

THE NATIONAL AND INTERNATIONAL FACTORS INFLUENCING CHANGES IN
THE POLICY OF AIR POLLUTION CONTROL

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It used to be said of Prussia in Bismarck's time that everything was forbidden unless it was compulsory. Today we hear that in the Netherlands everything is permitted, even that which is forbidden. And in Britain we live in a permissive society and yet more and more legislation is being enacted and reaching the Statute Book. Whether all such legislation is enforced or even enforceable is another matter. These cynical examples of national characteristics usually emanate from the country concerned; and this could point to a fortunate international characteristic. All nations possess a sense of humour — which is indeed fortunate, because in such humour is more than a grain of truth.

Much existing legislation had its origin in classical times and much law today is still based on the old Roman law. But the way in which different countries have adopted and adapted this basic law varies considerably because of different national characteristics, differing requirements and differing attitudes. Some nations seem to be more law abiding than others; others give the impression of being less amenable to discipline. Consequently, over the years, different approaches have been evolved by different nations. It is generally accepted, for example, that the northern races tend to be rather stolid whereas those peoples who live in warmer and sunnier climates tend to be more volatile. So climate, too, may be said to have an effect in that it has helped to mould and develop certain national characteristics.

Obviously, there are many different approaches to the development of legislation and legal systems but generally it may be said that these fall into two main classes: legislative systems which have just developed rather haphazardly with legislation enacted as and when required and the other, legislative systems which have followed a more logical development and have been codified. Because one or other of these systems has been used by nations which, in the past, had imperial and colonial ambitions, the two systems were spread all over the world, and former colonies and de-

pendencies, on achieving independence, have often adopted or adapted the system which they inherited. Even if they rejected outright the old system, the system they adopt is still likely to fall into one of these two main classes.

Perhaps the classic example of haphazard development is that which pertains in Great Britain. First, in Britain there is no written constitution and much of the legislative system is based on common law, i.e. case law. Legislation as such has been enacted in the past because it was thought to be a good thing, because it was capable of enforcement and because it could achieve the desired results. It was therefore more or less readily accepted by the people. There are instances of legislation being deliberately delayed until it became clear that enforcement was possible and the legislation acceptable. On the other hand, and more especially in recent times, there has been a change; some legislation has reached the Statute Book, but has not yet been implemented. Later, when we consider clean air legislation in rather more detail we will see examples of both these cases.

A typical example of codified legislation is that of France, and the Code Napoleon. This is a logical system and a system which, like the British, has spread all over the world. In some places, for example, Canada and the United States, the two systems have met and sometimes clashed. The result has not always been that one system has triumphed and the other been rejected, for sometimes a new system based on the best of both the old ones — though not always — has emerged. In some instances, the two systems have continued to operate in parallel in different regions of the same country. Here in South Africa, we have a somewhat different, though at the same time similar example. Here two imported cultures have affected the country's development and its legislation.

But, whatever legal system any particular country or nation adopts, there is one form of legislation which is common to all. This may be termed 'political', or perhaps more unkindly 'panic' legislation. Often, for sound political motives, and with the best will in the world, governments have enacted legislation but have taken no real regard of its

consequences or methods of enforcement with the result that the law has fallen into disrepute. Those working in the realms of the environment and the control of air pollution are no strangers to such legislation.

A further factor is that of federal and regional government. In the U.S.A. for example, there is Federal legislation which applies to the whole country; but this does not prevent the constituent states from enacting and implementing their own legislation which in some instances goes much further than that required by the Federal Government. Similarly, in West Germany the various regions of the Federation are in a position to enact their own legislation. Both are examples of regions imposing further legislation on that imposed by central government.

The European Community, on the other hand, is now beginning to work the other way. Here we have nine countries each with its own system of legislation — a haphazard system in Britain, a codified system in France, and a regional system in West Germany for example — now having directives imposed on them by a central commission. 'Union' legislation is being superimposed on national legislation and the stage is being set for an acute difference of opinion or even a clash between national and international interests.

