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For the use of the following material:

The aim of this material is to strengthen the knowledge of local / regional managing agencies in the transport field and to accelerate the take up of EU research results in the field of local and regional transport. The beneficiaries of the project are managing (energy) agencies who want to play a bigger role in the transport field.

Due to the size and (in some cases) the number of individual projects, it is not possible to explain each single result in detail and include it into these written materials.

The following set of material should rather act as a portal and facilitate the access of single projects and detailed results.

Therefore the material in hand doesn't lay claim to completeness.

The following compendium contains results of EU research-projects and complementary results of national research-projects. The authors thank the partners and collaborators of the COST 342 project. A complete list of the projects, consortia, and cited literature is given at the end of the material.

The material for the topic “Parking Management and Pricing” was compiled by Tom RYE (Napier University, Edinburgh) for the STEER training project COMPETENCE in 2006.
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1. **Introduction**

This Unit in COMPETENCE is about parking pricing and management. It draws on a number of key sources: the 2005 final report of the European COST 342 project on parking; LEDA (http://www.leda.ils.nrw.de/); CIVITAS (http://www.civitas-initiative.org/main.phtml?lan=en); the limited academic literature on the topic; and policy and policy evaluation from www.vtpi.org, http://www.socscinet.com/transport/konsult/public/level0/10_hom.htm, and from the UK generally. The author of this Unit is UK based and so this goes some way to explaining why quite a few of the examples and cases are from the UK. However, the COST 342 material includes many examples from other European countries. A link to it is provided on the COMPETENCE website, and it is commended to you.

The availability and cost of a parking space is an important determinant of whether or not people choose to drive to a particular destination, and also whether they choose to own a car at all – it is likely that the relatively lower levels of car ownership in many inner cities (in spite of their greater wealth relative to other areas) are partly a result of the lack of on-street parking (so nowhere to put a car), as well as the above average levels of public transport accessibility.

Local authorities have direct control over the use of kerbspace (other than on trunk roads) in their areas, and therefore of the supply and price of on-street parking. Many authorities own public off-street car parks, over whose use and price they also have control (although the extent to which they are the provider of public off-street parking varies from locality to locality). Through the development control process, they also have some control over the level of parking that is provided in new developments.

Whilst parking controls and prices are rarely popular with the public, they are a policy option that is relatively well-known and, certainly in larger towns and cities, accepted – if there is an obvious shortage of parking spaces then many people may accept that there is a need for parking controls. Parking controls and pricing are the transport demand management measure that is most frequently implemented by local authorities, yet little of the academic literature deals with experience of this policy, preferring instead to concentrate on the “sexier” topic of congestion charging. This Unit attempts to redress that balance a little.

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**Learning outcomes**

Once you have worked your way through this unit, including the self assessment questions, you should be able to:

- understand the relationship between parking, revenue raising and economic development
- understand how and why local parking policies are developed, and be able to critically apply your understanding to a case study
- understand the circumstances in which it may be appropriate to use parking policy as a demand management tool.
Car parking is an issue of significance both at the local and at the strategic level of planning. Parking policy and supply play a major role in the management of transportation systems in dense urban areas. In order for parking policy decisions to be well founded, the analysis of parking behaviour and the effect of parking policies should be fully integrated with the other elements of the transport planning process (Young et al, 1991).

Parking policy has traditionally been viewed as a subset of transport policy. It is now recognised that parking policy has a key role to play in integrated transport strategies, which seek to exploit the importance of parking in influencing the overall pattern of travel. An increasing recognition of the importance of the links between parking policy and other urban policies has evolved, to the extent that parking policy is now being used to meet a wide range of urban goals.
2. Parking: some basic concepts

This chapter introduces some basic concepts and definitions in parking before we move on to consider different types of policy that can be pursued by local authorities to manage parking.

2.1 Parking Demand

Users of parking facilities constitute more than half the population and this proportion is growing: the EUROSTAT online transport statistics database shows that the number of cars per 1000 population in the EU25 rose from 394 in 1995 to 463 in 2002 (a rise of 16%). The car is the dominant mode of transport accounting for nearly 75% of all passenger kilometres in the EU25.

There are currently (2003) more than 212 million cars in the EU25, up from over 64 million in 1970 (EUSTAT, 2005). There are only two places where these vehicles can be found: they are either on-street or off-street. If they are on-street, they can be considered to be parked, searching for parking or in transit. Almost all cars that are off-street will be parked. Estimates show that cars spend more than 95% of their lives parked (Collins 1991).

In transport terms, demand is usually measured by observing activity: for example, traffic flows along a route, or parking acts at a site. In “uncontested” conditions, where the space available equals or exceeds the demand, then demand is equal to the observed consumption. In “contested” conditions, where there is competition for space, the observed activity or consumption is constrained; it does not measure the potential demand because some drivers have either been priced out of the market or physically excluded by a shortage of space. It is in this second contested context that controls must often be introduced.

