# THE BRITISH BREWING INDUSTRY

## THIRTY YEARS OF ENVIRONMENTAL IMPROVEMENT

## 1976 - 2006

BRITISH BEER & PUB ASSOCIATION

# FOREWORD

In the wake of the Middle East crisis in the 1970s, the brewing industry started to look seriously at reducing its dependency on oil and to focus on the best methods to improve both energy and water utilisation in the brewing process. The outputs from the industry's 30-year efficiency drive are summarised in this report.

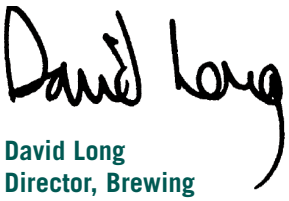
The starting point for the initiative was to measure the use of utilities along the production chain and to set achievable though stretching improvement targets. This provided a focus for brewers at senior level and resulted in capital investment being directed to project work in this area. It also meant that improvements could be verified against baseline measurements, which in turn, encouraged further investment.

Brewers are committed to an ongoing strategy of economic, environmental and social sustainability. The voluntary approach, which has proved so successful over the past three decades, is being increasingly supplanted by legislation. Industry is now heavily regulated on environment issues and further developments in this area seem to be inevitable. The brewing industry firmly believes that the future legal framework geared to sustainable development must provide sufficient flexibility to allow companies to continuously optimise brewing processes and operations, which improve environmental performance without creating further barriers.

The brewing industry's long track record of voluntary measures placed the British Beer & Pub Association (BBPA) in a strong position to negotiate one of the first Climate Change Agreements with Government and the sector has already reduced $CO_2$ emissions by over 50% since 1990. To put this achievement in perspective, the reduction is more than double the UK's emissions saving target set by Government for the period 1990 to 2010.

A key objective of the BBPA is to help support a sustainable future for the brewing and pub sector. We look forward to continuing this work in order to enhance the industry's green credentials whilst maintaining a healthy platform for business.

Continuous improvement in this area is not only good for the environment, it makes sound business sense.



**David Long**
**Director, Brewing**
**British Beer & Pub Association**

The British Beer and Pub Association is the UK's leading organisation representing the brewing and pub sector. Its members account for 98% of the beer brewed in the UK and own more than half of Britain's 58,200 pubs.

# INTRODUCTION

This report highlights 30 years of environmental improvement and shows the significant steps taken by brewing companies to improve environmental management and performance. This review is based on results obtained from membership surveys covering a series of key environmental performance indicators. The report also includes specific case studies, which describe various practical measures being taken by the sector and by individual operators.

# BACKGROUND

The UK has approximately 12 large breweries, 40 medium to small-sized breweries and around 500 micro-brewers. The total annual beer production of some 56 million hectolitres has a market value of £18 billion. The industry uses 28 million cubic metres of water per annum and its total energy bill is £60 million, delivering 2.2 billion kWh of energy which emits 0.5 million tonnes of $CO_2$ per year.

***UK beer production - 56 million hectolitres***

***Market (retail) value - £18 billion***

***Total delivered energy – 2.2 billion kWh***

***Total cost of energy - £60 million***

***Total water usage - 28 million cubic metres***

***Total $CO_2$ emissions from energy use – 0.5 Mt***

***UK Industry emissions ~ 150 Mt***

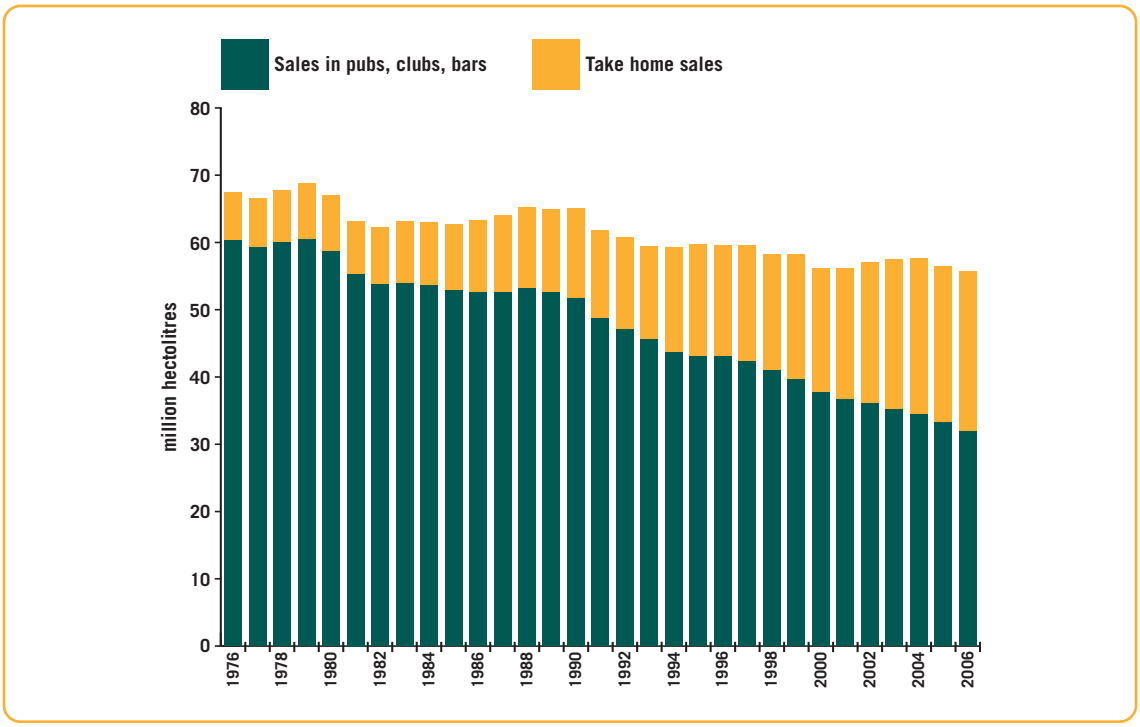
***UK total emissions ~ 550 Mt***

Since 1976 the BBPA has conducted a biennial survey of its members' energy and water usage. The purpose is to promote further energy and water savings, to assist outside agencies to undertake work with the industry on energy and water reduction programmes and to enable the industry to demonstrate its responsible approach to the use of energy and water.

