

ENERGY AND PERSONAL TRAVEL

Institutional obstacles to conservation by

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1. INTRODUCTION

It is now becoming recognised that energy saving can be looked upon in policy and practice as an issue as deserving of attention as energy supply. In some respects it could be viewed as being worthy of more attention because meeting demand by increasing supply can lead to the adoption of patterns of activity which then rely on more intensive use of resources: for finite resources, this then exaggerates the inevitable problems and difficulties of relinquishing this use. However, public policy within the sphere of energy conservation in personal travel in Britain has not been successful in reducing reliance on one such finite resource - petroleum. Indeed, the years since 1973 have not even seen this reliance held steady: instead, it has increased.

A wide range of grounds - economic, political, environmental and ethical - can be cited for more diligent application of energy conserving practices, principally with respect to petroleum - the commodity which is in most urgent need of conservation. Not least among these is the fact that, whatever the rate of recovery of newly discovered reserves, or the rate of improvement in the efficiency with which petroleum is used, this in no way negates its finite nature. Hence, cutbacks in consumption levels, which encourage and are encouraged by alternative, more sustainable patterns of activity, thus allow these finite resources to be allocated in a more responsible way towards areas of real need, both for present and future generations.

2. PETROLEUM CONSUMPTION

In marked contrast to other endeavours in the field of energy conservation, practices associated with travel to date have been insufficient to reverse the almost uninterrupted trend of rising consumption over the last 30 to 40 years. The significance of this trend has become all the more obvious as other petroleum users have achieved economies or have switched to other fuels.(1) As a result, petroleum consumption for personal travel now represents over 25 per cent of all petroleum use in Britain. This in turn represents a quadrupling of the quantity which was consumed annually at the beginning of this period.

On average, each of the 54 million men, women and children in Britain now uses over 400 litres of petroleum for personal travel during one year, and each of the 15 million cars on the roads consumes over 1400 litres annually. Official forecasts suggest that conservation policies will have to be more successfully developed, extended and applied if these figures are not to continue to rise steeply. For instance, maintaining current levels of consumption (let alone lower levels) is likely to require an increase of 20 per cent in engine efficiency before the year 2000, in the face of even the lowest official forecast of car ownership. The alternative would be a 20 per cent decrease in travel, but related forecasts predict instead that there will be between 20 and 55 per cent more car traffic by the turn of the century.

It is apparent that the prime causes of present high levels of consumption are, first, the continuing trend towards higher levels of car ownership, and secondly - and independent of this trend - the extended use to which cars have been put: the number of cars has increased by nine per cent since 1973 and, on top of this, the average mileage of each car - new and old - has increased by six per cent. This

has led to an increase of 15 per cent in the petroleum consumed by cars,(2) with the savings achieved as a result of improvements in engine efficiencies offset by additional increases in consumption for other reasons, such as a trend to larger engine sizes. In fact, car travel now accounts for 92 per cent of the petroleum used in personal travel.

3. MEANS OF ENERGY SAVING

There are a number of means of bringing about significant reductions in energy use - some with greater, some with lesser potential, though some of those with apparently lesser potential could bring about more obvious and immediate savings, as they are simpler to adopt.

Three distinct areas of potential can be isolated. The first, and the one with the best record of achievement to date, is concerned with technical innovation, that is, with using less fuel to cover each kilometre travelled, without at the same time requiring any change of the habits that have evolved over the years and without any loss, however marginal, of convenience.(3) Part of the explanation for the relative success in this area is the rare congruence of interest between manufacturers, consumers and government in achieving conservation objectives by these means. Nevertheless, there is still considerable room for improvement, particularly through new legislation aimed at encouraging the owning and running of more energy-efficient cars. Less successful in this area have been developments into the use of fuels to replace petrol, largely because the costs of the alternatives appear to have risen in line with an increasingly perceived need for them.