2.2 Types of parking

There are four main types of parking – places that you can park a car. These are:

- On-street. As its name suggests, a parking space on the public road.
- Public off-street. A car park not on the public road, in which any member of the public can park their car, subject to complying with any regulations (e.g. maximum stay (in hours), or paying a fee). This kind of car park may be owned and/or operated by the public and/or private sector.
- Private non-residential off-street. This is car parking that is associated with a particular building or land-use – parking for a shopping centre, or an office-building. Only people who are connected with that building or land-use should, in theory, be able to use the parking, and the land-owner has control over this use (within legal constraints in the member state concerned).
- Private residential parking – off-street parking associated with houses or flats. In theory, only the residents of these houses or flats should be able to use the parking.

The pattern of parking supply in our towns and cities in recent years has been in a state of continuous evolution as parking demand has increased. From the outset, this has been
influenced by the public and private organisations involved in providing parking infrastructure. It is worth remembering the basic types of parking and the degree to which local authorities have control over them. The major distinction when considering parking supply is that between parking provided on-street and that provided off-street as shown in Table 2.1.

<table>
<thead>
<tr>
<th>Location</th>
<th>On-Street</th>
<th>Off-Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Public</td>
<td>Private</td>
</tr>
<tr>
<td>Owned</td>
<td>Public</td>
<td>Private</td>
</tr>
<tr>
<td>Operated</td>
<td>Public or private</td>
<td>Private</td>
</tr>
<tr>
<td>Type</td>
<td>Free</td>
<td>Priced</td>
</tr>
<tr>
<td>Duration Control</td>
<td>Free</td>
<td>Priced</td>
</tr>
</tbody>
</table>

*Table 2.1 - Parking Type and the sector controlling and/or supplying it*

2.3 On-street Parking

On-street parking is all publicly owned and is provided by local authorities in Europe under the general guidance of central government. Local authorities determine which restrictions should apply in specified streets, within central government guidelines, taking into account the national and local pressures for road safety, traffic flow, public transport provision and movement, the functioning of the local economy, the needs of residents and access for emergency services. In the many countries, they must involve the local community in the process of introducing parking restrictions, and communicate the changes effectively to local road users; we return to this topic later in the unit when we consider how to build acceptance for parking policy changes.

The extent to which unregulated kerb space is used for parking is determined by the demand of the area and the availability of off-street alternatives. Local authority restrictions will generally only apply when supply is exceeded by demand in a particular area (Balcombe and York, 1993), or where safety problems are caused by parking (e.g. sightlines at junctions are restricted).

2.4 Regulating on-street parking

In almost all Western European countries, the local authority decides on the parking regulations that go on street. There is a general tendency for on-street parking regulations to become more stringent (restrictive), the closer that one goes to the centres of towns and cities – because these are the areas of greatest demand. The vast majority of on-street spaces in a given member-state remain un-regulated in any way, because there is little or no demand for them. But, as demand increases, some typical restrictions that might be found include:

- No parking at any time around the mouths of junctions in order to ensure sightlines for vehicles, and safety and access for pedestrians crossing.
- Parking restrictions on main roads at peak hours to facilitate traffic flow.
- Parking restrictions on one side of a narrow road to permit two-way traffic flow.
- Time limited on-street parking in order to facilitate the turnover of parking spaces – usually to ensure that short term parkers (e.g. shoppers) can get a space.
- Parking restrictions in certain areas to provide kerb space so that commercial vehicles can load and unload to service shops and offices alongside the road.
• Time limits around stations (e.g. no parking 1300-1400 weekdays) to stop informal park and ride.

Where parking problems become more severe, a typical response is to introduce some form of parking restriction to give residents sole or preferential access to limited on-street parking around their homes. COST 342 (pp 336-38) cites the implementation of “blue-zones” or “disc parking zones” as a means to do this. They have been introduced in Switzerland, the Netherlands, the UK and Spain, amongst other locations. In Madrid, the local interpretation of a blue-zone is to mark out a high proportion of on-street parking spaces in the central area in blue. These spaces may then be used (time-unlimited) by residents who have a permit; or by other drivers, on payment of a charge, but only for a few hours at a time.

**Enforcement**

If parking regulations are to be effective, they must be enforced – otherwise, they will fall into disrepute. In many cases, however, as noted in COST 342 p 30, and by the LEDA project, local authorities are, at least partially, dependent on the police for enforcing these regulations. But in Austria, Czech Republic, Finland, France, Netherlands, Norway, Portugal and Spain, local authorities have powers to take over some enforcement from the police if they can (although only in the Netherlands and the UK is there complete local authority independence in parking enforcement; in all other countries, the involvement of at least one other agency is required (which can make enforcement less efficient). Here, parking regulations can be enforced under law that is not criminal and that can, therefore, be enforced by bodies other than the police, including private sector operators working under contract to the local authority (except in Finland, where such contracting out is illegal). In all cases, this has significantly enhanced the quality of enforcement, and in the UK it has also generated considerable income for some local authorities. Further details of the UK situation – which is cited as a good practice case study in COST 342 - are provided in the following paragraphs.