# INDUSTRY TRENDS

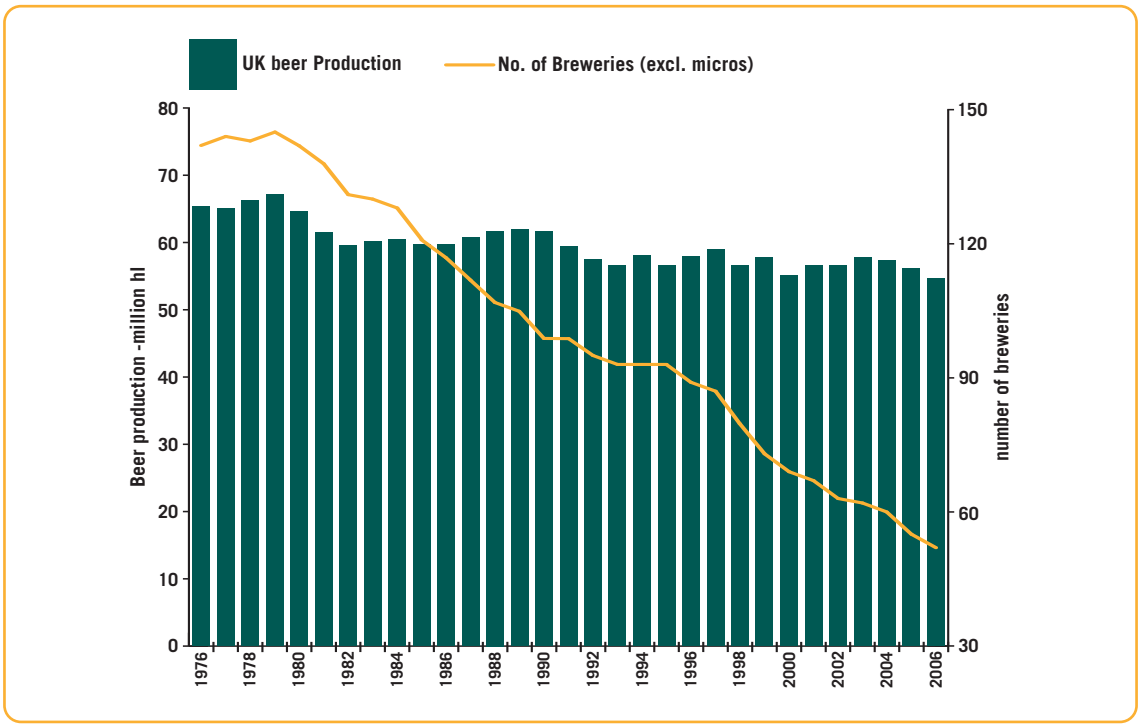
Over the last 30 years, beer production in the UK has fallen. There have been marked declines following recessions at the beginning of the 1980s and 1990s, the decline in heavy industry and more recently following consumer trends towards wine and other drinks. There has also been a switch from drinking in pubs, clubs and bars to consumption in the home. Take-home sales now account for over 40% of volume.

**Figure 1. UK Beer sales by Channel of Trade**



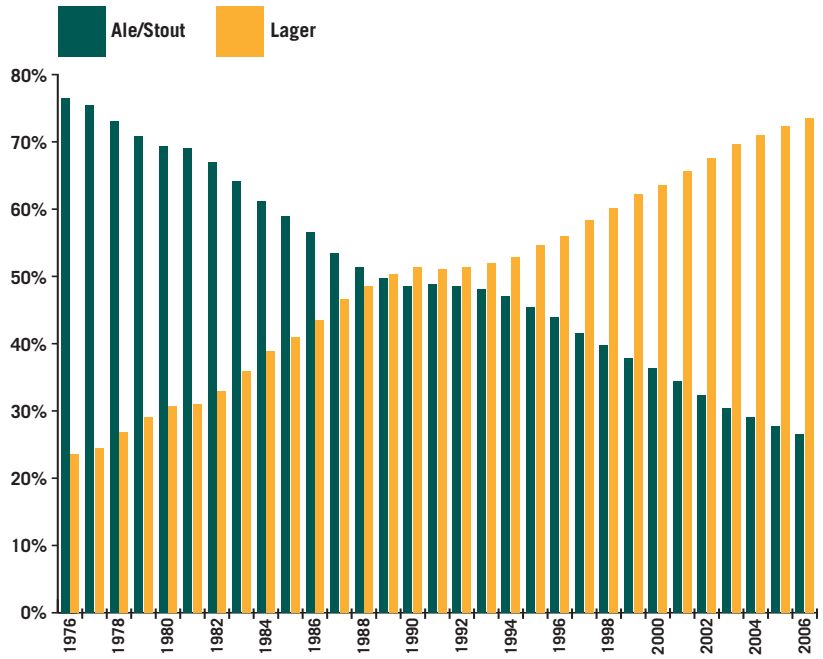

Against a background of decline in production, there has been a marked rationalisation within the industry through brewery acquisitions. In the past thirty years, the number of UK breweries has declined from 140 to 52 although there has been a growth in the micro-brewer sector, particularly in more recent years. The positive side of such rationalisation is the opportunity to improve utilities efficiencies by optimising production and packaging facilities.