The second area of potential saving is the one concerned, first, with channelling travel towards the use of less energy-intensive travel methods - either by steering future travel demand towards them or by effecting a transfer of existing travel from the more to the less energy-intensive methods - and secondly, with making more efficient use of vehicles in terms of their passenger occupancy.(4) Within this area, two sets of measures can be isolated: those that are fairly well recognised and those that are poorly recognised. In both instances, there is a much lower level of achievement to record because wider adoption of these means, albeit for worthy public policy objectives, impacts adversely on personal preference and requires some modification of habit. Principal among the former group is the potential for increasing use of the far more energy efficient forms of public transport instead of using cars, by traffic management, parking restraint, public transport support, and by increasing the costs of car use. Attention can also be drawn to the means of lowering energy consumption by increasing passenger occupancy through car sharing, improving engine maintenance, educating motorists on energy-saving skills in driving, and generally encouraging adoption of these practices through exhortation and legislation.

Among the latter group is the potential for energy savings through increased use of the most renewable of the energy sources used in travel - the human energy employed in walking and cycling.(5) Whilst these modes represent feasible alternative ways of travelling for many existing motorised journeys they are rarely incorporated into discussion on the development of appropriate strategies aimed at reducing the amount of fuel used in personal travel: it is as if they are judged irrelevant because they do not use finite energy, rather than being seen to be relevant for that very reason.

These two areas are directly associated with the methods used for personal travel. Less obvious, though in some respects with a greater scope for conservation, is the third area of potential saving, which is concerned with altering travel patterns and, in particular, with reducing mileage - reducing the need and incentive for travel over distances generally entailing the use of motorised methods.(6) Surprisingly, this is the most poorly appreciated area. Again within it lie two broad spheres of

application - those concerned with public planning and the decisions determining urban form, the location of housing and the destinations that people wish to reach, and those concerned with personal planning, that is, the decisions people make about where they live and work, where they shop or go to school, and so on.

Examination of available statistics reveals a general direction leading towards more mileage being travelled, partly through people choosing to do so, but partly through their having or being encouraged to do so because of the availability, accessibility and relative locations of housing and other destinations suitable to their needs, pockets and aspirations. Both instances have led to increases in the amount of energy used in travel; alternative policies aimed at encouraging a reduction in mileage could clearly have the reverse effect.

These last two areas of potential energy saving - concerning the use of different travel methods and the adoption of different travel mileages - are each relevant for conservation in their own right. However, it is important to recognise their interdependency: shortening the distances over which people travel makes the more energy efficient travel methods more acceptable as it reduces the relative time, effort and inconveniences which can be associated with travel other than car travel. Similarly, the location of destinations can affect the ease of reaching them by different travel methods - particularly by public transport. And measures which ease car use and reduce congestion can encourage longer distances to be travelled by car, or more frequent car journeys to be made, whilst measures which create safe and pleasant environments for walking and cycling can generate local activity.

4. OBSTACLES TO ENERGY SAVING

Examination can be made of how effectively the means of reducing the consumption of energy for travel have been applied, and what institutional difficulties and obstacles have stood in the way of their wider adoption. These difficulties and obstacles can be discussed under a number of headings, concerning perceptions about the use and conservation of transport energy, educational processes, policy development, and economic and social considerations. Some of the obstacles or difficulties are specific in content and have a direct and obvious relevance to the use of transport energy, others are interactive and indirect.

5. PERCEPTUAL PROBLEMS

The first set of obstacles relates to perceptions at several levels, including expectations about the future, attitudes associated with the need to conserve energy used in travel, awareness of the scope that exists for doing so (as outlined in the preceding paragraphs), and explicit reference to this in the relevant processes of decision-making.