Under the 1991 Road Traffic Act, local authorities are able to take over responsibility for on-street parking enforcement in their areas from the police, but such Special Parking Areas (SPAs) must be self-funding, with operating costs paid for from fines. Thus, CPZs are normally limited to those areas where it is anticipated that they will run at a profit – mostly areas where demand is significantly greater than supply. The introduction of area wide controls - a CPZ - usually involves some non-essential users such as commuters being displaced to create additional space for essential users such as residents, shoppers and short term business users. Problems may arise if the displaced users continue to park, but just outside the controlled area; this may result in parking pressure near the boundary of the zone. A CPZ will normally include:

• Parking spaces for residents only. To park in these, residents’ must buy an annual permit, which cost between €15 and €400 per year, depending on the town or city.

• Pay and display public parking. Parkers must estimate the length of time that they will stay in the space, and buy a ticket for that length of time, as soon as they park, and display it in their car. Hourly rates vary from €0.50 to €7.00.

• Space for loading, but not parking.

• Space where no parking or loading is allowed (e.g. around junctions, at bus stops).

If a parker contravenes any of the regulations, the local authority (or its contractor) can levy a fine. This varies greatly from place to place – in Edinburgh, UK, it is currently €90, dropping to €45 if the fine is paid within two weeks. The fine is the same, whatever the contravention (e.g. staying 35 minutes when you have paid for 30 minutes gets the same fine as parking your car
illegally in a bus lane and blocking all the buses). Typically, when a local authority takes over enforcement from the police, the chance of an illegal parker being fined increases by four to six times.

Enforcement is generally funded from central government taxation revenue, with the exception of those UK authorities that have taken on enforcement (where it is funded from parking income); and in Norway, and Finland. In Portugal, Sweden and Switzerland, parking charges are used to part cover the cost of enforcement.

2.5 How much does it cost to park on-street in different countries in the EU?

First of all, it is worth noting that residents who live in controlled parking zones are usually provided with a permit at a preferential (cheap) rate. For example, in the centre of the City of Edinburgh in the UK, for someone to park all day for the whole year in a public parking bay on street would cost around about €6,000. A resident living in that area gets a permit providing the same service but for €280 per year. In many other areas, residents parking is cheaper still. In those countries where municipalities have been active in building and operating off-street car parks, they may offer their residents preferential rates in these - €120 per month for a space in central Lyon, for example.

With regard to public on-street parking rates, which are normally set by local authorities, some examples are shown below:

<table>
<thead>
<tr>
<th>City</th>
<th>Fee per hour (€) (2002)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vienna</td>
<td>0.87</td>
</tr>
<tr>
<td>Brussels</td>
<td>0.50</td>
</tr>
<tr>
<td>Paris</td>
<td>1.00 – 3.00</td>
</tr>
<tr>
<td>Lyon</td>
<td>1.50 – 5.00</td>
</tr>
<tr>
<td>Bremen</td>
<td>0.60 – 1.50</td>
</tr>
<tr>
<td>Cologne</td>
<td>1.00 – 2.00</td>
</tr>
<tr>
<td>Stuttgart</td>
<td>0.20 – 2.00</td>
</tr>
<tr>
<td>Munich</td>
<td>2.00 – 2.50</td>
</tr>
<tr>
<td>Dublin</td>
<td>1.00 – 1.90</td>
</tr>
<tr>
<td>Amsterdam</td>
<td>1.60 – 2.50</td>
</tr>
<tr>
<td>Maastricht</td>
<td>1.40</td>
</tr>
<tr>
<td>Lisbon</td>
<td>0.50</td>
</tr>
<tr>
<td>Madrid</td>
<td>0.60 – 1.20</td>
</tr>
<tr>
<td>Barcelona</td>
<td>0.90 – 1.20</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>1.20 – 3.00</td>
</tr>
<tr>
<td>City of Westminster, London</td>
<td>7.00</td>
</tr>
</tbody>
</table>

Table 2.2 – on street parking tariffs (source: COST 342)

On-street parking charges should if possible be lower than off-street charges as this will act as an incentive to people to park off-street, rather than drive round and round looking for a cheaper (as well as more convenient) on-street space. In any case, it is also clear from other analyses that the price of parking per hour increases with city size.
ACTIVITY
Before you come to the training seminar, collect a little data about your town or city:
How much does it cost to park on street for an hour, in different parts of the city (if relevant).
Is there a residents’ parking scheme in any part of the city – and, if so, how much do they have to pay for a permit?
How much does it cost to park off-street?
For on-street parking, what is the fine if you park in the wrong place or do not pay – and what are the chances of getting a fine?
Who sets the parking charges; and who is responsible for enforcing parking regulations?

2.6 Off-street parking

Off-street parking will, in the average European medium to large-sized city, provide the majority of the parking space available in and around the city centre. Most local authorities will require a certain amount of off-street parking to be built for the users of all new developments in their area – this topic is discussed further in section 4.4. In addition, all are likely to try to provide some public off-street parking, open to all users, sometimes at a charge. However, the construction of new off-street parking can be extremely expensive. Excluding land costs, the following figures are typical:

- Surface space, asphalted, with drainage and lighting - €3000.
- Space in a parking structure (multi-storey car park) - €15000 - €20000.
- Underground space - €40000.