This, the first mention of the E.E.C., which is a form of internationalism, leads somewhat naturally into a brief consideration of another important factor which is both national and international in its character and influence. This is the economic factor. This can be applied, both internationally and nationally in many different ways. Purists might argue that, so far as air pollution is concerned, it should be disregarded; that the cost of the control or abatement of air pollution should not be a factor which should be considered. Many others would not go as far as this but would agree that where human health is concerned, then the economic factor should not be taken into account; it should, however, be given full weight when the control of air pollution is necessary as a means of improving amenity. Even if agreement can be reached on this and on what levels of air pollution are likely to affect

human health, there is still plenty of room for disagreement on the application of the economic factor. Different standards of control for plants in different countries making the same product by the same process mean different costs and so different prices. Can such things be allowed in a so-called Common Market? Or must the same controls, irrespective of other factors, be imposed on all? Should the nation or country that has climatic and geographical advantages be allowed to exploit them?

A number of politicians all over the world have been expounding the policy of the 'polluter pays'; but none of them has stated categorically who is the polluter. The general public tend to assume that industry is the polluter and it has been rather naively assumed that industry should therefore pay. Little consideration has been given to the fact that if industry is made to pay, whether it be by the cost of installation of expensive control equipment or in the payment of taxes or fines, this cost will be reflected in the price of the product and so borne by the consumers - the general public. The payment of fines for polluting the atmosphere raises another bone of contention. Most countries do impose fines of varying severity for breaking the law and exceeding laid down limits of emission - although fines have never done anything to abate pollution. Other nations, adopting the principle that the polluter should be made to pay, use a fiscal policy whereby different levels of taxation are imposed depending on the amount of pollutants emitted. In Norway, for example, in 1971 a tax was introduced on the sulphur content of oil based fuels. This form of taxation, therefore, really amounts to an indirect charge on sulphur dioxide emissions into the atmosphere - i.e. emissions from furnaces using oil as a fuel. There is no tax on the SO_2 emitted from other processes such as sulphuric acid plants, paper pulp mills or steel works; nevertheless, the tax may be said to apply to about two thirds of the total emissions of SO_2 . The tax charges are low, and so far, their incentive effect has not really been very noticeable. Similarly in the Netherlands, charges are levied on the sulphur content of all fuels. Again the charges are very low, but money collected from this source is used to finance the costs of implementing the Air Pollution Act and the administrative costs of pollution control. It may be claimed that these methods are each in their own way, successful; but objections

are often raised to the latter method on the grounds that this policy can be interpreted as a licence to pollute.

So far, the factors considered have all been man-made. They are therefore capable of change and modification; and although they certainly apply to the legislation of air pollution control they also apply to other forms of legislation as well. But in considering the legislation dealing with air pollution control, there are other factors which, perhaps cannot be changed so easily. These are the natural factors of geography, climate and meteorology.

The geographical position of a country and its geographical and topographical features can be an advantage or a disadvantage as far as air pollution control measures are concerned. This is obviously a subject on its own and it is only possible here to mention one or two simple examples. Britain is an island situated in a prevailing south westerly air stream which means not only that it receives little pollution from elsewhere but also prevailing winds help to disperse pollutants; and until recently it has generally been accepted that a policy of dispersion of pollutants through high stacks has been to its advantage. However, Britain is now being accused by Scandinavian countries of invisible exports of sulphur in various forms, for air, be it clean or polluted knows no boundaries. But the wind does not always blow from the south west, sometimes it comes from the east, and higher levels of sulphur dioxide have been recorded in Kent and East Anglia, and this SO₂ has presumably come from the Continent. So Britain may not be in the advantageous position as formerly supposed. Nevertheless, being an island does have its advantages when compared with countries like Luxembourg and Austria which have no sea board and where polluted air has an easy passage from one country to another. Obviously, the advantages and disadvantages of geography and geographical position raise problems which cannot be ignored.