**Figure 2. Brewery Rationalisation**



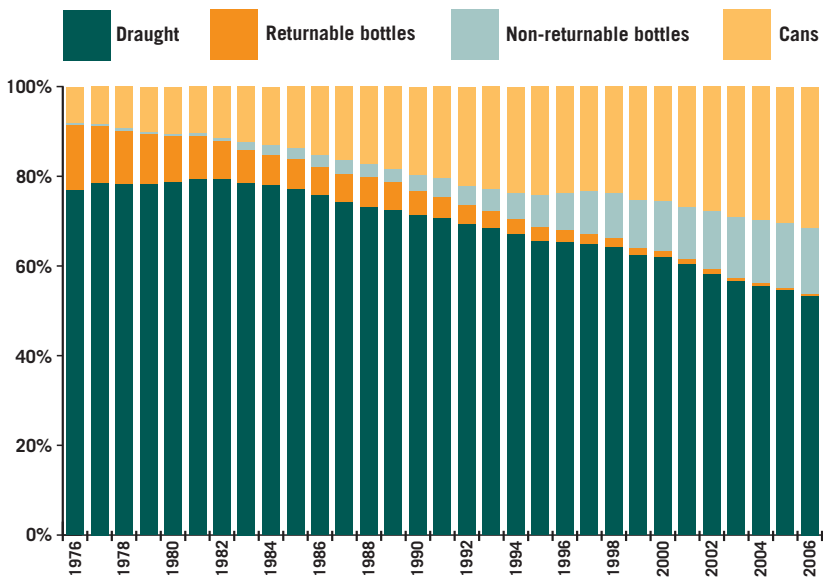
There has been a steady growth in the market share of lager to the point where it exceeded the volume of ale production in 1990. The lower fermentation temperature and cold conditioning period required for lager production results in a higher refrigeration demand and consequent greater electricity consumption. Lager now accounts for over 70% of UK beer sales.

**Figure 3. Beer Sales by Type**




The 30 year period has also seen a marked change in packaging mix. The number of cans produced has doubled and there has been a steady decline in the returnable bottle, matched by an increase in one-trip bottles. Draught beer in kegs and casks has been in decline since 1984, consistent with the growth of the take-home trade. The specific energy consumption is greater for small-pack beers and hence impacts on the industry's overall energy consumption figures.

**Figure 4. Beer Sales by Package Type**



# IMPROVING ENERGY EFFICIENCY

### *Energy Usage*

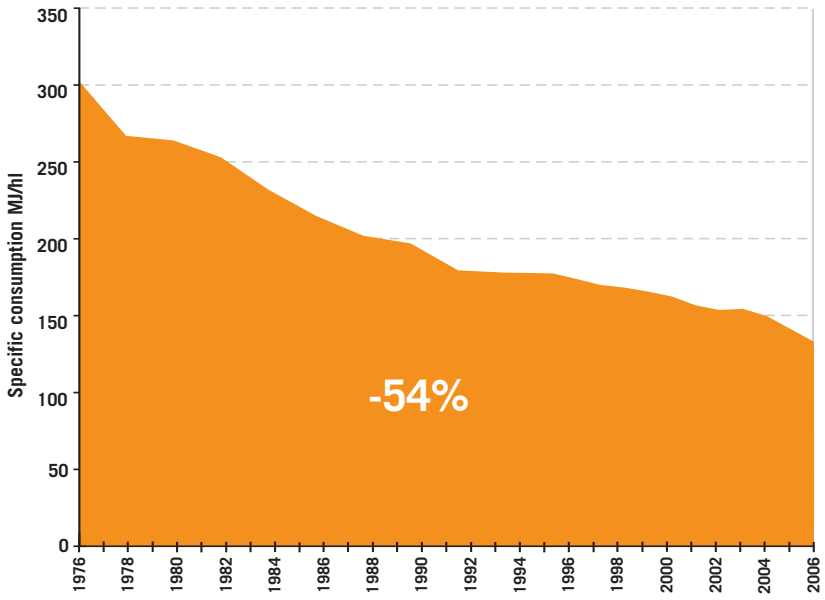
In 1976, in the wake of the Middle East crisis, the then Brewers' Society responded to a call from the Department of Energy to set a target for improving the specific energy performance in its members' breweries. The initiative provided benchmarks against which breweries of different sizes could measure their performance. This also encouraged companies to improve their energy efficiencies by application of proven means which were shared through the Society's Energy Working Party.

The bi-annual collection of utilities data and the generation of individual brewery reports against benchmarks is still carried out today. Outcomes of demonstration projects have been shared through circulars and conferences. In the late 1980s the industry was involved in a monitoring and target-setting project to promote the incorporation of the M&T into management reporting systems within companies. Ten years later, the BBPA started negotiations regarding a sector Climate Change Agreement and was one of the first sectors to finalise such an agreement with the Government.

### *So how has the industry performed in terms of energy usage over the last 30 years?*

As shown by figure 5, delivered energy consumption (MJ/hl) per unit of beer produced has fallen by 54%. The biggest strides have been made by the larger companies which have economies of scale, have rationalised production plant, and have also invested in energy-efficient technology. There has also been investment and considerable focus on improving energy efficiency by small and medium-sized companies. However, there are still opportunities for improvement and energy efficiency levels still vary considerably by brewery.

**Figure 5. Specific Energy Consumption**
*(delivered energy per hectolitre produced)*




### *How do UK brewers compare with their international counterparts?*

Over 150 large breweries from all over the world took part in a world-wide Benchmarking Energy Efficiency Survey in 2003. The average Specific Energy Consumption (SEC) for these brewers was 239 MJ/hl. Only 10% of breweries had an SEC less than 176 MJ/hl compared to the UK average (including small brewers) of 161 MJ/hl in 2003. This clearly demonstrates that **UK brewers are among the most energy efficient in the world.**

Britain's oldest brewer, Shepherd Neame, has joined an elite list of UK companies to become a recipient of a Queen's Award for Sustainable Development. Sustainable Development is one of three categories which make up the Queen's Awards for Enterprise. It recognises businesses which have an outstanding level of continuous achievement in the environmental and social impacts included in sustainable development.

