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CAR SOCIETY: LIFE CYCLES AND LIFESTYLES

1. Introduction

Waste management is increasingly being integrated within environmental management as a whole and within sustainable development as a broad concept. This is happening through such approaches as the precautionary principle arising from the Earth Summit, Integrated Pollution Prevention and Control (IPPC), life-cycle analysis of materials in production processes and the adoption of environmental management systems for production processes. The value of integrating waste management with environmental management in general and with the concept of sustainable development is that we not only think about what to do with materials once they become viewed as waste. Manufacturing and, indeed, the economy as a whole, can, with the benefit of the appliance of technology, maximise the efficiency of production taking account of the external costs of this production.

However, there remains a fundamental question of whether it is enough to simply apply efficient technology to take account of external effects within a framework of free market forces. As well as the well-rehearsed list of imperfections in the market-place such as external effects, monopolistic production and imperfect knowledge there is a still more fundamental and ideological question of whether the market always knows what is best and whether corrections for market failure adequately address damage to the environment. As economists suggest, efficient allocation of resources does not necessarily equate with the environmentally best option. In the absence of any steering of demand, the application of technology to external effects represents what is classically described as the 'technical fix' approach to environmental management. Certainly, in the case of the car industry which this paper

concentrates on, there have been significant improvements such as reduced pollution helped by use of catalytic converters and 'lean-burn' engines and a general trend towards lighter and more fuel efficient cars. However we are now seeing a move beyond technological measures to some degree of steering of demand by governments through mechanisms such as increases to fuel duty and more recently the graduating of vehicle duties according to fuel efficiency performance. Other mechanisms which are used to varying degrees in different countries are pedestrianisation, time-based limits on driving, road use charges and car parking charges. Therefore in the case of one type of human activity, use of the private car, we are witnessing a step change in government policy, that is the policy of 'demand management'.

2. The case for demand management

What is the importance of demand management for car use or indeed for other human activity? Clearly, demand management has certain implications for a democracy in that it represents a deliberate attempt to steer people's lifestyles. In the case of car use, there has generally been a promotion of use through the government road-building policy of 'predict and provide' and through carefully organised advertising campaigns by car companies. Certainly from a popularity point of view, governments of western countries and increasingly other countries face a steep climb in curbing the demand for car mobility. Car owners and users now represent a majority of the adult population in most western countries and there is high reliance on the use of the car. Car companies will give demand management a cold reception on the grounds of it threatening business and livelihoods. However, despite these obvious barriers to change, opinion polls have shown considerable public support for alternatives to car use and, of course, considerable public concern for environmental quality.

2.1. Demand management and waste management for transport

While demand management represents a relatively radical approach to transport problems, it is important to be clear about what has led to such a policy. In Britain the policy came to fruition over a relatively short period in the second half of the 1990s. Not long before this, a Government report entitled 'Roads to Prosperity' gives some indication of a very different policy towards transport! An influential report in this

change of Government policy was one by the Standing Advisory Committee for Trunk Road Assessment called *'Trunk Roads and the Generation of Traffic'*, which suggested that new roads generated new traffic. The suggestion is that while a range of environmental factors may have been considered in the move to a policy of demand management, it was road congestion which was the prime contributory factor.

For the purposes of this paper the response to this might be to ask 'So why is this relevant to waste?' The answer to this involves at least two particular issues.

1. The effectiveness of demand management is likely to depend not only on reduced car use, but also reduced car purchase and increased use of alternative travel modes such as buses and trains. If governments persuade people to change to public transport or non-motorised modes, this has implications for waste streams including infrastructure waste.

2. The need for demand management in combination with adherence to environmental and waste standards are likely to be used as arguments for tightening the controls and economic instruments on car specification, car taxes and car use for those wanting to buy and use cars. Prices will vary according to environmental performance and noise production. This will have implications for vehicle design and the materials used.

It may be the case that road congestion, possibly reinforced by concern over global warming, are increasing the attention on, and strengthening policies regarding other environmental effects of transport such as destruction of landscapes and waste production.