In so far as policy-making draws on a model for the future, it is apparent that expectations have a part to play, both institutionally in respect of the political and professional judgements upon which decisions are based, and socially in respect of the degree to which the public are receptive to the need for changes in the general direction of public policies. The social and institutional aspects are not separate entities: social perceptions can be moulded by institutional actions, just as institutional actions can be responsive to social pressures or to the analysis of social expectations and actions. One obstacle is that expectations of continuing affluence and increased mobility appear to flow from assumptions that these have been but temporarily interrupted by the current economic recession. There also appears to be an inertia induced by perceptions of recent history in which energy supply has matched demand, and by expectations - founded in recent events - that discoveries will be made and technological solutions found to enable the future to follow the past without appreciable or undue upset. Indeed, at a political level relatively little emphasis is placed on the fact that the needs of the burgeoning Third World population for this commodity may be more essential than many of the

uses to which it is put in the developed world - for instance, in respect of the one-third of petroleum consumed by cars which is used for leisure journeys in Britain. Moreover, there appears to be a reluctance to admit the real possibility of political perils in the future which could be sufficient to justify a substantial change of direction in economic and social policy.

Associated with these attitudes, which reflect a degree of complacency and lack of urgency about the need for change, is the view that car ownership and use can grow as forecast, and that consumer preferences in this respect need only be modified to the extent that more efficient use be made of petrol. It is commonly held that the car should be treated as a priority user of oil as it is judged that for most car owners there is no realistic alternative form of travel; in fact, the travel activity of a large minority of the non-car owning households in Britain is very largely organised without a car, as is much of the activity of the majority of the population who do not have the optional use of one. But there is a fairly widespread antipathy towards interfering with the overall direction of public policy towards growth in whatever spheres it can be attained - as if to do so would be interfering with natural order.

A further basic obstacle under this heading of perception has been mentioned already - it is the oversight of the need for conservation, and lack of awareness of many of the means that can be used to further the aim of energy conservation in personal travel. Of particular concern is the fact that some of these means are poorly recognised at the professional level, especially in respect of reducing the number of miles travelled through public and personal planning and in respect of the use of non-motorised travel.

This obstacle has numerous facets, for not only does it prevent the development of any policy expressly aimed at reducing or containing the use of transport energy by these means, but it inhibits the encouragement of any other policy which, in effect if not in intent, could bring about such a reduction or containment; it provides less urgency for identifying any problems in implementing either of these types of policy - and for tackling such problems; it does nothing to discourage policies which have effects that run counter to this aim.

Thus, the Department of the Environment has no policy relating to the influence of planning on the energy used in travel.⁽⁷⁾ As a result of this, energy considerations are rarely fed into discussions or policy notes on the myriad of land use and locational issues which influence travel and therefore affect the consumption of transport energy. Little attention is paid to the transport energy implications of statutory land use planning activity, and broad planning aims couched in terms of conservation, finite resources or even, specifically, energy, find little expression in subsequent policies, and are rarely included either to favour or oppose alternative planning strategies.

In the more direct sphere of transport policy and energy policy, the relevant institutions have generally seen the scope for energy conservation as being limited to increasing energy efficiency in vehicle use and developing alternative fuels to power vehicles.⁽⁸⁾ With rare exceptions, such as in ACEC and recent EEC reports, the potential for effecting savings by deliberately planning to reduce the extent of motorised mileage that people cover in their daily activity has been either overlooked or consciously excluded from examination or discussion.

In so far as energy policy generally is concerned, far more effort has been applied to reducing consumption, particularly of oil products, in the domestic and industrial sectors than in the transport sector, and probably as a consequence of this, far more success has been achieved in these sectors. This appears again to reflect a common judgement that transport is a sector deserving of priority status in the

allocation of the relatively scarce resource of oil because of the heavy dependence that it now has on this resource. It is also thought to be difficult to reduce consumption by reducing the demand for travel; it is indeed thought unwise to institute measures to this end. This is because such measures would restrict personal freedom, particularly in the use of cars, and the introduction of radical policies in such areas is considered to be fraught with political risk.

Another obstacle in this area is that energy is not considered as a resource to be dealt with as economically as possible in the way that financial or land resources are considered. The energy cost of proposals, policies or practices are thus not calculated, either when land use or transport alternatives are being assessed, or during the processes of development control.