The Kent brewer was one of only seven companies to be honoured in the Sustainable Development category in 2006. The award highlights the brewery's commitment to local sourcing in all aspects of its brewing and pub retailing operations; its innovative initiatives to reduce the brewery's environmental impact - conserving water, energy and other raw materials; and its significant contribution to the local community.

**Refrigeration Plant - Design Innovation**

Banks's Brewery (Marston's plc) realised that the existing refrigeration plant using reciprocating ammonia compressors, air cooled condensers and calcium chloride brine for secondary heat transfer could be replaced with a design using half the energy.

Supplied by Gordon Refrigeration, an Australian company, the plant now meets this target, and has won an award from UK Trade and Investment for "Future Care and Leadership." This recognises companies who have introduced design innovation for reduced energy consumption and reduction in greenhouse gas emissions for industry.

Variable speed drives on the condensers and the ammonia compressors allow the optimum ammonia condensing pressure to be set so that the combined power input for the compressors and the condenser fans is at a minimum value for all system loads and ambient temperature conditions. Condensing pressures vary constantly so that the system always operates at minimum power. Enthalpy calculations are used for the temperature and humidity of the air entering and leaving the evaporative condenser and these values are used in establishing the required condenser fan speed for the plant to operate.

All thermodynamic processes result in an increase in entropy and, therefore, for maximum efficiency entropy increases can be minimised by reducing heat exchanger temperature differences. The first liquid ammonia plate heat exchanger cools brine for the lowest temperatures. A second heat exchanger cools chilled water for fermentation control and air conditioning.

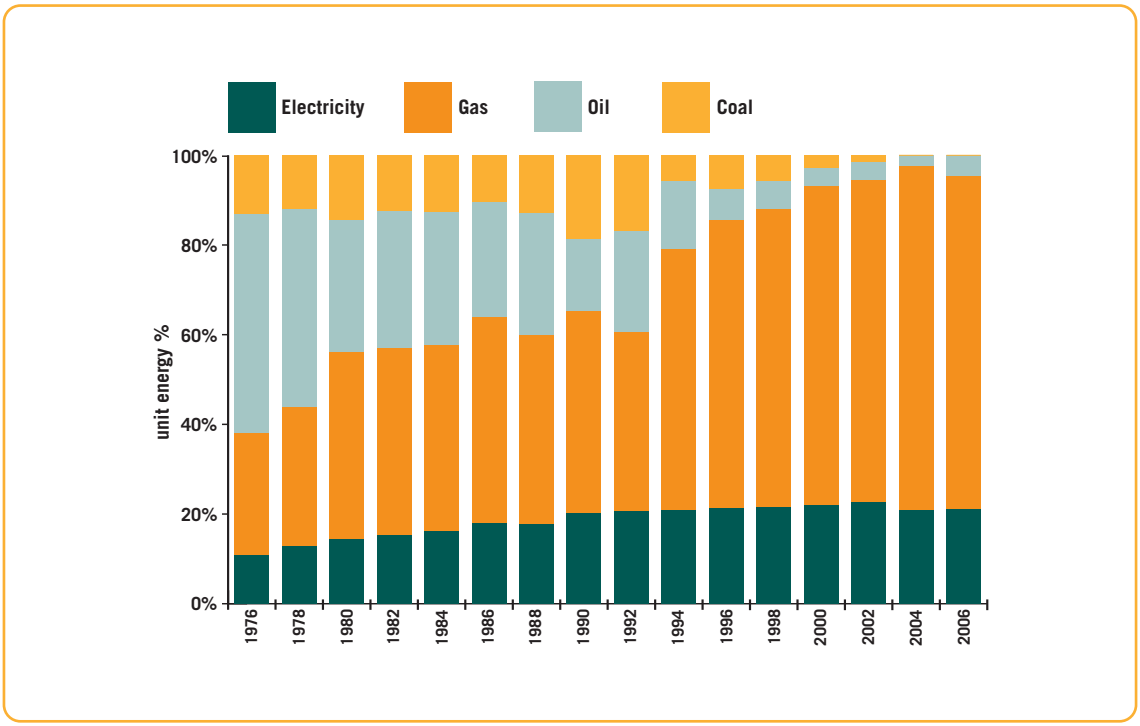
A SCADA system and comprehensive instrumentation allows remote monitoring of all areas of the refrigeration plant and cooling across the site, making this one of the most efficient and reliable refrigeration systems possible.

### *$CO_2$ Emissions*

Generation of $CO_2$ in the brewing industry arises from combustion of fossil fuels – either at the brewery itself (direct emissions) or in the generation of electricity at power stations (indirect emissions). There is therefore a need for ongoing improvements in the efficiency with which these fuels are utilised.

The use of electricity has doubled as a proportion of total delivered energy as a direct consequence of process automation and an increase in refrigeration load. Natural gas has displaced oil and coal as the prime energy source. However some brewery sites now operate combined heat and power (CHP) plants to generate some of their own electricity, hence the fall in delivered electricity in 2004.