So what are the adverse effects of motor transport? A recent draft British Government Strategy entitled "Powering future vehicles" [DTLR, 2001] listed six factors related to the level of road transport. These are:

1. Climate change
2. Air quality
3. Noise
4. Resource use
5. Local 'liveability'
6. Consumer benefits

As well as these effects specifically on the environment, other authors have identified the following additional factors:

7. Safety and health
8. Land-take
9. Road-building material use
10. Waste disposal

Without going into details about these effects which have been discussed at length elsewhere, it is becoming increasingly apparent that

the adverse effects of motor transport are both widespread and potentially severe. It is against this background that the public, while continuing to drive out of habit and convenience, may, on a more philosophical level, accept the need for demand management and alternatives to the private car. This acceptance is crucial to a consideration of waste management for the car industry, especially in the long-term since, even before measures to reduce, re-use and recycle have been designed, decisions over the quantity of vehicles and hence the rates of production, recycling and disposal would need to be faced. Of course, we are not at the stage where Governments are dictating levels of car purchase although a variety of instruments as discussed above can gradually influence this. Significantly, even the car industry or at least official representatives of it such as the Society of Motor Manufacturers and Traders (SMMT) in Britain are beginning to accept that technological advances are insufficient to counter environmental degradation without reductions in projected future growth rates. The Society accepts the need for an integrated transport system and has also responded to the Government's invitation to various industries of preparing a sustainability strategy. The first strategy prepared for the automotive industry, which was published last year, concentrates on:

1. Manufacturing;
2. improving environmental performance; and
3. dealing with end-of-life vehicles (ELVs).

It is unclear whether these represent the Government's priorities for environmental management and sustainability but it suggests that while waste management has generally received less obvious attention than environmental pollution and damage to landscapes in policy-making related to vehicle use, there is now considerable attention on waste management issues also. Further justification for this is the 'precautionary principle' and IPPC, which form a basis for recovering batteries and waste oils from ELVs.

Recent European Community (EC) Directives also reflect considerable concern with waste from cars, particularly as the demands of the Directives place a considerable burden on member states. The most notable here are:

– the Landfill Directive which bans land-filling of whole tyres from 2003 and land-filling of shredded tyres from 2006; and

– the End-of-Life Vehicle (ELV) Directive which requires authorised treatment facilities to dismantle all vehicles by April this year (2002) and from 2007 requires vehicle manufacturers to contribute a significant part of the costs for dismantling.

2.2. Thinking about life-cycles and lifestyles

It is clear from the above that waste management for the motor vehicle industry is very much linked to a wide range of factors which ultimately concern quality of life and environmental effects. It is also clear that the EU and member state governments are recognising that demand management, while a somewhat radical approach, is a necessary measure for dealing with the environmental effects of car use. Environmental effects are considered here in a broad sense and include congestion, land-take and noise. Furthermore, there are signs of integration between demand management and waste management through measures such as:

1. Vehicle duty and road tax,
2. Petrol duty policies,
3. EU Directive requiring car manufacturers to the cover net cost of dismantling end-of-life vehicles,
4. Government invitation to industries to prepare sustainability strategies.

Measures (1) and (2) above may appear to be aimed particularly at environmental pollution to which the definition of waste could arguably be extended. Even excluding this from the definition of waste management, they are arguably waste production taxes in the conventional sense, since they deter vehicle purchase thereby potentially reducing the eventual waste stream.

It is worth noting that there would seem to be considerably more government policy documents concerned with managing car use than with managing car purchase, which tends to reflect the greater attention to environmental pollution and land-take, especially in 'greenfield' locations, than to waste management. However, one reason for this may be the unwillingness to come into conflict with the giant vehicle manufacturing companies and with the more obvious expressions of public freedom of choice.