As far as the land use aspects are concerned, and some of the transport aspects, a further problem is the lack of recognition by energy institutions of the relevance of these aspects to petroleum consumption; and where the relevance is noted, it receives very little attention.

A related problem lies in the assumption that current patterns of activity are relatively immutable and that time does not allow change through planning to occur sufficiently quickly to affect the amount of mileage that people travel. Such assumptions are misguided, however, for the very purpose of the extensive machinery and processes of the national system of land use planning is to control the structure and form of urban development in accordance with the broad aims over a long-term future. It thus has scope for shaping also the patterns of travel that result from the urban structure, and so for influencing the pattern of transport energy consumption; it could indeed be thought of as being a singularly appropriate tool for influencing energy use because the influence exerted would be gradual and so more flexible and more easily assimilated. Opportunities for exerting such influence occur each time changes are planned: tens of thousands of public and personal locational decisions are made every day, affecting travel to or from home, workplace, school, shopping or leisure activity and so on. The combined effect of these decisions could lead to a significant modification of the amount of mileage that is subsequently travelled.

6. EDUCATION AND TRAINING ASPECTS

The second set of obstacles falls under the heading of education and training, both among the professions whose activities impinge on the subject, and among the public at large. It has been seen that any efforts in this sphere by such bodies as the Departments of Energy and Transport, the Advisory Council on Energy Conservation, the Watt Committee on Energy, and other relevant professional institutions have not widened sufficiently the understanding of the need to conserve transport energy and the means whereby it can be used more rationally, for the consumption of energy for personal travel has continued to rise.

The obstacle in respect of professional education is not so much a lack of awareness about the relevance of planning and transport planning to energy use, but a reflection of inertia, lack of stimulus and lack of knowledge and teaching ability in these spheres.⁽⁹⁾ This is especially true of the planning profession, which acknowledges that the issues are important, but whose planning schools also generally admit that there is currently a very low level of penetration of these issues into planning education, and that the profession should be giving more attention to them. As in planning policy, not only is it rare to find any teaching which is focussed on energy issues, but there is also relatively little attention paid to these issues where they impinge on other relevant subject areas within planning: though there is a clear and admitted scope for their inclusion in so far as much of planning activity affects travel patterns. There is somewhat more knowledge and reference to energy issues in transport education, though it is again acknowledged

by those concerned that there is scope for the development of this subject area - and this is perhaps particularly so in respect of the scope for changing travel patterns to reduce transport demand.

A particular problem in this area of education is that, as in education generally, the development of new subject matter is a slow process unless given favoured treatment, because the development is dependent on expertise which is, by definition, sparse. Hence, there is a dearth of appropriately qualified professional teachers, needed to provide the necessary input into academic courses on transport, planning and energy, and this in turn has led to there being insufficient trained professionals to provide the necessary input for the development of policy and practice in all the areas affecting consumption. Related to this, professional educators consider, and this study has shown, that there is a lack or incompleteness of readily available information, data, research and analysis on energy consumption and conservation in travel, on the precise relationship between energy use and planning or transport variables, and on trends in factors associated with energy use.

This fact in turn leads to the consideration of another obstacle which is the difficulty that exists, in this as in other spheres, of measuring or assessing negative consumption, and of presenting energy efficiency in travel methods or travel patterns not just in terms of reducing consumption but in terms of increasing conservation.

Another problem associated with professional education is that energy issues are not seen to be of pressing importance in courses which are highly vocational in character; energy resources are not seen to be directly relevant to the activities of professional land use and transport planners, in the way that financial resources are seen to be relevant. Related to this is an attitude that attention needs to be given in the first instance to the problems faced by them at the present time, rather than to the problems they might want to avoid in the future, or indeed the problems which might be created for society in the future by current activity.

