

## 10. GOVERNMENT APPROACHES

### ■ 10.1. NATIONAL APPROACHES

Government policy-makers can use a number of different policy instruments to influence environmental behaviour in the brewing industry. Traditionally, policy instruments (standards, permits) have encouraged companies to adopt end-of-pipe solutions, i.e. to control pollution. With the range of instruments and the costs of pollution increasing, there is more scope for policy-makers to encourage companies to prevent pollution. There are three categories to consider:

- Regulatory
- Economic
- Persuasive/voluntary

Standards for the concentration of pollutants in waste water and stack emissions have been adopted in many countries. Other relevant standards concern noise and odours. The effectiveness of standards will depend on supervision of compliance by the authorities.

#### □ 10.1.1. Environmental Standards

Examples of standards in areas relevant to the brewing industry are presented in this section.

Examples of national standards for the discharge of waste water to receiving waters, applicable to breweries, are shown in Table 10.1.

Country	BOD mg/l	COD mg/l	SS mg/l	Total N mg/l	Total P mg/l	pH	Temp. °C
Denmark	15		20	8	1.5	Local permits	< 35
EU	25	125	35	10	1		
Germany	25	110		10	2		
Poland	30	150	50			6.5-9.0	< 35
Malawi	20		30			6.5-8.0	
India	30		100			5.5-9.0	
Thailand	20		30			5.0-9.0	
Malaysia	20	50	50			6.0-9.0	
Argentina	50					5.5-10.0	< 40

**Table 10.1: Examples of National Effluent Requirements**

In Denmark, there are air emission standards for boiler plants generating up to 50 MW using heavy fuel oil (Table 10.2).

Parameter	Standard
Oil/coke particulates	< 2 g/kg oil
Sulphur dioxide	< 500 mg/Nm <sup>3</sup>

**Table 10.2: Danish Emission Standards for Energy Plants < 50 MW Using Heavy Fuel Oil**

Danish regulations for dust emissions, which for breweries are primarily relevant to malt and adjunct handling, are summarised in Table 10.3.

Mass flow kg/h	Emissions mg/Nm <sup>3</sup>
< 0.5	300
> 0.5-5.0	75
> 5.0	20-40

**Table 10.3: Danish Regulations for Dust Emissions**

Regulations for dust emissions will often include methods for measuring these emissions. Some factors to be included are distance to the discharge point and chimney height.

The odour from brewhouses is regulated in Denmark through an ambient air quality requirement of less than 5-10 Odour Units/m<sup>3</sup>. Due to the acceptance of a certain amount of odour from breweries, ambient air concentrations up to 10-30 Odour Units/m<sup>3</sup> can be allowed. Ambient air concentration is normally calculated using a mathematical model, based on organoleptic measurements at the emissions points.

Noise regulation depends on the usage of the areas surrounding the brewery. Danish regulations are shown in Table 10.4.

Areas	Monday-Friday 07.00-18.00	Monday-Friday 18.00-22.00	Every day 22.00-07.00
		Saturday 07.00-14.00	Saturday 14.00-22.00
1. Industrial areas	70	70	70
2. Industrial areas with restrictions	60	60	60
3. Mixed industrial/residential areas (city)	55	45	40
4. Apartment house areas	50	45	40
5. Residential areas	45	40	35
6. Summer cottage and recreational areas	40	35	35
7. Allotment areas	4, 5 or 6		
8. Open land	Case-dependent		

**Table 10.4: Danish Guidelines for Ambient Noise Levels from Industries in dB(A)**

### □ 10.1.2. Other Regulatory Instruments

Permits or licences are examples of government regulatory requirements. For example, a discharge permit enables a brewery to discharge a certain level of pollutants. Problems with permitting may arise if a company is encouraged to move pollution from one medium (e.g. water) to another (e.g. land), thereby not really reducing the environmental impact. To counter this problem, governments are adopting an Integrated Pollution Control (IPC) or Integrated Pollution Prevention and Control (IPPC) approach to permitting. Permit applications then take into account emissions to all media (air, water, land).

Governments can also specify further requirements in a permit. For example, a company may be required to submit a waste minimisation plan or to report publicly on its waste minimisation targets.

Governments (usually local) often have planning requirements such as zoning, which should prevent the construction of installations in inappropriate locations. It would be rare in any case to find a new brewery in a heavily populated area. Normally, breweries are located in areas where transport noise can be tolerated and where water is available for supply and for discharge.

The building of a new brewery or a major addition to an old one sometimes requires an Environmental Impact Assessment (see Section 9.2.1.)

Extended Producer Responsibility (EPR) programmes are increasing, especially in Europe. They aim to change the traditional balance of responsibilities among manufacturers and distributors of goods, consumers, and the government with regard to environmental issues such as waste management. EPR programmes may affect brewers in the choice of packaging, as they could be held responsible for collecting, re-using, recycling or disposing of packaging.

### □ 10.1.3. Economic Instruments

Economic instruments make use of market forces to influence the behaviour of companies and consumers. A change in behaviour can be stimulated by incentives such as tax breaks and grants, or disincentives such as penalties, taxes and levies. Economic instruments are used in addition to, not instead of, environmental protection standards.