Similarly, climate and prevailing weather are important considerations. People who live in cold countries need to keep warm and therefore burn more fuel for domestic heating than the people who live in warmer countries. More fuel burned means more pollution to be controlled.

So, from this point of view, the countries which enjoy a warmer climate all the year round may be said to be at some advantage. On the other hand, countries in the temperate and colder parts of the world are often more windswept and this helps with dispersion of pollutants. Some of the hotter countries are apt to suffer from prolonged inversion which can prove a distinct disadvantage. It is common knowledge that the climate of Los Angeles has contributed very considerably to the problem of photochemical smog, a problem which has not yet become really evident in Europe. So, climate, like geography, has advantages and disadvantages; and can be the cause, as for example in California, of particular - and in this case draconian - legislation.

In the last paragraph, for the first time in this paper the word 'fuel' has been used. The indigenous supplies of fuel in a country obviously constitute another natural factor which must be taken into account. This factor, again, like the economic factor is both national and international in its implications. These countries which have access to an adequate supply of natural gas are at an advantage compared with those who have no such supply. Those countries which have easy access to hard coal are at an advantage compared with those countries which have to rely on soft coal. Oil virtually constitutes a factor on its own. Although its origins may be national, its use is international and its price and availability have, and will have in the future, a deep and lasting influence on the use of fuel generally, the development of new forms of energy and therefore on clean air legislation throughout the world.

If we now turn more specifically to clean air legislation in the light of the factors mentioned, it will be seen that there is a tendency for this to follow the national pattern of the legislative system of the country concerned. In all, some thirty four countries, thirty in the Northern Hemisphere - mostly between the latitudes of 30° North and 60° North, and four in the Southern Hemisphere have air pollution control legislation.

Most clean air legislation is comparatively recent but some does go back a very long way. Perhaps the edict of 1273 when the use of coal

was prohibited in the City of London as being 'prejudicial to Health', and the Royal Proclamation of 1306 which prohibited artificers from using sea coal in their furnaces represent some of the earliest legislation. Although it is on record that one artificer was executed for breaking the latter law, it is clear that it had little effect in the long run and can be classified as an example of 'political' legislation already discussed. Another example of 'political' legislation dates from 1810 when Napoleon issued a comprehensive proscriptive decree to the effect that 'manufactures which give out an unwholesome or unpleasant odour will not be allowed to be established without the authority of the administration'. The decree then continued with a long list of manufactures, some fourteen pages of them, divided into three classes: those which had to be distant from all private dwellings; those which were not to adjoin private dwellings unless they could be carried on without damage or inconvenience to the neighbourhood; and those which might remain without inconvenience near private dwellings. Although this decree was ineffective, it is interesting that over a century later in 1917 these regulations were re-established as a basis for a new law under which four hundred different types of enterprise were classified. The problem was, of course, that with the growth of cities, the activities originally outside the city were encroached upon by such growth.

It is generally accepted that there are two classic approaches to air pollution control; the 'best practicable means' approach and 'air quality management' approach. The first is the British approach to the problem which Lord Ashby has described as 'tentative - not to say reluctant - untidy and piecemeal, but refreshingly realistic.'

In May 1862, Parliament at Westminster appointed a select Committee to 'inquire into the injury resulting from noxious vapours evolved in certain manufacturing processes and into the state of the law relating thereto'. In moving the appointment of the Select Committee, Lord Derby made reference to the appalling destruction of vegetation going on for years around the Alkali Works at St. Helens, Newcastle and Glasgow. The trouble was caused by hydrochloric acid, called in those days muriatic acid, which the majority of manufacturers, despite the evident damage they