7. TRANSPORT AND PLANNING POLICIES AND PRACTICES

The third set of obstacles to a more rational use of energy in personal travel falls under the heading of the actual policies and practices followed in transport and in land use and locational planning which have led to current patterns of travel being adopted. Much public planning has been carried out without adequate regard to the consequences for travel, and thereby to the consequences for energy consumption. As a result, lifestyles more dependent on car use - and often on extensive car use - have not been discouraged. These lifestyles have evolved, on the one hand because of the convenience of the car itself, the expanding road network, traffic management measures and the relatively low cost of car travel enabling more people to choose a greater spread between their homes and the destinations they wish to reach and, on the other hand, because there has been no alternative for people but to travel further or to travel by car - because of the location of available and suitable housing, the separation of land uses, the low density of residential development which does not support an adequate range of local facilities, the siting and planning of facilities which encourage use of cars, or because of the closure of local facilities on grounds of economy, the contraction of public transport services or the loss of amenity and increased costs of living in inner urban areas.

As noted earlier, much of the explanation for this appears to stem from a basic oversight of the consequences of decisions in these areas for travel patterns - and thereby for energy consumption. As a result, many decisions have been taken which have been either counter-productive, for instance, in requiring building developers to provide ample parking space - usually free - for employees, or ineffective because, for instance, it is not seen that the low enforcement of laws on parking can have the additional disadvantage of increasing car use. Other

planning decisions have been taken to allow developments to occur which lead to an extension of travel and an increased reliance on car use, for instance, in relation to the location and spread of housing development, the provision of large-scale facilities and the provision of travel generators in locations not well served by public transport.

8. ECONOMIC AND EMPLOYMENT CONSIDERATIONS

The fourth heading representing obstacles to the adoption of energy conserving practices is concerned with their economic and employment consequences. One major aspect of this is related to the viability of the motor industry. It illustrates the difficulties and dilemmas facing government in, on the one hand, attempting to conserve energy and yet, on the other hand, wishing to promote demand for energy-intensive products which have absorbed significant public investment and which provide substantial employment. The problems are made more difficult because this employment is concentrated in certain localities and any contraction of the industry would be likely to cause serious social and industrial problems. Concern about these issues appears, in part, to explain why successive governments have fought shy of legislating in such a way as to ensure that the taxable benefits of company car ownership and use are set at their true level.⁽¹⁰⁾ The consequence of taking a concessionary attitude on this has been a higher car mileage than would otherwise have occurred - apart from other public disbenefits such as a substantial loss of revenue.

A second aspect is related to the price of petrol.⁽¹¹⁾ Contrary to the popular view, the price towards the end of 1982 was only about a quarter higher in real terms than it was in 1970. It can be shown that, until fairly recently, government revenue per gallon was allowed to decline substantially. For the price of petrol to prove an effective mechanism for reducing consumption would require two substantial changes. First, the price would need to be set much higher - and the only way for government to do this is by raising the duty on it considerably, a tactic government is reluctant to adopt because of its inflationary effect. Moreover, a significant increase in duty would not necessarily lead to proportionately additional expenditure on running cars: it would raise the significance of the costs of travel and discourage people from adopting space-extensive, car-dependent lifestyles. Secondly, greater effort would be needed to enhance motorists' perceptions of this deliberate cost increase.

A further obstacle related to the price of petrol is that investment in research and development in the area of alternative fuels is discouraged by imprecision regarding both price and the likely demand for these fuels in the decade or so ahead by which time they could become available in sufficient quantity to fill a significant gap in supply.

An economic obstacle to the creation of an environment likely to lead to a lowering of energy needs for travel lies in the means employed for establishing priorities on transport expenditure and its subsequent allocation. There is the widely held view of the car as the highly beneficial invention to which an increasing majority of the population have gained access and for which, therefore, provision of roads and parking facilities on a large scale needs to be made. Associated with this in the decision-making process have been grossly inaccurate forecasts on future levels of vehicle ownership and traffic which have been used in determining that substantial investment should be made both in the motor industry and in road building. This has led to a reduction in the availability of funds for improving the attractions of public transport travel, for providing proper facilities for cyclists, and for creating a pleasant and safe environment for people when they are walking. Although recent years have seen a larger proportion of total transport expenditure being devoted to public transport, the outcome, as measured in terms of costs of travel and accessibility, has in general tended to favour car use far

more than any other method of personal travel.

