Company, ex. Eastern Generation, UK.

www.txu.com

Headquarters; Dallas, Texas, USA.

Annual CO₂ emissions from coal: at least 12.5 Mtce.

²⁹ Duke Energy environment health & safety in action. 2000 progress review

³⁰ <http://www.dukepower.com/content/default2.asp?wpm=DP02a3>

³¹ EIA Coal Industry Annual 2000 p.195 (downloadable).

³² <http://www.dukepower.com/content/default2.asp?wpm=DP02d2>

³³ EDF trading limited, 1st year of activity (from edf web).

³⁴ EnBW Environment report 2000.

³⁵

³⁶ Sum of emissions from individual plants in **Towards Sustainable Development 2000 Progress Report**, available from web in full pdf and text pdf.

TXU Energy is the third-largest generator of electricity in the US. TXU Energy owns more than 21,000 megawatts of coal, natural gas and nuclear generation capacity through 70 electric generating units at 23 plant sites.

No. 2 top coal consumer among US utilities in DOE EIA ranking 2000.

Recovers lignite coal at three Texas locations for use in the company's Texas generating plants; mined 26 million tons in 2000. That is 12.5 Mtce³⁷ or 10.1 MtC³⁸ CO₂.

The total lignite mined in the US was about 84 Mt in year 2000, so TXU mined, and used 30 per cent of it.

To judge from a map on TXU's website, it has several lignite power stations, but no other coal.

UK: "coal powered stations: High Marnham five 189 MW units Unit four to be mothballed from 31 March 02, Drakelow three 333MW units Unit C12 to be mothballed from 31 March 02, Ironbridge two 485 MW units"

Estimated emission from UK operations: 2.5-3 MtC.

Owns half of 350 MW in Kiel, Germany, the other half is owned by E.ON. Coal?

Comment: The core business of TXU is electricity and gas retailing and trading, rather than generation and it has also a large nuclear gas power capacity and a commitment to renewables.

Taipower

<http://www.taipower.com.tw/>

Headquarters Taipei, Taiwan, China.

Annual CO₂ emissions from coal power: 15.6 MtC (1999)
Trend: strongly increasing since 1980.

Government owned near-monopoly.

Produced 110.7 TWh thermal power 2000. According to IEA, public electricity and heat generation, i.e. Taipower, consumed 20.6 Mtce in 1999.

ENEL

www.enel.it

Former government owned, now undergoing privatization and restructuring.

Produced 25.7 TWh from coal year 2000.

Spun off Elettrogen to Spanish ENDESA, of which 321 MW coal power (not a lot), Eurogen is next to go.

ENDESA

www.endesa.es

Headquarters Madrid, Spain.

Annual coal power CO₂ emissions: at least 10 MtC + ca 2 from Hiberdrola and Elettrogen.

Dominant Spanish power generating company (more than half market), also in electricity distribution, telecom etc. A lot of activity abroad, especially Latin America and Italy, but little coal so far.

In Spain, Endesa has 2.2 GW imported coal power stations and 4 GW domestic coal, with a mix of lignite, anthracite and other hard coal in some of that. A simple calculation gives a conservative figure of 10 MtC.³⁹

Merging with Hiberdrola, which produced 7.6 TWh coal power in 1999.

Endesa is in an ISO 14000 implementation process and should be able to produce better information soon.

"In 1999, mining production /lignite and coal/ in Endesa was 8.5 million tons, which is equivalent to 19,901 billion therms." That would correspond to some 5 MtC+.

Cinenergy

www.cinergy.com

Annual coal power CO₂ emissions: 29.3 MtC.⁴⁰

Burned 28.1 million tons of coal⁴¹ 2000 in a large number of coal power stations in the Midwest.

Committed to clean coal technology and carbon sequestration.

CEZ

<http://www.cez.cz/eng/>

Headquarters, Prague, Czech Republic. Majority owner National Property Fund; full privatization planned for 2002.

Annual coal power CO₂ emissions⁴²: 9.8 MtC. (2000)

CO₂ emissions from CEZ power stations (mainly lignite) fell through 1993, but have since increased.

³⁷ A conversion factor for US lignite is produced by dividing the total lignite production in actual metric megatons with the US 1996 the total lignite in Mtce. This gives 0.481 tce/tonne. Input figures from IEA Coal Information 2001 p II.308.

³⁸ Emission factor assumed 27.6 kg carbon per GJ, after IPCC manual. Real figure could be somewhat higher or lower.

³⁹ 6000 hours operation (can be slightly more or less), at t Mt CO₂/TWh (should be more for older and/or lignite fired stations).

⁴⁰ If the 28.1 Mtons are equal to tce, IPCC standard emission factor 25.8 tonne/TJ.