3. ...To return to technology and efficiency

While current developments in policies are particular noteworthy at present given the significance of demand management, it is time to return to technological and economic factors. As stated above, these will also affect the waste and environmental management performance of the car industry. However, it is not only a case of technology allowing existing production practices and patterns of behaviour to carry on with improved efficiency, but of technology being used to re-align industrial practices to

take advantage of the use of renewable resources, more efficient production processes and to incorporate recycled materials both as input and output. Various companies have not only accepted these challenges, but have found that to re-align in this way has actually led to cost-savings. Accreditation schemes involving self-regulation of industry such as ISO 14001 are helping to diffuse such 'good practice' and to provide some degree of promotion of participating organisations. Government has a part to play in facilitating such practices by introducing public procurement schemes, that is making a commitment to buying products which use recycled materials. This is now part of the British Government's official statement on waste management, its 'Waste Strategy 2000'. The Government has also established the Waste and Resources Action Programme which, as stated in the Strategy [DEFRA, 2000, 26], is intended "to overcome barriers to promoting re-use and recycling."

There is also need for information on raw materials, production processes and waste arising, in order to make effective decisions on environmentally sound production processes. A recent report commissioned by the British Government (ECOTEC Research and Consulting [DEFRA, 1999]) looks at the comparative external effects of various primary and reprocessed materials. Recognising limitations in the calculations, the results for those materials relevant to the motor industry are shown below.

Generally speaking, use of secondary or recycled materials causes external costs through collection, transport and sorting, but these are usually offset or exceeded by the reductions in energy use and other external effects in the manufacturing stages. The research suggested that the net benefits of using recycled materials is likely to increase as uptake of, and adaptation to, their use grows. This provides support to the policy of public procurement mentioned above.

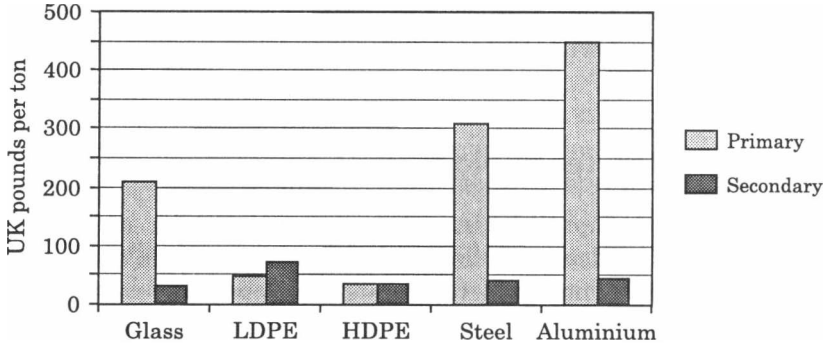

Fig. 1. Comparative external cost estimates of primary and secondary materials
Source: DEFRA, 1999.

4. Developing an integrated approach to waste management and lifestyles for the car industry

Despite movements towards integration of policy on the environment, there remains a tendency to view the environmental problems of transport in isolation. As stated above, there is a tendency to suspect that even the current demand management ideology is largely a reaction to the problem of road congestion rather than an overall assessment of effects including waste management. The following list describes some recently established or possible approaches to further integrating policies.

1. **Tradeable permits for local authority disposal of waste** is now being considered in Britain and may encourage local authorities to consider the waste implications of transport plans from both car use and road-building in their regions.

2. **Cost-benefit analysis** has generally not been applied to multi--modal studies of transport schemes, let alone to the costs of induced traffic and eventually potentially increased waste streams. Multi-modal transport assessments are now required in Britain.

3. **Strategic Environmental Impact Assessment**: may hold potential for integrated economic, environmental and waste management proposals.

5. **Economic instruments** could be further developed to deter vehicle purchase (assuming alternative modes of transport are acceptable) and to increase duty on heavier, less fuel efficient and therefore more environmentally damaging vehicles

6. **Public procurement policies** would help promote the use of more renewable or less damaging materials (for example flax and hemp) and help develop markets and increase their efficiency.

5. Commentary

– **Historic legacy**: the road network and patterns of car use have arisen from a gradual Government acceptance of private transport involving a '**predict and provide**' mentality. Have we reached saturation point with private transport? Furthermore, is historical precedent a sufficient reason for allowing car use to be determined by the market-place?

– The waste management argument for reduced car ownership and use is strengthened when congestion, accidents and pollution are considered alongside road-building and road maintenance. Viable public transport alternatives need to be developed alongside such policies.

Literature

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