were causing, were allowing to escape with impunity. And so, in 1863 the Alkali Act was passed. It applied only to this one industry and only for the control of one pollutant - muriatic acid. The Act was so drafted that it did not inconvenience trade unduly, but it did empower inspectors to have free access to the works and to enforce the condensation of the acid vapours. Although the best practicable means were in fact employed in enforcing this legislation, it was not until 1906 when the Alkali etc. Works Regulation Act, which extended and consolidated previous similar Acts, was passed that the expression was defined as follows: 'The expression 'best practicable means' where used with respect to the prevention of the escape of noxious and offensive gases, has reference not only to the provision and the efficient maintenance of appliances adequate for preventing such an escape, but also in the manner in which such appliances are used and to the proper supervision by the owner of any operation in which such gases are involved'. So by 1906, by means of haphazard and piecemeal legislation, the philosophy of the best practicable means had been established. It has continued as the basic philosophy of all clean air legislation in Great Britain ever since.

The Alkali Act, however, revised as it was, dealt only with emissions from specific plants known as 'Scheduled Premises'. Some attempts were made during the late nineteenth century to introduce legislation to control smoke from industrial and domestic sources, but these all failed for one reason or another. Smoke was, however, proscribed as a nuisance under the Public Health Act of 1874; but it was not until 1956 following the publication of the Beaver Report in 1954 that the Clean Air Act was passed. This legislation was aimed at controlling industrial smoke and gave local authorities, if they so wished, the powers to control domestic smoke by establishing 'smoke control areas'. It should be noted that there was no compulsion of local authorities to enact this legislation and to this day there are areas in Britain where this legislation does not yet apply. The growth of clean air legislation has continued to be haphazard. It was found after the 1956 Clean Air Act had been in force for some time, that there were loopholes and a further Act was passed in 1968 which attempted to close some of the worst of these. In 1974 the Control of Pollution Act was passed. This contains a section dealing

with the control of air pollution; but although this Act is now in the Statute Book, the necessary regulations to secure its implementation have not yet been issued, largely for economic reasons. However, they are now under active consideration, and it is hoped that 1976 will see them brought into force.

The control of pollution from road vehicles has also been rather untidy. Regulations have been issued from time to time under the Road Traffic Acts, the latest, strangely in line with those of the E.E.C., being in 1973.

In 1975, the Alkali Act was repealed and embodied in the Health and Safety at Work Act of 1974. This has virtually meant no change in the actual legislation controlling emissions from the scheduled processes and the Alkali Inspectorate has to a large extent retained its identity within the Health and Safety at Work Commission; the principle of the best practicable means has been carefully preserved. Now, in January 1976, the Royal Commission on Environmental Pollution has published its Fifth Report 'Air Pollution Control: An Integrated Approach', and proposes yet further changes.

As we saw earlier, because of the influence of imperial and colonial powers in earlier times, there has been a tendency for those countries where this influence was previously felt, to follow in some instances the style of legislation adopted by the original imperial power. This has happened within nations of the British Commonwealth and indeed within some nations which were previously within the Commonwealth but have since left it. The legislation in South Africa, the Atmospheric Pollution Prevention Act of 1965 as amended by the Atmospheric Pollution Prevention Act of 1973 follows very much the British pattern and is based very firmly on the philosophy of the best practicable means. On the other hand, because of the fact that this legislation is later in time and so to a degree has been able to benefit from the mistakes of the past, and also because of the effect of other national cultures, it is very much less haphazard in form than its British counterpart and has the great merit of being compact.

Similarly, we find that in Australia, clean air legislation originally intended to follow the British pattern using the Alkali Act of 1906 and the Clean Air Act of 1956 as bases. Clean Air legislation in Australia is mostly by the States and so we obviously find that there are variations. It is interesting that New South Wales enacted a Smoke Abatement Act as early as 1908. However, since then New South Wales, closely followed by Queensland and Western Australia, has enacted legislation very similar to its British counterpart. Victoria, on the other hand, in 1957 enacted a number of provisions of the original British Clean Air Act but did not make any provision for smokeless zones. Since then, Victoria has set up an Environmental Protection Agency and there are signs of a shift to air quality monitoring since that time. The state of South Australia is following a similar pattern. Perhaps it is time for the U.K. to review its own haphazard, piecemeal legislation and to put it in a more logical form — and indeed the Royal Commission referred to earlier has recommended such a course.