⁴¹ www.cinergy.com/environment/decade_of_progress/coal_energy_and_the_environment.asp

⁴² <http://www.cez.cz/eng/environment/article.asp?id=54084&cat=1826&ts=8ec16>

Annex 3. Other big coal users

The world's top **steel** producer; Nippon Steel, year 2000 used 20.98 Mt coal, which should produce 15-16 MtC, which would put them about 10th on the corporate list. Many other big steel companies have no information on coal consumption or CO₂ emissions readily available.

Table A3.1. The biggest steel producers, according worldsteel.org.

Rank	Mt steel	Company
1	28.4	Nippon Steel
2	27.7	POSCO
3	24.1	Arbed
4	22.4	Ispat International
5	21.0	Usinor
6	20.0	Corus
7	17.7	Thyssen Krupp
8	17.7	Shanghai Baosteel
9	16.0	NKK
10	15.6	Riva
11	13.0	Kawasaki
12	11.6	Sumitomo
13	10.9	SAIL
14	10.7	USX
15	10.0	Magnitogorsk
16	10.0	Nucor
17	10.0	China Steel
18	9.6	Severstal
19	9.1	Bethlehem Steel
20	8.8	Anshan

Major coal carbon emitters are likely to be found among these, even if carbon intensity for crude steel production varies. Arbed (Luxemburg) and Usinor (France) have announced plans to merge to the by far biggest steel company in the world, in what the companies refer to as a “strategic alliance” with Nippon Steel.

The **cement industries** emit CO₂, both because it is an inherent feature of the process, partly because of energy use, which is often coal.

Annex 4. Top coal electricity generators 2000

Table A4.1 The world's top 30 coal-fired electricity generators year 2000, by capacity. From IEA Coal Information 2001.

	GWe	country
Ministry of ElectricPower*	124.7	China
ESCOM	33.9	South Africa
American Electric Power Company Inc	26.1	USA
RWE Power	18.9	Germany
Tennessee Valley Authority	17.4	USA
National Thermal Power Corporation	17.3	India
Korea Electric Power Corporation	14.2	(South) Korea
Georgia Power Company	14.0	USA
Vereinigte Energiewerke AG Berlin VEAG	12.2	Germany
E.on Energie	8.8	Germany
Electricité de France	8.8	France
Alabama Power Company	8.7	USA
RENEL Romanian Electricity Authority	8.7	Romania
ENEL Spa	8.6	Italy
Donbassenergo	8.5	Ukraine
Electric Power Development Company Ltd EPDC	8.5	Japan
Edison Mission Energy	8.1	USA
Taiwan Power Company TAIPOWER	8.1	Taiwan, China
Detroit Edson Company	8.0	USA
Ontario Power Generation Inc	7.8	Canada
CEZ as	7.3	Czech Republic
Delta Electricity	6.9	Australia
Electricidad SA (ENDESA)	6.8	Spain
Sverdlovennergo	6.4	Russia
PSI Energy	6.3	USA
Huaneng Power International Inc	6.3	China
PacifiCorp	6.3	USA
Texas Utilities Electric Company	6.1	USA
Dneprenergo	6.0	Ukraine
Eastern Generation Ltd	6.0	UK

*Incl Huaneng Power (also on the list)

The Swedish NGO Secretariat on Acid Rain

The essential aim of the Swedish NGO Secretariat on Acid Rain is to promote awareness of the problems associated with air pollution, and thus, in part as a result of public pressure, to bring about the required reduction of the emissions of air pollutants. The eventual aim is to have those emissions brought down to levels – the so-called critical loads – that the environment can tolerate without suffering damage.

In furtherance of these aims, the secretariat operates as follows, by

- Keeping under observation political trends and scientific developments.
- Acting as an information centre, primarily for European environmentalist organizations, but also for the media, authorities, and researchers.
- Publishing a magazine, Acid News, which is issued four to five times a year and is distributed free of charge.
- Producing and distributing information material.
- Supporting environmentalist bodies in other countries by various means, both financial and other, in their work towards common ends.

- Acting as coordinator of the international activities, including lobbying, of European environmentalist organizations, as for instance in connection with the meetings of the bodies responsible for international conventions, such as the Convention on Long-range Transboundary Air Pollution.

- Acting as an observer at the proceedings involving international agreements for reducing the emissions of greenhouse gases.

The work of the secretariat is largely directed on the one hand towards eastern Europe, especially Poland, the Baltic States, Russia, and the Czech Republic, and on the other towards the European Union and its member countries. By emitting large amounts of sulphur and nitrogen compounds, all these countries add significantly to acid depositions over Sweden.

As regards the eastern European countries, activity mostly takes the form of supporting and cooperating with the local environmentalist movements. Since 1988, for instance, financial support has been given towards maintaining information centres on energy, transport, and air pollution. All are run by local environmentalist organizations.