#### **CASE STUDY - DISPOSAL TAX**

*The generation of solid waste differs among brewers, depending on the processes used and local legislation. Where there is considerable waste to be disposed of, a waste tax could be an economic burden for brewers and thus a strong incentive for them to minimise waste.*

*In Denmark, a waste tax is levied by weight on waste sent to landfill and to incineration. The charge is the equivalent of \$US 29/tonne for incineration and \$US 35.50/tonne for landfilling. From 1997, the rates will be raised and further differentiated to \$US 29/tonne for incineration in a plant producing heat and power, \$US 38.20/tonne for incineration without energy recovery, and \$US 51.80/tonne for landfilling.*

*There are signs that, in conjunction with other instruments, the waste tax has had some effect in reducing waste generation and disposal. From 1987 to 1989, total registered waste decreased by 12 per cent and waste diverted to recycling increased by 7 per cent. From 1985 to 1993, the proportion of waste recycled or reused increased from 35 to 50 per cent. However, a minor increase in illegal dumping has been reported.*

*Other countries, such as France, United Kingdom, Australia have also implemented waste taxes.*

Taxes can influence both the consumption of inputs to a process and outputs from a process. Disposal taxes (see box) influence the waste management function of a company, whereas a tax on water or energy consumption should influence the input use.

Although an economic instrument can be an efficient way to influence behaviour within a jurisdiction, there can be disruptions in trade across jurisdictions. For example, the use of a disposal tax may encourage companies to transport waste across borders to a cheaper disposal facility.

An important consideration when implementing economic instruments such as taxes is how the money raised will be used. One criticism of "environmental taxes" is that they are used by governments to raise revenue rather than to try to minimise environmental impacts.

#### 10.1.4. Persuasive/Voluntary Approaches

##### *Voluntary or Negotiated*

Voluntary/negotiated agreements between governments, industry, and other stakeholders can be an effective way to change behaviour. Governments can seek an agreement with an industry sector, an industry chain (e.g. packaging), or even a group of industries generating the same waste. There can be agreements on waste reduction targets, environmental reporting, deposit-refund schemes, etc.

In general, industry likes the flexibility, control and predictability associated with negotiated agreements. For governments, less administrative time is usually required to monitor results. However, entering into an environmental contract through this kind of agreement may not only be a "gentleman's agreement" but also imply a binding legal obligation. Examples of agreements involving brewers have been those on the replacement of CFC gases, reduction of energy consumption, and reduction of packaging waste.

##### *Demonstration Projects*

Governments can further influence breweries by making them aware of cleaner technologies through demonstration projects.

In many countries, it appears that businesses are driven predominantly by legislation in deciding when and how to react to environmental pressures. Many firms still regard environmental pressures as more of a threat than an opportunity. A demonstration project can go a long way towards selling the concept of cleaner production by presenting positive examples. There are various ways to finance a demonstration project. In some cases the government covers all costs (sometimes shared among several ministries), while in others the project is jointly financed by participating companies.

### **CASE STUDY - UNITED KINGDOM DEMONSTRATION PROJECT**

*Project Catalyst was the largest waste minimisation project in the UK. It cost almost £1 million and involved 14 participating companies from a wide range of industries. The project was funded by the Department of Trade and Industry, the BOC Foundation, and the participating companies themselves.*

*The project identified opportunities for reducing emissions and discharges by tackling the cause of the waste and its reduction or avoidance at source. Potential savings of £8.9m per year were identified. Almost £2.5m involved zero cost and almost £3m had a pay-back of less than one year. 55% of the changes involved technology modifications, 19% good housekeeping, 23% recycle/reuse, and only 3% product modifications.*

*The opportunities identified represented a potential reduction of over 12,000 tonnes per year to landfill, a reduction in demand of over 1,900,000 cubic metres of water, and a reduction of 1,800,000 tonnes of liquid effluent.*

*One of the participating companies was a small brewer with an annual turnover of £15m. Project work included cleaner production at the brewery site and at the managed public houses that sell the beer. Water/effluent waste minimisation was identified as the focus of activities at the brewery, as water and effluent charges are a significant and increasing cost element. Gas and electricity costs were the main targets for savings in the public houses. To date, 45 cleaner production opportunities have been identified with potential savings of £313,718 per year.*

*These results demonstrate the value of a regional group cleaner production project and its structured methodology. Not only did the participants identify significant cost savings and improvements in environmental performance, but they also implemented many operational and behavioural changes leading to improved managerial performance.*

### **CASE STUDY - DUTCH VOLUNTARY AGREEMENT ON ENERGY EFFICIENCY IN BREWERIES**

*Dutch brewers and the Ministry of Economic Affairs signed an Agreement on 20 May 1992 to improve energy efficiency, thereby assisting in the national plan to reduce CO<sub>2</sub> emissions by 2000.*

*Breweries are responsible for 0.5% of total energy consumption in Dutch industries. As part of the agreement, the Dutch brewers agreed to strive towards an increase in energy efficiency per production unit of 20% by the year 2000, with 1989 as a reference year. An interim goal of 12% has been set for the end of 1995.*

*It is left to the individual brewer how, according to the Best Practical Means, the goals of this agreement can be reached. A consultative body consisting of brewing industry representatives, the Ministry of Economic Affairs and NOVEM (the Dutch Organisation for Energy and Environment) meet regularly to discuss technological developments and determine whether certain technologies, which previously were economically and technically unfeasible, have become feasible and so provide a reason to revise the agreed goals and measures.*

*Brewers prepare evaluations of the progress of energy efficiency on a yearly basis and present them to the Ministry of Economic Affairs*

*The Ministry of Economic Affairs provides financial support for studies, knowledge transfer, research and development, demonstration, and market introduction.*

#### ***Last Word***

Competitive manufacturing situations can lead companies to seek cheaper methods of production and disposal at the expense of the environment. A basic regulatory framework will always be necessary to define the acceptable bounds of competitive activity. However, an active system of industry agreements, codes of practice, and voluntary standards can reduce the need for more regulatory measures to some extent and focus on the unique aspects of brewing.

Such self-regulation is most successful where trade associations exist to exercise necessary leadership. The preparation of an environmental code of good operating practice, and co-operative treatment of effluents, are among the initiatives that can be facilitated through such associations.