

SUSTAINABILITY STRATEGY FOR THE BRICK INDUSTRY

An Update 2007

The brick industry established key performance indicators in 2002 to assess its progress in matching the targets and aspirations defined in its own sustainability strategy. Performance is monitored by returns submitted annually by members of the Brick Development Association.

This report reflects the results of the industry's performance since publication of the strategy, based on data submitted by companies for the five year period. However where additional compatible data is available from other sources, it has been included to present a more comprehensive picture. In some cases results from previous years have been adjusted from earlier reports to reflect more accurate data now available and to ensure consistency in the basis of the data series.

The indicators are subject to ongoing review and refinement to ensure they provide the best available measure of the industry's sustainability. In that respect this report contains three changes.

- Measurements of CO₂ emissions have been introduced to provide an indication of the impact of atmospheric emissions.
- The measurement of energy efficiency has been refined to focus on delivered energy consumed, as opposed to primary energy
- An assessment has been made of the use by the industry of materials from alternative, recycled and secondary sources. This provides a measure of the avoidance of the consumption of natural resources through the use of materials which would otherwise have no beneficial use and would be subject to disposal.

1. Social Progress which recognises the needs of everyone

Objective: Improving the occupational health and safety of the industry's employees.

KPI 1.1 Percentage of employees covered by the Ceramic Industry Health and Safety Pledge.

All member companies of the BDA are formally committed to participation in the Pledge, which consists of an expanding programme of initiatives designed to reduce the incidence of work-related injury and ill health.

KPI 1.2 Working days lost per 100,000 through work-related injury.

Early improvement in performance has been maintained, as shown below.

	(1) <i>Numbers Employed</i>	(2) <i>Number of Accidents</i>	(3) <i>Days Lost</i>	(4) <i>Days Available</i>	3 as % of 4
2001	6573	2011	4805	1544655	0.31
2002	6469	1750	4585	1520215	0.30
2003	6229	1145	2917	1462405	0.20
2004	6200	1383	3283	1457000	0.23
2005	5041	1321	1839	1184635	0.16
2006	6219	1315	2180	1461465	0.15

Objective: Improving employee development through relevant and useful vocational training.

KPI 1.3 Training days provided per employee

2002	1.3
2003	1.3
2004	0.9
2005	0.8
2006	0.8

The apparent decline in the level of training provision must be seen in the context of a stable workforce with low levels of recruitment. The measure includes direct training only. It does not reflect the qualitative improvement in training brought about through the development by the International Clay Technology Association of industry specific accredited professional qualifications for operator to senior management level.

2. Effective Protection of the Environment

Objective: Extending the application of environmental management systems to the industry's operations.

KPI 2.1 Percentage of production capacity covered by systems accredited to ISO 14001 or EMAS.

2002	60
2003	61
2004	57
2005	55
2006	60

The number and proportion of sites operating accredited systems has not altered. The apparent decline in production covered by such systems in 2004 and 2005 was the result of changes in capacity and utilization of the sites in question. Most sites are subject to PPC permitting, and those currently without an accredited EMS have procedures to ensure compliance. It is anticipated that the proportion of sites operating under an accredited system will increase significantly in the next few years.

Objective: Reducing the impact of atmospheric emissions from the production process.

KPI 2.2 Control of fluoride emissions.

All kilns with a capacity exceeding 2 megawatt, which represent over 90% of the industry's total output, are subject to statutory control of fluoride emissions. The industry achieves full compliance with this requirement.

KPI 2.3 CO₂ emission per square metre of brickwork (new)

tonnes CO₂ / sq. metre / annum

2001	0.000236
2002	0.000233
2003	0.000232
2004	0.000231
2005	0.000232
2006	0.000229

The measure reflects the contribution of CO₂ emissions per square metre of brickwork per annum attributable to brick assuming an average expected service life of 120 years. The CO₂ emissions comprise direct emissions from energy and process as reported under the EU Emissions Trading Scheme.

Objective: Minimising industrial waste disposal to landfill.