In addition, there is a maintenance and security charge for each space, which can easily be €150 - €450 per year.

The main concern of a private operator of an off-street car park will be to maximise profits, but a local authority may have a range of other objectives. They may wish to provide public off-street parking, simply to make sure that visitors to their town or city have somewhere to park. They may also wish to control the price of such parking – perhaps to make it relatively more expensive for long-stay commuters (to reduce peak hour traffic) but cheaper for shoppers, who tend to travel in the off-peak. But the degree to which they have control over public off-street parking depends very much on how much of it they own. In the UK, this varies considerably: in one city (e.g. Edinburgh) the local authority may own virtually none of this kind of parking; in another (e.g. Nottingham) it may own the majority of spaces. Where local authority transport spending is limited, they may be unable to afford to build new car parks. In southern Europe, it is understood that municipalities play a much bigger role in the provision of public off-street parking, and so are better able to influence how it is priced, and thus how it is used, and by whom.

As we know, local authorities can control on-street parking. They can also control new private non-residential (PNR) off-street parking by regulating how much is allowed to be built as part of the building permit process. However, once PNR parking is built, local authorities have no control over it. This is important because they may wish to control PNR as a way of controlling peak hour traffic.
Unfortunately, most local authorities do not know how much PNR parking is available in their areas, still less do they have a means of controlling it. COST 342 cites the example of the Netherlands, where it is estimated that around 40% of parking in larger cities falls into the PNR category. COST 342 does not mention any figures for any other European countries, other than to say that PNR stock is thought to be equal to the number of controlled on-street spaces. If the UK is anything to go by, this is probably a massive underestimate. In summary, in 16 UK cities, the average proportion of public off-street provision is 45%, private non-residential (PNR) falls between 26% and 57% of the total with on-street controlled parking representing the smallest proportion of parking in these cities, constituting between 7% and 20% of the total parking stock. It was also found that there had been an overall increase of 8% in the total amount of parking supply between 1987 and 1992. (Balcombe and York, 1998.)

2.7 Experiences of parking price changes and zoning in town centres

Still and Simmonds (n.d.) confirm that there is an increasing trend amongst local authorities that have control of a reasonable proportion of the off-street public parking in their areas to change the pricing structure to deter all-day parkers in order to free up parking spaces for shorter stay shopping and business parkers. Such policies have been adopted by many cities, such as Munich, Vienna, Freiburg and Lyon, amongst many others. In the UK, Healey and Baker (1998) surveyed 123 local authorities and found that, at that time, 25% were planning to cut the number of parking spaces in their urban centres, with more than 50% increasing parking charges in real terms.

However, there has been little evaluation of the effects of such policies, with the exception of Canterbury’s (UK) policy of reducing city centre parking and replacing it with park and ride. This has been successful in reducing city centre traffic levels without negatively impacting on city centre trade (Valleley, 1997). However, COST 342 reveals no examples of any reversals in such pricing policies indicating that their effect is, at worst, neutral. Importantly, such changes are likely to enjoy the support of retailers, both in terms of on-street parking as well as the off-street “offer”.

2.8 Relationship between parking and public transport use policies to encourage public transport

It has generally been found that parking policy measures are likely to be relatively more important than many other traffic management measures in influencing mode choice. More specifically, in the limited studies undertaken, the decision to use a car for the journey to work is greatly influenced by the availability and cost of parking. (See for example Feeney 1988, NEDO 1991, and Shoup and Willson, 1982, COST 342, Litman, 2006.) For example, the 1994 Swiss National Census shows that, of those employees who are provided with a reserved parking space at work, 81% use their car to get there. The corresponding figure for those without a parking space is 35%. Chapter 7 of COST 342 provides numerous further examples of ways in which car-based mobility is affected by the provision of a parking space.

Supportive vehicle parking policies will be essential to complement other transport initiatives in achieving objectives relating to accessibility and the environment. If there is an excess of city centre parking over demand for it, improvements in public transport alone cannot be expected to
result in a change in modal split (Scottish Executive, 2003). Many of the most significant initiatives and policies towards city centre transport depend for their success on restricting road traffic, and parking policy is one of the most potent yet publicly acceptable means of restriction. From the North American context, Pratt (2003) also cites research from Canada by Morrall and Bolger (1996), as presented in the following table.