The other classic approach to air pollution control is that of air quality management. This was first used by the Soviet Union in 1951 when air quality standards for ten pollutants were set. Standards were backed up by experiment and direct research on human, animal and plant organisms. The list of pollutants has now been extended to 114 substances. The ambient air quality standards are fixed nationally as the basic concentration units, but there are no national or regional emission standards, and advantage is taken of the ability to set up industries in less polluted areas which are still extensively available in the U.S.S.R.

Taking into account national characteristics, it might be thought that eastern European countries with their own close political ties with the U.S.S.R. would tend to follow a similar pattern of legislation. Although the countries of the eastern bloc do rely on an air quality management approach, their methods of control not only differ from country to country but also differ from those of the Soviet Union. They have retained their own national systems. In Czechoslovakia, for example, air quality standards have been introduced for 18 substances, but there is

also a fiscal system of legislation. A basic tax is imposed on fuel consumption or on an assessment of the cost of a necessary control device to reduce emissions. Surcharge taxes are imposed for emissions over certain limits and these also vary with the height of chimney stacks. The highest surcharges are exacted in places such as health resorts; the smallest surcharges are paid in industrial areas. East Germany, although using air quality standards as a basis for control, also has emission standards for dust, sulphur dioxide and other gaseous pollutants. East Germany also uses the air quality inventory as a method of control and this background level has a considerable bearing on acceptable emission levels. Poland has established air quality standards for 15 pollutants and also uses a form of zoning. A lower standard is used in areas like health resorts and places where hospitals and schools are sited; a higher standard is used in less protected areas, including areas of dense population. Similar methods are used in Hungary and Rumania.

Most western European countries, with the exception of Great Britain, which we have already discussed, base their controls on air quality together with emission standards. The air quality standards are based on dose effect criteria not unlike those of the United States of America and the U.S.S.R.. The United States also, of course, use the air quality management approach and, as we have already seen have federal legislation based on standards and limits laid down by the Environment Protection Agency implemented by follow-up state legislation.

Japan, with its very high population densities and high car pollution provides a study of air pollution control entirely on its own. In 1969, legislation for the control of air pollution was introduced and from the beginning both air quality and emission standards were used, although it was not until 1971 that an Environmental Protection Agency was created. At the same time, emission standards were reinforced by some 40%. Generally, the method of air pollution control exercised in Japan is very similar to that of the U.S.A., but it seems that changes in standards, usually to make them more stringent, occur much more frequently. For the control of pollution from motor cars, Japan insists on standards very similar to those imposed in the United States.

Other countries generally fall into the two main classes but there are slight variations depending on factors of national prestige, climate, geography and finance or economics. Will these factors have any influence on other countries? When considering clean air legislation in one's own country and comparing it with that of another, one thinks one can always see something better. The grass is always greener on the other side of the fence. One thinks of places where improvement can be made in one's own system which would fit in very well with national requirements, with the requirements of national economics and which will produce a better answer. But self satisfaction and prejudice are difficult to break down and if a country thinks that it has evolved a system of air pollution control which it likes, then it is unlikely to make sweeping changes even if it makes minor ones.

Nevertheless, changes and sometimes sweeping changes are being suggested if not made. West Europe as we have seen, relies on an air quality management approach; Great Britain now a member of the E.E.C., confirmed by a recent referendum, relies on the philosophy of the best practicable means. The E.E.C. Commissions in Brussels and Luxembourg are issuing Directives based on air quality criteria in some instances without emission standards. These may be acceptable to a few countries, but are certainly not at present acceptable to all and certainly are completely contrary to the philosophy of the best practicable means. Nevertheless, Great Britain, though still believing in the best practicable means is coming to see that there are things to be said in favour of air quality criteria backed up by realistic emission standards which can themselves be based on the best practicable means philosophy. Last year, the Greater London Council adopted reference levels to be known as the 'Greater London Council Guidelines for Air Quality'. The same authority is considering establishing an emission inventory for Greater London on the lines of what is already being done for some of the larger conurbations in West Germany, the Netherlands, Italy and in the U.S.A., Canada and Japan. What is more significant perhaps is that the report of the Royal Commission on Environmental Pollution, published in January, 1976, while stating quite categorically that Britain should adhere to the philosophy of the best practicable means which take fully into account such