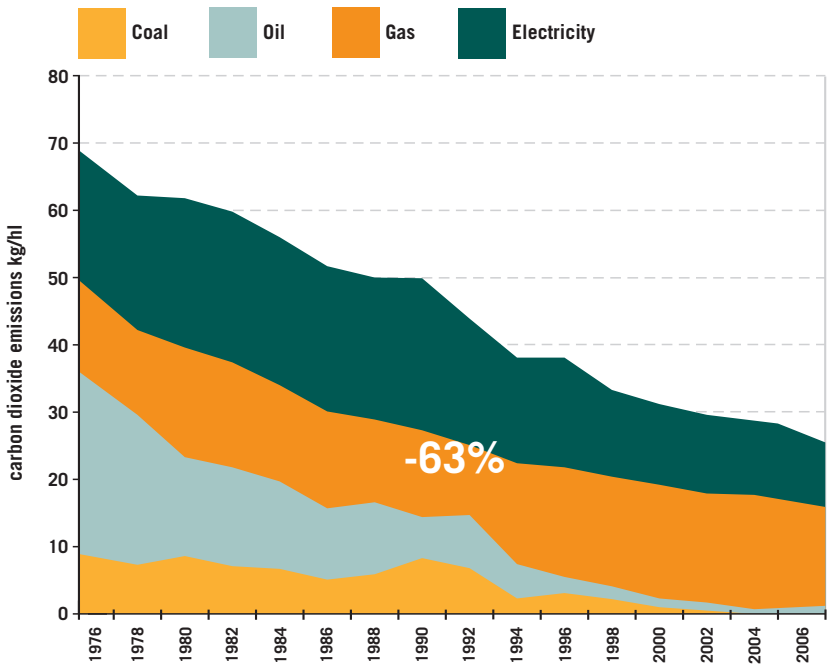
**Figure 6. Fuel Sources**




It should be noted that electricity, as compared with natural gas, gives rise to more than twice the quantity of $CO_2$ for the same amount of delivered energy. This is mainly due to thermal losses during electricity generation at power stations and to a lesser extent from transmission losses when delivered to individual sites via the National Grid. Whereas electricity provides only 21% of energy, it creates 38% of $CO_2$ emissions. Natural gas, on the other hand, provides 74% of the total energy requirement but causes only 58% of $CO_2$ emissions. The use of good quality CHP plants has helped reduce overall emissions although results in increased direct emissions.

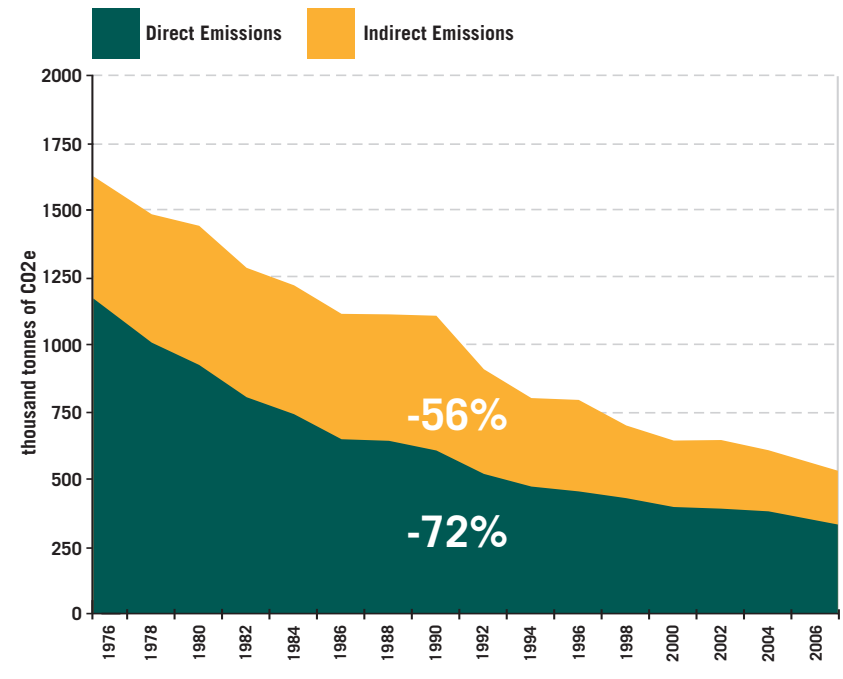
The result has been that **$CO_2$ emissions per unit of beer production have reduced by 63% since 1976.**

**Figure 7. $CO_2$ Emissions per hectolitre of beer produced**




Since 1976, overall $CO_2$ emissions have fallen by 67%, with direct emissions falling by 72%.

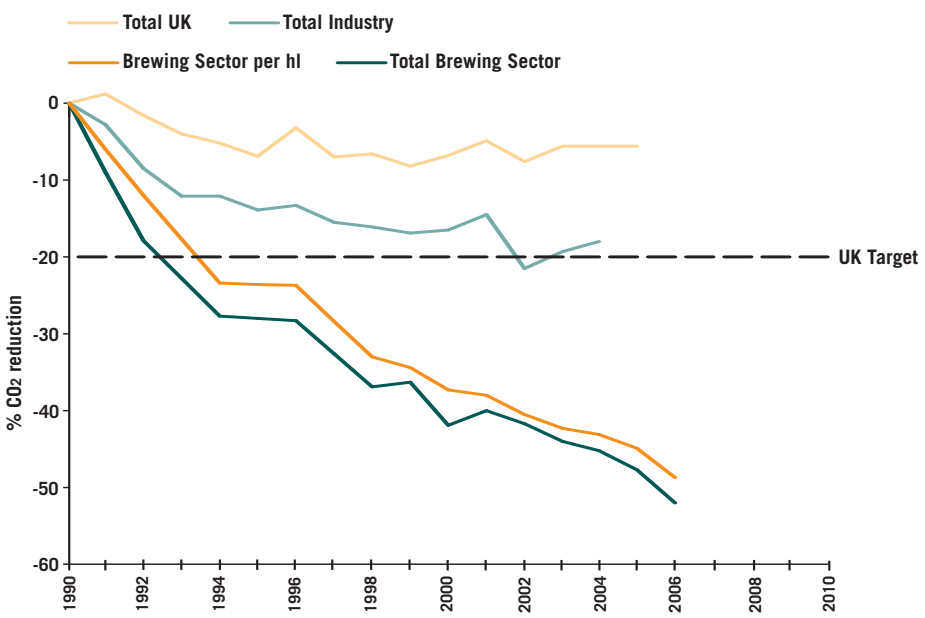
**Figure 8. Total $CO_2$ Emissions**




To meet its commitment to the Kyoto Protocol, the UK has agreed to reduce total greenhouse gas emissions by 12.5% relative to 1990 over the period 2008-2012. The UK Government aims to move beyond its Kyoto target towards a goal of reducing emissions of carbon dioxide by 20% below 1990 levels by 2010, and to put the UK on a path to reduce carbon dioxide emissions by 60% by 2050. The draft Climate Change Bill, published in March 2007, proposes that the 60% target be placed in statute along with a 26-32% reduction by 2020.

