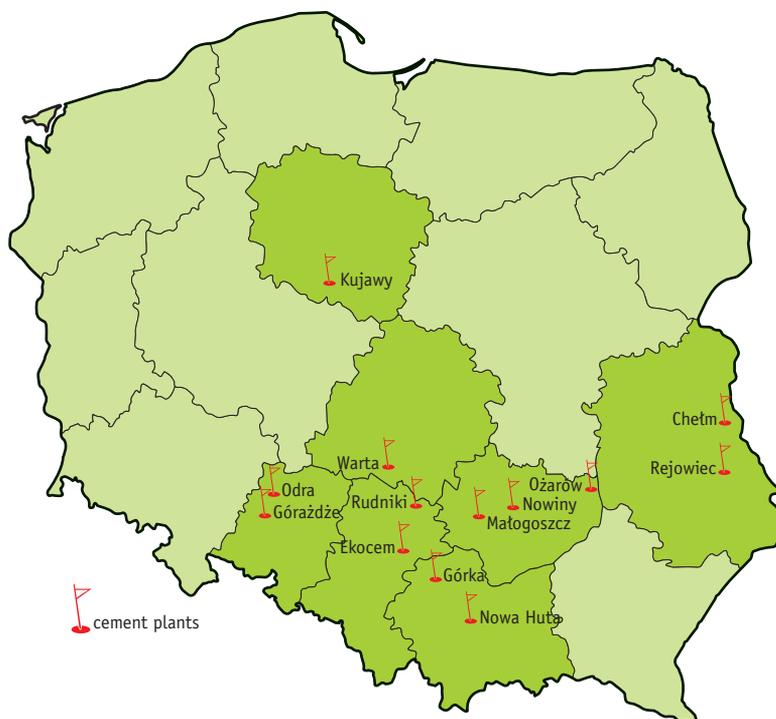


The cement industry in Poland

In terms of the volume of production, the Polish cement industry ranks seventh amongst European cement producers. The in-depth technical modernisation carried out in the industry over the past decade has brought it in line with the European and global leaders in terms of technology. The sector is completely privatised, with manufacturing plants being owned by global cement producing concerns.

Location of cement plants



Currently, the production capacity of dry furnaces in the cement industry amounts to approximately 13,000 thou. tonnes of cement clinker per annum. This may be increased to as much as 15 million tonnes/year. The capacity of currently installed cement mills is sufficient for cement production totalling up to 20 million tonnes/year.

The market

In 2005, the domestic consumption of cement amounted to 12,160 thou. tonnes, having increased by 5,9% in comparison with 2004.

The increase in cement consumption occurred gradually following the period 2000-2003, during which domestic cement consumption decreased systematically. In comparison with 2000, when the consumption of cement was the highest in the entire period of economic change taking place in our country, this result is still lower by 15,5%. We should, however, expect that it is the next year after 2003 that was preceded by a clear downward trend in cement consumption, and yet with growth following in successive years. This opinion is also substantiated by the high rate of economic development of our country, observed over the past two years, and the slow yet systematic increase in investment outlay. With a doubt, this opinion will be verified in future years.

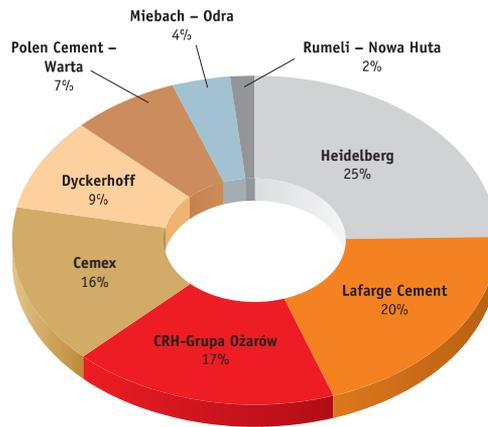
In 2005, the cement industry sold 11,852.9 th.tons of cement on the domestic market, i.e. 7.2% more than in 2004. A comparison of domestic consumption with sales effected by the industry shows that approximately 300 thou. tonnes of cement sold on the domestic market are imported. This is serious competition for domestic cement manufacturers. In the preceding year, the sector exported 487.6 thou. tonnes of