Economic considerations also present obstacles to the formulation and development of energy sensible policies and practices in the spheres of locational and land use decisions. Thus, the spread of urban areas and the extension of commuting patterns are, to a considerable extent, the result of economic pressures on the housing market, incorporating considerations about land and development costs and house prices. These clearly influence both developers' and the public's locational decisions and so have implications for travel. Economic considerations also affect decisions about the number, size and retention of facilities used by the public, so conditioning travel patterns and energy consumption. And whilst energy considerations obviously should not necessarily attract top priority when such decisions are made, they should be given some attention and perhaps serve to modify the decisions in a direction which would discourage rather than encourage ever-increasing amounts of travel and transport energy expenditure.

9. SOCIAL FACTORS

Finally, there are social factors that can be seen to have acted as obstacles to the rational use of energy travel. It is clear that there is public preference - when that can be exercised - for energy intensive patterns of behaviour: car ownership and two-car ownership itself, high performance cars in terms of speed, comfort and convenience, and the more space-extensive lifestyles that both encourage car ownership and are encouraged by it. Indeed, one of the more telling effects of rising car ownership is the impact that this has had on mileage travelled: the ratio of car passenger mileage increase to public transport passenger mileage decrease over the last ten years is more than twenty to one, indicating a very low potential for bringing about a significant transfer of car travel to public transport travel. A further example of the social obstacles preventing energy saving in travel has been the very low response to car sharing arrangements, in the absence of traffic management or parking regulations that encourage such arrangements.

At the same time, the decisions people take cannot necessarily be interpreted as their preferred ones - fear of road accidents dissuading people from travelling by bicycle being an obvious example, and lengthy commuter travel resulting from the lack of low priced housing in certain areas being another. There can be little doubt that, with more energy progressive policies, for instance in the sphere of petrol pricing and parking restraint, reductions in less essential car mileage could be foreseen, and also more car sharing or transfer to alternative travel methods on journeys to and from work.

It has been shown that it is possible to identify a wide variety of institutional obstacles acting counter to the more rational use of energy in personal travel. They provide some explanation for the relative lack of success to date in this sphere of conservation and, in some instances, they have actively encouraged an increase in energy use.

10. CONCLUSIONS

This paper has focussed on several means whereby the amount of energy used in travel could be reduced. It has been seen that the full range of these means and the need for energy conservation in this area are not well perceived by all the relevant institutions - and, where perceived, are not always acted upon. There are many barriers standing in the way of the more widespread adoption of energy saving practices in travel. Many of these barriers stem from policies, attitudes and practices either directly surrounding car ownership and car use or, alternatively, which have led to the spread of car-oriented lifestyles with their energy wasteful patterns of travel. These lifestyles were devised at a time when the need for conservation was less well understood than it is today. Some are now difficult to discard - all the more reason then for creating the conditions in which they are less

likely to be adopted in the future.

A number of energy conservation techniques have been employed to date, but their success has been insufficient to counter the rising consumption of petroleum in travel: clearly, therefore, policy needs to be directed towards other techniques and practices. In this, it needs to focus on removing the barriers to their adoption in order to create the potential for moving towards a sustainable future - that is, one which is decreasingly dependent on finite sources of energy for its travel, rather than one which is increasingly dependent on them, as has been the underlying trend since 1973.

This paper is drawn from from the final chapter of its authors' report, Energy and personal travel: institutional obstacles to conservation, published by Policy Studies Institute, 2 Castle Lane, London SW1, UK.

References are to Chapters in that report:

- (1) Chapters I and II.
- (2) Chapter IV.
- (3) Chapter III.
- (4) Chapter V.
- (5) Chapter VI.
- (6) Chapters VII and VIII.
- (7) Chapter XI.
- (8) Chapter XII.
- (9) Chapter XIII.
- (10) Chapter X.
- (11) Chapter IX.

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