Figure 9 shows that whilst the UK is still considerably short of its 2010 goal, the brewing sector has reduced $CO_2$ emissions by more than twice this amount since 1990 and is on track to meet the 2050 target in the next few years. Emissions per hectolitre of beer produced have fallen by 49% since 1990 with total emissions falling by 52%.

**Figure 9. UK, Industry and Brewing Sector Emissions**




**Joint Industry Refrigeration Initiative**

Whilst there is significant variation by site, refrigeration accounts for approximately 30% of electrical energy used in breweries. In 2006 the BBPA, along with the Food & Drink Federation, Dairy UK and the Cold Storage Association, secured £150,000 of partly matched funding from the Carbon Trust to carry out a major project on refrigeration.

The objective of the project was to prepare focused and practical guidance for refrigeration plant users that would help reduce energy use and cost with minimal investment. Eight topics were selected for investigation, based on feedback from nearly 400 manufacturing sites in a food and drink industry survey conducted in 2005. Anticipated savings of 10% of refrigeration energy use were identified

Four topics (reducing heat loads, avoiding high head pressure, improving part load performance and reducing fan and pump power) were investigated by detailed site level surveys at 30 'host' sites. These included six breweries ranging in size from St Austell Brewery in Cornwall, to the Coors Brewery in Burton. The results of these surveys formed the basis for the guidance developed for these topics.

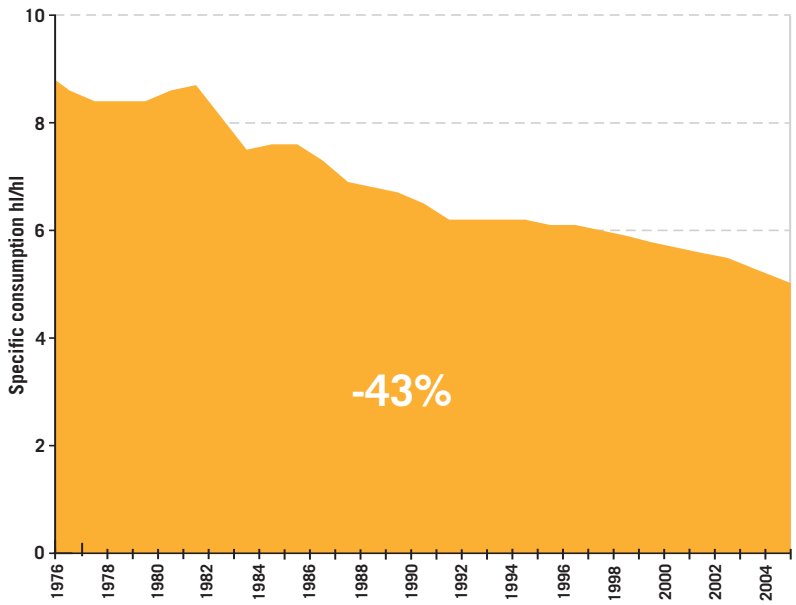
A further four topics (procument of new plant, appointing and managing contractors, checklist of operational improvements and R22 phase out and F-gas regulations) were researched by refrigeration experts who then produced generic guidance notes in relation to these. Five regional workshops were held in February/March 2007 to discuss the project outputs and findings and the guidance notes will also be made available to all CCA participants.

# IMPROVING WATER EFFICIENCY

The UK brewing industry currently uses 28 million cubic metres of water each year, a high proportion of which is abstracted from private wells and springs (52% of total water consumed). Water is required for two distinct purposes; in the production of beer itself, and for steam raising, cooling and washing.

On average, breweries discharge around 67% of water 'supplied' as trade effluent and, in many cases, trade effluent costs are higher than water supply costs. In many breweries, the total cost of water supply and trade effluent disposal is about the same as the site's energy bill. Efficiencies in the production process have led to breweries being able to reduce specific water consumption by 43% over the past 30 years; from nearly 9 hectolitres per hectolitre of beer brewed to 5.0 hl/hl.

**Figure 10. Specific Water Consumption**




It has been demonstrated that water and energy efficiencies go hand in hand. Reduced volumes mean less pumping demand and lower heating and cooling loads.

**Optimisation of Yeast Handling CIP Systems**

Based in Burton-upon-Trent, Coors Brewers Ltd took on the project to see if their automated cleaning system for cleaning tanks and pipelines was effective and if it met their cleaning specification. They also wanted to see where they could use less energy, water and chemicals. The company also needed to know whether all the processing plants were cleaned as often as required and whether brewery operators interfered with cleaning programmes.

A data-monitoring unit (In-Site Management Information System) was implemented. This interfaced with the individual site's automated Cleaning In-Place (CIP) system to record all actions that were carried out during cleaning. The operation was monitored and recorded continuously to establish how the system really worked in practice. Over a period of two months, they monitored and analysed all cleans to individual circuits.

The In-Site system produces several reports as each clean is completed. These include the cost of utilities involved in the process, verification of quality standards (based on pass or fail) and the environmental impact of each clean in terms of the electrical energy used.