<table>
<thead>
<tr>
<th>City</th>
<th>CBD Share of Area Employment</th>
<th>CBD Office Space (1,000 ft²)</th>
<th>Parking Spaces per 1,000 ft²</th>
<th>Parking Spaces per CBD Employee</th>
<th>Park and Ride Spaces per CBD Employee</th>
<th>AM Peak Hour CBD Transit Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saskatoon</td>
<td>20.7%</td>
<td>3,600</td>
<td>3.5</td>
<td>0.79</td>
<td>—</td>
<td>14.6%</td>
</tr>
<tr>
<td>Edmonton</td>
<td>20.2%</td>
<td>15,133</td>
<td>2.1</td>
<td>0.51</td>
<td>0.029</td>
<td>32.0%</td>
</tr>
<tr>
<td>Calgary</td>
<td>23.4%</td>
<td>31,493</td>
<td>1.3</td>
<td>0.46</td>
<td>0.084</td>
<td>38.8%</td>
</tr>
<tr>
<td>Montreal</td>
<td>14.9%</td>
<td>87,996</td>
<td>1.0</td>
<td>0.38</td>
<td>0.270</td>
<td>48.7%</td>
</tr>
<tr>
<td>Winnipeg</td>
<td>26.1%</td>
<td>17,478</td>
<td>1.4</td>
<td>0.36</td>
<td>—</td>
<td>39.7%</td>
</tr>
<tr>
<td>Vancouver</td>
<td>16.3%</td>
<td>n/a</td>
<td>n/a</td>
<td>0.29</td>
<td>0.034</td>
<td>46.0%</td>
</tr>
<tr>
<td>Toronto</td>
<td>25.3%</td>
<td>61,570</td>
<td>1.5</td>
<td>0.29</td>
<td>0.122</td>
<td>64.1%</td>
</tr>
<tr>
<td>Ottawa</td>
<td>31.7%</td>
<td>21,024</td>
<td>1.1</td>
<td>0.28</td>
<td>0.008</td>
<td>48.8%</td>
</tr>
</tbody>
</table>

Note: Listed in order of decreasing ratios of long-term parking spaces per CBD employee. Source: Morrall and Bolger (1996).

Table 2.3 - Relationship between Downtown Parking Supply and Transit Use in Canadian Cities

Empirical experience and theoretical work reported in the literature therefore supports intuition: there is a clear link between parking availability and car use. The difficulty is not in demonstrating this link, but rather in being able to implement policies that use the link to reduce car use.

### 2.9 Park and Ride

Towns and cities often adopt park and ride as part of their strategy to tackle traffic congestion, in the main on routes into town and city centres (although there are examples of park and ride sites that serve major workplaces outside city centres). COST342 estimates that, between 1970 and 1990, the number of cities in Europe with park and ride sites increased by a factor of three, to around 76, and the number of parking spaces available by 337%.

Park and ride works by diverting city centre bound trips into a car park en route and taking the drivers onwards from there by public transport. For park and ride to be successful, it is vital that:

- The public transport route is fast, frequent and reliable. If it is faster, including interchange and wait time, than the corresponding car journey, its market will not be limited only to those who have no (free) parking available in the city centre.
- The frequency of an urban park and ride service should be every 10 minutes or, if possible, less. For services where the last stop is the park and ride, it is preferable if the service frequency is high enough so that a vehicle is always waiting at the stop. Where it is not the last stop, real time information is helpful to show the actual service frequency.
- The (perceived) cost of using the site should be lower than the fuel and parking cost of driving into the city centre. Depending on the target market for the park and ride, it may be
desirable to price the park and ride ticket for a car full of people (i.e. one person pays the same as a family travelling together), as this is the price comparison that people will make when deciding whether or not to use park and ride.

- Over time, the amount of parking – both PNR and public parking – in the town centre should be reduced, and it should be more expensive than the park and ride.
- There should be easy access from the main road network to the park and ride and, preferably, segregated exits from the park and ride for public transport vehicles (if they run on the road).
- Capacity should be great enough to cater for demand; but not so great that walking distances from the furthest parts of the car park are excessive. This may entail a parking structure (multi-storey) if demand increases beyond a certain point.
- Security for passengers and their cars at the site should be very high – CCTV and, preferably, a staff presence, will increase users’ confidence in the service.

COST342 cites Madrid, Spain, Bern Switzerland and Oxford UK as places with highly effective park and ride services. Madrid’s are based primarily on suburban rail and metro. Bern has a combination of rail and tram to serve its park and rides. Oxford’s five sites are all served by bus only (24 hours per day). The effects of such park and rides can be significant, but this depends on the factors listed above being in place. A few examples of the effects of park and ride on traffic are listed below (from COST 342)

- In Vienna – park and ride captures 12% of city centre-bound car traffic.
- In Chester, UK the corresponding figure is 20%
- Madrid’s park and ride sites have 20,000 users per day, while there are 12,000 in Barcelona and 10,000 in Hanover.
- In Strasbourg park and ride has been a key element in the success of its two tram lines. Some 43% of motorised trips now made by public transport.
- In Oxford, UK, park and ride sites are estimated to have led to a 3-9% reduction in city-centre bound car traffic.

It should be noted, however, that there are some park and ride sites whose costs far outweigh their benefits (including even environmental factors), and that even the best planned park and ride is likely – where new public transport services are implemented to serve it – to attract users who previously made their entire trip by public transport, but who switch to park and ride because it is quicker and/or cheaper. COST342 estimates that these can account for up to one third of users of a new park and ride. Another perverse effect can occur where a park and ride site is built in one location but users drive to another (and make use of informal parking opportunities, for example, on-street around a station) because the public transport service level at the second location is much better.