Owners of cement plants in Poland

Plants	Owner
Góraźdże Cement SA Cement plant Góraźdże Ekocem Sp. z o.o.	HeidelbergCement
Lafarge Cement Plant Kujawy Plant Małogoszcz	Lafarge
Grupa Ożarów SA Grupa Ożarów Cement plant Rejowiec	CRH
Cemex Polska Sp. z o.o. Plant Chetm Plant Rudniki	Cemex
Cement plant Nowiny	Dyckerhoff
Cement plant Warta SA	Polen Zement
Cement plant Odra SA	Miebach
Cement plant Nowa Huta SA	Rumeli
Górka Cement Sp. z o.o.	Mapei



Distribution of domestic cement market in Poland in 2004



cement, that is approximately 35% more than in 2004.

A characteristic feature of the domestic cement market is the sale of large quantities of bagged cement. In the total quantity of cement sold in 2005, bagged cement accounted for approximately 36%. Despite the downward trend, the decrease in the share of bagged cement (40% in 2004) in cement sales is proceeding very slowly. In this respect, our market differs considerably from the markets of other European countries, where the quantity of bagged cement sold accounts for only a few dozen percent of sales.

Production

In 2005, cement production totalled 12,259.9 thou. tonnes, thus being 7.5% higher than in the previous year. Cement clinker production amounted to 9.417 million tonnes; this figure is similar to that for 2004. The increase in cement production was in proportion to the increase in cement sales. The cement industry may fully

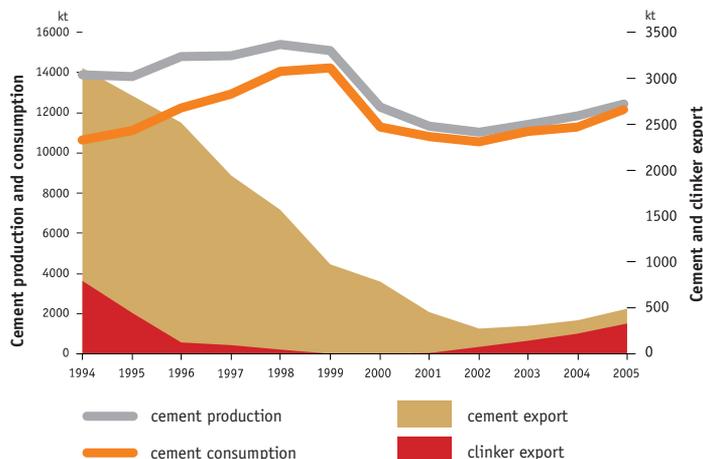
satisfy market demand over the next few years, even if the demand was to increase considerably. This stems from the fact that in the preceding year its total production capacity was utilised in only 71%.

More than 30 types of cement were made available on the market, meeting all customer requirements concerning the properties of cement. Of the total cement production figure, 45.3% was accounted for by pure cement, 46.1% by cement with additives, 7.7% by metallurgical cement, and 0.8% by pozzolana and other types of cement. The cements manufactured are characterised by a high stability of properties, which is achieved by the strict observance of technological regimes and the thorough control of production processes.

Technology

Following the in-depth modernisation of cement plants, clinker is manufactured nearly exclusively using the energy-saving dry method. Since 2003,

Results of the cement industry in 1994-2005



Results of the cement industry in 2003-2005

	2003	2004	2005
Clinker production	8518,0	9354,9	9417,0
Cement production	11 009,0	11 413,1	12 259,9
Domestic deliveries	10 572,0	11 061,7	11 852,9
Cement consumption	10 570,0	11 479,3	12 160*
Cement export	276,0	361,7	487,5
Clinker export	75,8	226,0	283,0