Such detailed monitoring enabled Coors to see how the company could improve the existing programme sequences. The subsequent changes created many water-efficiency benefits, including: optimisation of the demand for water (and thus reduction in effluent discharge); optimisation of the use of chemicals; recycling of the last cycle of rinse water as pre-rinse water; and identification of system errors. Eliminating aborted cleans and re-starts further reduced the demand for water.

As a result of these actions, the use of mains water has fallen by 54%. Overall, water use has decreased by 37%. The project paid for itself in nine weeks. The project has also resulted in additional savings in $CO_2$ emissions (by 132 kg per annum) and chemical requirements.

Wells Young's BREWING COMPANY

**Tekmi Pasteuriser Water Reclaim**

As part of Wells and Young's commitment to reduce the usage of water, several teams were put together to look at the main plant users. An area identified for further investigation was the Tekmi bottle pasteuriser. This machine was over nine years old and was not designed with water conservation in mind. The team calculated that the machine was using over 20,000 cubic meters of water per annum.

A new recovery system was designed to collect all the water overflowing from units 1, 2, and 3, with the overflows on units 5, 6 and 7 being capped off as these were balanced with the first three. A two cubic metre recovery tank was installed below floor level with an enclosed trough from units 1,2 and 3 feeding it. Level probes in the tanks feeding the first three units were incorporated into a new automated system with automatic fill valves fitted to each. This ensured that only the tank or tanks that needed topping up where filled.

Initial results of the new water recovery system show savings in water of over 50%, worth over £20,000 per annum. Using the recovered warm water from the pasteuriser also reduced the steam requirement, providing further savings.

**Investment in Effluent Treatment**

As any significant user of water in their process will know, increasing control is being put on discharge consents and this trend will undoubtedly continue. That is why Scottish & Newcastle UK Ltd took a proactive approach in tackling these issues by investing £3 million in the installation of the latest effluent treatment plant technology at their Royal Brewery in Manchester. Veolia Water Systems were commissioned to install the plant, produced by the Holland based company, Paques, with construction commencing in March 2005 and taking 12 months to complete. The plant utilises 'Best Available Technology (BAT)' high rate, two stage anaerobic BIOPAC® Internal Circulation (IC) and aerobic CIRCOX® biological treatment process reactors followed by a traditional Dissolved Air Flotation stage and final sand filter polishing stage.

The effluent treatment plant significantly reduces the site's discharge of suspended solids and chemical oxygen demand by 96% and 97.5% respectively as well as smoothing out the pH to a neutral level. All of this helps reduce the site's environmental impact.

In addition to the treatment performance of the plant, the BIOPAC® reactor design converts most of the organic components of the effluent into methane, known as biogas. The biogas is then collected and can be used as a replacement for natural gas in the site's boilers – thus saving on finite environmental resources, cutting the site's carbon footprint and helping the site meet its Emission Trading Scheme target obligation.

S&N are now seeking to improve the quality of the final effluent still further with the addition of an ultra filtration plant which would enable the effluent to be discharged to a culvert running through the site. Trials of this are due to take place in 2007.

A similar treatment plant is currently being built at S&N UK's John Smith's Brewery in Tadcaster and is due to be commissioned in summer 2007.

# REDUCING PACKAGING WASTE

In 1976, over 90% of beer was still sold through the on-licensed trade; the majority through brewers' own pub estates. Localised production and consumption and a "closed loop" distribution system made refillable bottles environmentally and economically viable. Along with refillable casks and kegs, they were the preferred packaging type.

Technological advances, the break-up of vertical integration, the emergence of supermarkets and changes in consumer lifestyles and behaviour has resulted in over 40% of all beer now sold through the off-licensed trade. These factors along with considerable brewery rationalisation, a move to centralised distribution and secondary wholesaling and the increasing importance of branding, mean the use of refillable bottles is no longer environmentally or economically viable. They now account for less than 1% of beer sales.

Cans and non-returnable bottles now account for 46% of UK beer sales, although refillable casks and kegs are still the most common form of packaging, accounting for 53% of UK beer sales.

The growth of cans and non-returnable bottles has increased the focus on recycling. The industry is committed to encouraging recycling wherever possible and is involved in areas such as 'reverse haul' and working closely with the Waste and Resources Action Programme (WRAP) on ways to increase recycling from pubs and bars. However, less than 1% of beer sold in bottles and cans is sold through the brewers' own pubs.

A considerable amount of investment has also been put in to reducing packaging, and particularly in lightweighting. The BBPA along with member companies is heavily involved in the WRAP Glassrite: Beer project, the objective of which is to reduce the weight of bottles going to landfill with a target of 20,000 tonnes of glass saved by March 2008.

**Lightweighting**

Coors continually strives to reduce resource use. This is demonstrated in the continual research and implementation of lighter packaging. Two good examples are the move from 206 to 202 diameter ends on aluminium cans. In 2003/4, three can line pasteurisers in the Burton Brewery were converted at significant capital cost to enable handling of 202 end cans. This reduction in diameter resulted in an overall reduction in tonnage of cans used of 800 tonnes thus reducing the need to mine the associated raw materials. In the last five years, the weight of a standard 300ml Grolsch glass bottle has been reduced by 25%.

Lightweighting means that not only are the brewers reducing the use of raw materials, but also the numbers of truck movements are reduced, with commensurate savings in emissions from vehicles and congestion effects.

# IMPROVING DISTRIBUTION EFFICIENCY

Beer is a bulky product. The industry is committed to reducing the environmental impact of transporting beer to customers. Centralised distribution combined with larger consolidated loads and sophisticated route planning have increased the efficiency of beer delivery. This, along with significant investment in fleet and the increasing proportion of beer sold through the off-trade, particularly in large supermarkets, means overall emissions from beer distribution are falling.