**Costs**

The cost of park and ride depends primarily on whether or not dedicated public transport infrastructure (e.g. a new tram or railway line) has to be built to serve it; and whether or not the public transport service is existing, entirely new, or an adaptation of an existing service. If not existing, then additional subsidy is likely to be required, at least initially. To these costs must be added the cost of building and maintaining the car park (see earlier section for figures on this), and any staffing costs. Most park and rides are publicly owned and subsidised. Where the initial investment is public but the service becomes so popular that it is profitable, and where
public transport is run by private companies, the public authority may let the operation of the park and ride as a contract and share the profit with the operator. This happens in York and Oxford in the UK, for example.

### 2.10 Company parking space management

Large employers with an accessibility, congestion or staff mobility-related problem will sometimes choose to implement mobility management at their site(s). Sometimes, this will include management of the employer’s parking spaces – especially where these are limited in relation to the number of staff and/or visitors. There is a clear link between the availability of a parking space at work and the way that people travel to work: the 1994 Swiss census, for example, showed that 81% of staff with a free parking space drive to work, compared to 35% of those without.

1a) **Employees with guaranteed parking in Switzerland**

1b) **Employees without guaranteed parking in Switzerland**

Source: Swiss Mikrozensus 1994 / percentages

The rationing of or charging for parking spaces at work is not an enormously popular policy with staff, however – especially in the planning stages. To make it more acceptable, the following steps and conditions should be satisfied:

- A problem is identified and parking management is a solution to that problem. For example, some hospitals in the UK have suffered from parked cars blocking routes for ambulances. Clearly, here, parking management is required.
There are alternatives available to driving to work for those staff who do not qualify for a permit and/or do not wish to pay a charge.

Widespread consultation is carried out with staff. This should cover a number of important issues, including:

- How should permits and (if appropriate) actual parking spaces should be allocated – what criteria should be used, and how many different types of parking space should be defined?
- What should the charge be (if a charge is planned), and should it be income-related?
- How should a charge be paid? Daily, monthly, annually – and in a ticket machine, or through salary, for example?
- How senior staff should be treated – acceptance increases if these staff are perceived to be treated as fairly as everyone else.

Legal requirements, with regard to employment contracts, are properly dealt with. These vary from country to country.

It is clear how the money raised will be used. Acceptance is likely to be increased if at least some of the income is used to fund improvements in car parking, car park security etc; and some used to improve or reduce the price of alternatives to driving.

For examples of companies that have implemented parking management, and the effects of this, see Rye and Ison (2004). The Department for Transport (DfT) published a series of case studies of employers with travel plans (site mobility management plans) in place in 2002. This showed clearly that the most effective travel plans are those that include some form of effective parking management – either rationing or pricing of spaces (DfT, 2002). Experience from the US, cited in Pratt (2003) supports this conclusion.
3. Relationship between parking and economic development

There is an inherent tension in parking policy between three key objectives for local authorities: local economic development (preserving economic vitality); raising revenue from parking charges; and travel demand management. The latter two objectives imply a need to reduce the number of parking spaces and/or charge for their use; the former is often seen to imply that as much parking space as possible should be provided, in order to ensure that no car borne trade or inward investment is deterred from the area in question.

COST 342 (pp 47 and 48) report some interesting experiences about attempts to use parking policy to stimulate local economic development. Because of political pressures from retailers in particular, several cities have tried relaxations to their parking restrictions to stimulate greater trade. These include:

Oslo. Here, weekend parking was made free. Instead of this attracting lots of additional shoppers, fewer people parked for longer (and some of those were shopkeepers!). Occupancy rose to almost 100%, parking duration by 30% and so there was less turnover and it became more difficult for people to park. Most retailers were negative about the experiment and it was abandoned in 2000.

In Herford, Germany, the first half hour of parking was made free. This increase occupancies, did draw some more short term visitors into town, but also led to a deterioration in the traffic environment.

In Appeldoorn, Netherlands, parking fees were increased at the same time as a cheap public transport ticket was introduced. The latter brought an increase in people coming into town, whilst parking occupancy remained as it was before. However, the view of most retailers was that people were choosing where to shop mainly on grounds of the quality of the shops, not the parking opportunities.

In Madrid, expensive parking fees have not affected the buoyancy of the retail economy.

On the other hand, a Dutch study, also cited by COST 342 (p 48), on regional parking policy, argued that:

- On the one hand, cities and towns with a unique quality/features can implement restrictive parking policies with little effect on their retail sector.
- On the other, where there are a number of quite similar competing towns and cities, with little to choose between them, then parking policy can be a deciding factor for people in deciding where to go and shop.
- Therefore, a regional parking policy can be helpful in that it can help to maintain the relative positions of existing centres within the region, and also (in theory) help to prevent the development of new, competing centres (but this depends on the planning system at a regional level).