KPI 2.4 Waste disposal to landfill expressed as percentage of production by weight.

	<i>Non-hazardous</i>	<i>Hazardous</i>	<i>Total</i>
2002	0.18	0.01	0.19
2003	0.22	0.05	0.26
2004	0.23	0.02	0.25
2005	0.27	0.02	0.29
2006	0.32	0.02	0.34

The data was affected by legislative change altering the categorisation of wastes. The legislative changes have also resulted in more accurate data measurement and

recording. The volume of waste created by the industry remains small (around 15,000 tonnes per annum) with minimal environmental impact.

The minimisation of waste disposal to landfill is also assisted by the industry's use of alternative materials reflected in KPI 3.3

3. Prudent Use of Natural Resources

Objective: Reducing energy consumed through improved energy efficiency.

KPI 3.1 Specific energy consumption per tonne of output.

	<i>Output (tonnes)</i>	<i>Energy consumed (KWh)</i>	<i>SEC</i>
2001	6539688	5100130531	779.9
2002	6456265	4872262517	754.7
2003	6444972	4858304907	753.8
2004	6652605	4963269329	746.1
2005	6357704	4810757299	756.7
2006	5877820	4357362086	741.3

Energy comprises a major cost for the industry. Consequently there is ongoing full commitment to improving efficiency. In addition the industry has participated in Climate Change Agreements since 2001, and is subject to the EU Emissions Trading Scheme.

The measure above reflects delivered energy used in production. Ironically the volatility of energy prices in 2005 necessitated some reduction in capacity utilisation resulting in reduced efficiency.

Objective: Reducing the volume of treated water used in the production process.

KPI 3.2 The percentage of water recycled from the production process.

<i>% of (1)</i>	<i>Water used (M³)</i>	<i>Water recovered (M³)</i>	<i>(2) as</i>
2002	467285	197570	42.3
2003	529800	218800	41.3
2004	599080	239180	40.0
2005	741244	265000	35.8
2006	633313	232100	41.4

The variation in total volume of water used is reflective of the total production of the survey sample, rainfall levels which affect the moisture content of clays, and changes between the proportions of soft mud and extrusion production.

Objective: Minimising virgin raw material (clay) consumption.
(new)

KPI 3.3 Proportion of raw materials derived from sources other than clay extraction.
(new)

Research undertaken recently by CERAM Building Technology has established that

- 8.3% of the industry's raw materials are derived from sources other than the primary extraction of clay.
- This equates to 643,000 tonnes of materials.
- The industry has very close to 100% internally generated process waste recovery and recycling.

It is intended that this measure will be continued in future years.

4. Maintenance of High and Stable Levels of Economic Growth and Employment

Objective: Maintaining and improving profitability in order to provide for continuing investment and employment.

KPI 4.1 Turnover.

The value of brick sales for the years 2001 to 2005 according to National Statistics was:

	£
2001	506,104,000
2002	543,261,000
2003	516,914,000
2004	533,841,000
2005	531,177,000

Objective: Maintaining and increasing investment in plant and machinery in order to improve manufacturing efficiency and environmental performance.

KPI 4.2 Investment in plant and machinery over the previous 5 years.

Five year investment programme finishing in :

2002	£118M
2003	£106M
2004	£123M
2005	£137M
2006	£141M

A significant proportion of investment made is targeted at improving environmental performance.

Objective: Maintaining and increasing value added through the development of new products.

Brick manufacturers have developed products to respond to the challenge of off-site manufacture.

Corium, a clay tile that fixes mechanically to a steel support system, Wonderwall, a brick slip system that is bonded to an insulated backing tray and Permafast a prefabricated panel system are all examples of recent product developments.

Ceram has developed 'Traditional Plus' a single-skin brickwork system based on a 140mm wide extruded brick that has potential in the housing market. This could be formed into prefabricated units or fixed on site by a 'thin joint adhesive' that is beginning to be recognized as a replacement for traditional mortar.

Finally Manufacturers will now supply unfired clay blocks for internal use. This is proving to be a good way of introducing thermal mass into lightweight frame structures.