**Benchmarking Performance in Drinks Distribution**

In 2007 a number of brewing companies will be taking part in a Department for Transport funded benchmarking and performance improvement project for distributors in the drinks supply chain sector in England. The aim is to stimulate efficiency improvements and reduce carbon emissions. Key performance indicators will enable participating companies to benchmark their transport performance against that of other firms within their sector and their own distribution centres. The survey results and action plan will provide operators with baseline performance figures against which their operations can be measured. It will highlight opportunities for improvements in operational efficiency and help to identify the potential to reduce environmental impact.

# ENVIRONMENTAL REGULATION

Much has been achieved in the industry through voluntary action. In the recent past, a number of regulatory pressures have been introduced. The industry is responding to this challenge.

### *Climate Change Agreement*

The BBPAs extensive data set was instrumental in putting the sector in a strong position to conclude a Climate Change Agreement (CCA) with the UK government. This allows an 80% reduction in the Climate Change Levy that equates to a £4m/year saving to the industry in exchange for meeting agreed biennial targets through to 2010. The BBPA was able to demonstrate clear industry trends and project these forward to 2010. This enabled the Association to negotiate an appropriate target for the brewing industry.

The sector target is divided among participants by a relatively sophisticated energy efficiency algorithm developed by the BBPA and based on data derived from membership surveys. The algorithm allocates reference energy consumption factors to the main processes undertaken, i.e. the brewing and processing/packaging of ale and lager. The algorithm also takes account of production capacity and allows the site target to 'flex' automatically with changes in throughput.

Data verification is an important prerequisite of the CCA scheme. The BBPA, in conjunction with the British Standards Institute (BSI), was one of the first trade associations to successfully complete 'group verification' on behalf of its members, following the first milestone period of the CCA scheme. Group verification has also been successfully undertaken for Milestone 2 and Milestone 3 enabling companies to sell or bank $CO_2$ allowances where they have exceeded their CCA targets.

### *EU Emissions Trading Scheme*

The EU ETS commenced on January 1 2005 and, in effect, runs alongside the UK CCA scheme. Although the EU ETS is compulsory for eligible facilities (those with oil or gas-fired combustion plant totalling more than 20MW), companies will need to remain in the UK CCA scheme to receive their 80% discount on the Climate Change Levy.

The EU ETS is a 'cap and trade' system. Facilities that use more than their allocated emissions allowances will need to purchase additional allowances to continue to operate. The UK secured a temporary opt-out for the first three years of the EU ETS scheme (2005-2007) for those companies already in a CCA and that wished to do so. Most eligible breweries opted out of phase I.

All eligible sites (including sites wishing to opt out) were required to have emissions data from 1998 to 2003 verified to establish their annual allocation under EU ETS. The BBPA commissioned BSI to jointly undertake group verification of baseline data alongside verification for the second milestone of the Climate Change Agreement. This joint approach resulted in estimated net savings of £80,000.

There is no opt-out option for phase II of EU ETS which commences in January 2008. The Association is arranging workshops for members to ensure installations are fully compliant with the legislation and understand the monitoring and reporting requirements.

### *Integrated Pollution Prevention and Control*

IPPC was introduced to the brewing sector in 2005. Breweries with a finished-product production capacity greater than 300 tonne/day, averaged over a quarter year, are required to have a PPC permit and are required to operate in a way that prevents (or reduces to an acceptable level) emissions to air, land and water. Brewing companies have adopted the use of 'Best Available Techniques' (BATs) to prevent pollution in its widest sense, including noise, vibration, odours.

The BBPA worked with the Environment Agency to produce a 'brewery specific template' to ease the process of applying for a PPC permit and assisted in the preparation of The Brewers of Europe guidance note for establishing BAT in the brewing industry.

Complying with IPPC legislation has cost the brewing industry upwards of £4 million to date.

### *Packaging Waste Regulations*

UK brewing companies currently pay around £4 million per annum to comply with current packaging waste obligations and to meet the stringent recovery and recycling targets. This cost is increased significantly when taking account of the time required to calculate obligated tonnages. This is a particular issue for vertically integrated brewers who have a packer/filler obligation as well as different selling obligations in relation to free-trade sales, sales to tenants, and sales through directly managed pubs.

Despite casks and kegs being included within the Packaging Waste Regulations, the Association maintains that they are actually an integral part of a wider beer dispense system. At the end of their life, the metal is recycled into new kegs and hence never enters the UK waste stream.

### *Ongoing Commitment to Sustainability*

Brewers continuously strive towards sustainable use of resources throughout the supply chain. For example, almost all extracted grains from the brewing process are used for animal feed and excess yeast generated in fermentation is used in health foods. Within the last five years all but the smallest breweries have become accredited to the Feed Materials Assurance Scheme (FEMAS), and micro-breweries wishing to continue to supply their grains as animal feed are joining a specially designed scheme devised by the Brewing, Food and Beverage Industry Suppliers Association (BFBI). This development has required breweries to take a positive stance as the producers of safe, quality assured feed that can be supplied into the human food chain. Potential use of brewers' grains as bio-mass may offer an alternative for those brewers who can handle the co-firing needs on site.

The industry has a tradition of sharing best practice and transferring knowledge and know-how. In 2006, the brewing industry provided grant funding to Brewing Research International grant to establish an environmental website to be used as a resource tool in the brewing and distilling sector. The website provides protocols for the auditing of water and energy usage and waste management in the brewing and distilling industries. The website was launched in early 2007 and provides an essential communication platform to disseminate best practice.

Member companies of the BBPA are committed to a strategy of economic, environmental and social sustainability. The Association has recently signed a memorandum of understanding with Government under a CBI initiative to formalise this commitment. The Association has been working closely with the Department for Environment Food & Rural Affairs to establish the Food Industry Sustainable Strategy and will continue to work closely with government to achieve further environmental improvement in the sector.

# NOTES

This booklet has been printed on paper with 75% recycled fibre content

Published by:
British Beer & Pub Association, Market Towers, 1 Nine Elms Lane, London SW8 5NQ