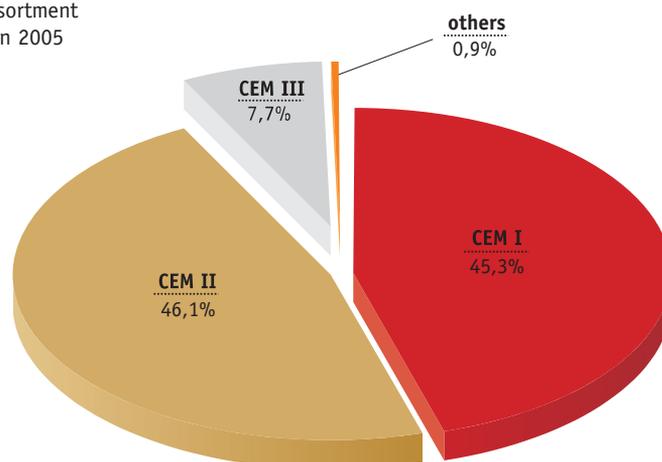
* assumption



only 2% clinker intended for the production of cements with special properties has been manufactured applying the wet method. Unitary heat consumption for clinker burning totalled 3,466 kJ/kg of clinker on average for the entire industry (3,380 kJ/kg for the dry method. It is worth noting that in the European Union countries – prior to the expansion of the EU – average consumption of heat for clinker burning totalled 3,725 kJ/kg, which clearly points to the high technological development of our industry.

The minimisation of thermal energy consumption on clinker burning is of fundamental importance for manufacturers, for fuel purchases constitute the largest single item in the costs of cement production. In 2004, approximately 10%, and in 2005 – 13.9% of thermal energy used for clinker burning was obtained by the industry from the combustion of substitute fuels. The objective of the industry is to at least double these figures. Furthermore, the industry consumes consi-

Cement assortment produced in 2005





derably less electric energy than in previous years. In 2005, this totalled 101.0 kWh/tonne of produced cement, while the figure for 2004 was 102.6 kWh/tonne. The cement industries of numerous other European countries consume even a few dozen percent more electric energy. Only a few dozen years ago, Poland had plants which consumed more than 200 kWh/tonne of produced cement.

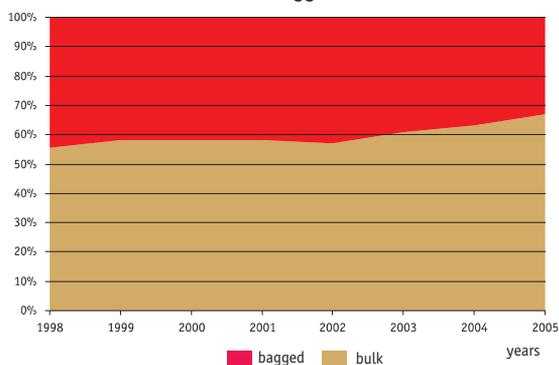
Environment

The operations of the cement industry in Poland are an example of a properly implemented strategy of sustainable development.

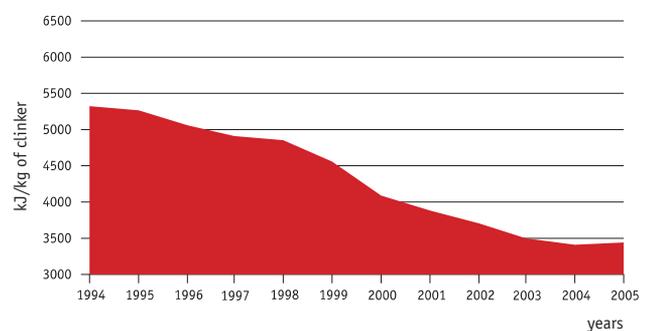
The emission of dust to the atmosphere has been drastically reduced. In 2005, the emission of dusts totalled 1,609.5 tonnes, i.e. 0.131 kg/tonne of produced cement. In 2004 this totalled 1,716.5 tonnes/year, that is 0.15 kg per tonne of cement produced. A year earlier, this index was 0.18 kg/tonne of cement. By way of comparison, at the beginning of the nineteen nineties, dust emissions totalled approximately 5 kg/tonne of produced cement.