In spite of the significance of the issue of parking and economic development, very few studies have in fact been carried out to better understand the links between parking availability, economic vitality and inward investment. Still and Simmonds (n.d.) provide a comprehensive review of the work that has been carried out to date; they argue that the lack of empirical...
evaluation of the effects on economic vitality of parking policy is due to a lack of consistent policy implementation, coupled with the difficulties of disentangling the effects of parking policies from those of other influences – particularly general economic conditions. They also point out that those companies that have been negatively affected by parking policies will not be present in an “after” study, perhaps biasing the results towards those companies that have benefited. Finally, they note that studies of the influences on locational decisions of retail and other firms have tended to assume that parking will be freely available; as maximum parking standards are increasingly adopted across the country, this assumption may be called into question and it may be expected that more studies will consider this issue.

The most comprehensive study of the effect of parking policy on retailing in the UK was carried out by Potter (1996) and Kamali and Potter (1997). They compared various cities according to the level of parking restraint applied, and their level of economic vitality (in the retail sector, measured by vacancy and rental rates). They concluded (p420) that there is “no evidence that a relaxed attitude to parking improves economic performance”. A similar type of study, comparing shopping centres in London, concluded that:

“although there is some relationship between indicators of economic prosperity and parking provision, this relationship is extremely weak. Other, much more important variables than parking provision are likely to be responsible for the differences in economic variability between London’s centres” (Sanderson, 1997).

Still and Simmonds (op cit) point out that the conclusions of these studies do not mean that there may be no relationship between parking provision and levels of retail vitality. In terms of inward investment by employment uses, there is anecdotal evidence that parking availability has an impact on choice of location, but this has not been backed up by more rigorous empirical studies. Faber Maunsell (2002) note from interviews with the development industry that parking availability is unlikely to play a role in the inward investment process until the decision is at the level of choices between competing locations at the local level; thus it could influence a firm’s decision as to whether to locate in Vienna or in nearby Wiener Neustadt, for example.

Modelling exercises (e.g. Coombe et al, 1997) have demonstrated that parking restraint can have land use implications, depending on the assumptions made. Using the START model applied to Bristol, Coombe et al predicted that reductions in PNR availability of up to 80%, a larger CPZ, and increases in on- and off-street parking charges would lead to an increase in city centre population but a slight decentralisation of employment. The model run did not assume any improvements in public transport services and so its predictions are unsurprising: parking supply reductions were in effect a reduction in the relative accessibility of the city centre, which was predicted to cause a land use response. It is however feasible that, coupled with environmental improvements and better public transport (both in part arising from a reduction in city centre parking) then the relative accessibility of the centre could be increased, making it a more attractive location. This simple case is one example of the many interactions that must be considered when trying to predict or measure the economic development impacts of changes in parking policy.
4. Relationship between parking and planning and transport objectives

4.1 Introduction

COST 342 notes that national transport policies have remarkably similar objectives across many countries in Europe. The following are typical:

- The need to reduce car use to reduce congestion.
- Encourage the use of alternatives to the car.
- Improve public transport, including park and ride, especially in larger towns and cities.
- Reduce the environmental impacts of car use.
- Making sure that transport is fully accessible.

However, the links between these and parking policy as a means to achieve some of these objectives are not made particularly clear in many European countries, according to COST 342.

4.2 Development of a typical parking policy

COST 342 (pp 20-21) sets out a useful chronology of the development of a typical parking policy (referring particularly to on-street parking). It is useful to remember that, generally, parking policies will only start to develop formally when parking demand starts to exceed supply, because that is when problems start to occur. COST’s typology starts before then:

- Stage 1 – no problems, available space gradually used up.
- Stage 2 – as demand starts to exceed supply in certain streets, so regulations are introduced in those streets. Parking may be prohibited in some locations, more clearly marked in others.
- Stage 3 - in towns and city centres, as demand further increases, some form of time limit is introduced, in order to increase the turnover of spaces so that they are more likely to be used by shoppers and visitors, and less by commuters. Disc parking or signed zones may be the initial method used to stimulate turnover, but pricing may then be introduced to further manage the parking stock.
- Stage 4 – commuters are pushed into surrounding areas and so there is competition with residents for parking space. Residents’ zones are introduced to deal with this.
- Stage 5 – more and more differentiation of parking tariffs to target different groups, and to encourage use by one group more than another.
- Stage 6 – development of park and ride sites on edge of town.
• Stage 7 – the inclusion of parking in mobility management, where it plays its part in a seamless mobility chain.

This development of course does not (with the exception of Park and Ride) consider off-street parking. Nor does it really consider the active use of parking as a means of traffic restraint. However, both of these factors can form an important part of a local or regional parking policy, as we shall see.

The table on the next page shows some typical policy responses that authorities follow when trying to manage parking.