factors as geography, climate, meteorology and economics for fixing emission limits, does recommend that the Government should establish air quality guidelines for certain pollutants and that local authorities should use these guidelines in adopting air quality targets. And in any event, the Alkali Inspectorate already sets standards in the form of 'presumptive limits'. The Royal Commission also consider that the Government should set up a central inspectorate for all forms of pollution. A move towards an EPA? Perhaps.

What will happen in Europe, especially within the E.E.C., is still a matter of conjecture, but it is to be hoped that it will be realised that air quality criteria based on sound emission standards do have their place. Unfortunately, what is not always clear is whether the air quality criteria already established are criteria which must be adhered to and reached or whether they merely represent objectives which would be ideal and which should be aimed at. There are instances where the latter really holds good although the criteria are quoted as absolute standards. If the said criteria could be used as objectives and the best practicable means used as the means of obtaining them, then real progress could be made on all fronts. There are signs that some people, notably industrialists perhaps understandably, in some countries in Europe would like to see a wider application of this principle, for industry these days, if not international, is often multi-national. In America, too, not all those concerned with the administration of air pollution control are in favour of the methods at present adopted; a considerable number of knowledgeable people in high places would like to see some application of the best practicable means philosophy. U.S.S.R., too, is currently showing great interest in the control methods employed in the U.K..

Canada, in changes that are going on there at the moment, perhaps provides an example of the way that things might develop in other parts of the world. The control of air pollution was first developed in the more populated provinces but quickly spread to the ten other provinces. But legislation within the various provinces is very diverse. Possibly as a result of this, the Canadian Federal Government in 1971 passed a Clean Air Act which will eventually provide guidance to the provinces

although still leaving the main responsibility to them. In the meantime, it functions as a co-ordinating measure. It is next proposed to impose national air quality objectives in the form of a maximum desirable, a maximum acceptable and a maximum tolerable air quality level as the basis of a method of control which will bring together the best practicable means approach with that of a long-term air quality management. We saw earlier that Canada, as a result of colonial and imperial influences in the past had been subjected to two main kinds of legislation — the haphazard and the codified — or the British and the French. We also saw that in some instances countries had used the best of both systems to provide their own peculiar system to suit their own peculiar needs. Canada is a case in point and it would seem that Canada is adopting and adapting the best philosophies of both worlds in her clean air legislation and this might prove to be a model for other countries. Perhaps the Canadian example may spread south of the border to the U.S.A.. Perhaps the E.E.C. will recognise that there are merits in both main systems of air pollution control and that they can be married.

Although clean air legislation is comparatively recent and in most instances has all been enacted within the last quarter of a century, many countries are already asking themselves the questions 'How much further do we go?', and more particularly these days 'How much can we afford to spend?' and 'How do we spend what money we have?'. Obviously, the money available must be spent to the advantage of mankind. It must not be wasted and therefore must be used realistically and in a practical manner in reaching what is attainable. This might be said to be a plea for the use of the best practicable means. But at the same time, realism must also be used in setting objectives in the shape of air quality standards to act as incentives, always bearing in mind that standards themselves can achieve nothing unless proper control can be and is exerted at the point of emission. To do this some national, deep rooted beliefs may have to be scrapped and more weight given to geography, climate and economics. With a free exchange of ideas between the countries of the world and with goodwill on all sides changes can be made, changes which will lead to even cleaner air.

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