The decrease in specific heat consumption for clinker burning has made it possible to lower gas emissions to the atmosphere. The emission of carbon dioxide, the main constituent of

Sales of cement in bulk and bagged in 1998-2005



Specific heat consumption in the cement industry in 1994-2005





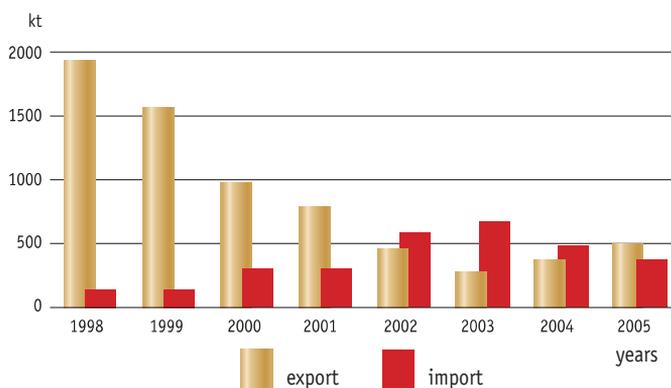
combustion gases, attained a level under 0.9 kgCO₂/kg of burnt clinker; this is nearly the lowest value that may theoretically be achieved in the most modern kiln systems.

The natural environment also benefits from the operation of industry. The abovementioned utilisation of substitute fuels has made it possible to lower the consumption of natural fuels, and thus to protect resources, in accordance with the principle of sustainable development. On a global scale, this also contributes to lowering gas emissions and decreasing the quantity of wastes deposited on the landfills. The combustion of substitute fuels is, at the same time,

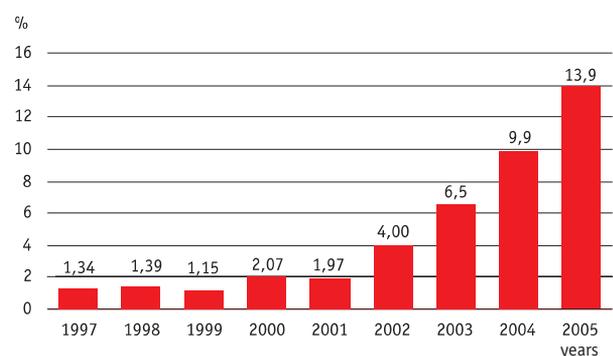
the most efficient and economic method of waste utilisation, with the full application of the energy contained therein for technological processes. In 2004, the quantity of wastes utilised in this manner totalled 201.1 thou. tonnes. In 2005, 329.92 thou. tonnes of alternative fuels were consumed. The cement industry attaches considerable importance to ensuring that the process of waste energy recovery is completely safe for both the natural environment and the quality of the end-product, i.e. cement.

Another advantage consists in the utilisation of industrial wastes as secondary raw materials in the cement production process. In 2005,

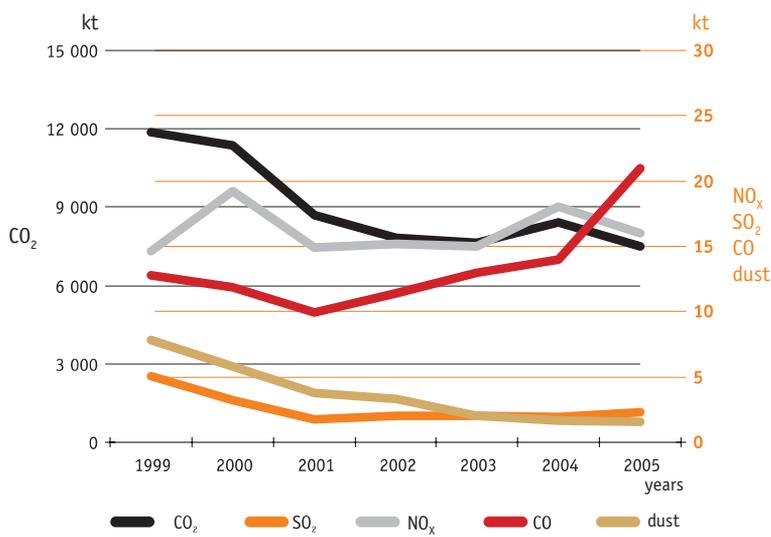
Export and import of cement in 1998-2005



Share of heat from alternative fuels in 1997-2005







Emissions of dust and gases by the cement industry in 1999-2005

3,615.6 thou. tonnes of wastes were used as raw materials for the production of clinker cements and as cement additives. In 2004, this totalled 3,648 thou. tonnes. This made possible considerable savings of natural raw materials. The usage of wastes as cement additives enables shaping of the product's properties, which is of considerable importance for specific cement applications. At the same time, this makes it possible to lower gas emissions per unit of production.



Use of wastes as additives for the production of clinker and cement in 2005