**Typical parking policy choices in different urban areas**
(from Litman, 2003 found at www.vtpi.org)

<table>
<thead>
<tr>
<th></th>
<th>Large City</th>
<th>Small City</th>
<th>Town/Suburb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Centre,</td>
<td>Priced: high hourly rates</td>
<td>Priced: medium rates</td>
<td>Regulation: 1-3 hour time</td>
</tr>
<tr>
<td>On-Street</td>
<td>(e.g. 25¢ per 10 minutes)</td>
<td>(e.g. 25¢ per 30 minutes)</td>
<td>limit.</td>
</tr>
<tr>
<td></td>
<td>Regulation: Some loading</td>
<td>Regulation: 1-2 hour time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spaces with short time limits.</td>
<td>limit.</td>
<td></td>
</tr>
<tr>
<td>Commercial Centre,</td>
<td>Priced: high hourly, daily and</td>
<td>Priced: medium hourly, daily</td>
<td>Priced: low monthly rate</td>
</tr>
<tr>
<td>Public Off-Street</td>
<td>daily and monthly rates.</td>
<td>and monthly rates.</td>
<td>($15-$30 per month)</td>
</tr>
<tr>
<td></td>
<td>(e.g., $5-10 per day)</td>
<td>(e.g., $2-5 per day).</td>
<td>Regulation: 2-3 hour time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regulation: sometimes 1 hour</td>
<td>limit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>free to customers.</td>
<td></td>
</tr>
<tr>
<td>Commercial Centre,</td>
<td>Priced: high daily and</td>
<td>Priced: medium daily and</td>
<td>Priced: low monthly rate</td>
</tr>
<tr>
<td>Private Off-Street</td>
<td>monthly rates.</td>
<td>monthly rates.</td>
<td>($15-$30 per month)</td>
</tr>
<tr>
<td></td>
<td>(e.g., $5-10 per day)</td>
<td>(e.g., $2-5 per day).</td>
<td>Regulation: free to</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>customers and employees.</td>
</tr>
<tr>
<td>Near Commercial</td>
<td>Regulation: 1-3 hour</td>
<td>Regulation: 1-4 hour</td>
<td>Unregulated.</td>
</tr>
<tr>
<td>Centre, On-Street</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential Neighbourhood, On-Street</td>
<td>Regulation: “Residents Only”, which may involve permits.</td>
<td>Unregulated.</td>
<td>Unregulated.</td>
</tr>
<tr>
<td>Near Special Attractors (schools, parks, theatres, etc.)</td>
<td>Regulation: “Residents Only”. Special management and enforcement during busy time periods.</td>
<td>Regulation: “Residents Only”. Special management and enforcement during busy time periods.</td>
<td></td>
</tr>
</tbody>
</table>

An example from Europe of a city that has introduced parking policies similar to those listed above is Madrid. In 1980 its first municipal parking system was introduced, based mainly on parking discs that restricted parking times in certain areas. However, it has now transformed into a much larger scheme of paid on-street parking. 75% of the 40,000 available on-street parking spaces have been converted to paid parking.
spaces are for residents, but non-residents are able to park in these spaces for a limited period and at a higher price. Residents’ bays are used by an average of 1.5 cars per day at a duration of 53 minutes for non-resident users; and non-resident bays by an average of 4 cars per day, with an average stay per vehicle of 90 minutes. Monies raised are used, amongst other things, to finance the construction of off-street car parking for residents in the historic central area.

One important addition to the list of policy responses in Table 2 is the parking levy. Currently, the only two cities in the world to apply such a levy are Perth (Australia) and Sydney, although the City of Nottingham is still planning to introduce a much higher workplace parking levy at some point in the next 2-30 years. Enoch (2001) provides details of the schemes in the two Australian cities: these apply to all private parking non-residential spaces in the CBD in Sydney and Perth, plus in several district centres in metropolitan Sydney. Companies with fewer than six employees are exempt from paying the levy in Perth, although they must register their parking spaces. The levy is about £50 per space per year in Perth, but a much more significant £280 per year in Sydney’s CBD (half that in other district centres), but it applies only to parking for commuters. The tax has been in operation since 1992 in Sydney, compared to only 1998 in Perth. In both cities, the revenue is hypothecated to public transport, although to revenue support only in the Western Australian city. Enoch postulates that the much higher tax in Sydney has become accepted as a “fact of life” by the city’s businesses, whilst there is a much broader level of support for the levy in Perth, due its lower level. In either case, the examples from Australia show that a PNR levy can be introduced, causing neither catastrophic negative public reaction nor economic disaster. However, in Scotland, its use by local authorities is currently precluded, due to its deletion from the Transport (Scotland) Bill before its passage into law in 2001.

4.3 Other examples of parking policies in action

There are good web databases that have plenty of examples of parking policies in action, from all around Europe. A few are listed below:

http://www.leda.ils.nrw.de/ (LEDA) – this site appears now to be only available in German. Go to the home page, then click on “Ergebnisse” on the lefthand side. Then you will see a number of drop-down menus. On the menu entitled “Measure category”, there are several parking related options (in English). Choose one, then click “Suchen!” and a large number of examples will appear, with links.

http://www.civitas-initiative.org/measure_fields.phtml?lan=en - here you will find a list of the measures (being) implemented in the cities that are part of the CIVITAS project. If you search on “Access restrictions” on the first menu, “Parking management” will appear in the second. Then click “Start” for a list of measures.

http://www.eltis.org/cs_search.phtml on the European Local Transport Information Service website, ELTIS, does not have a category “parking”, but if you search its case studies with a full text search using the word “parking”, it yields a number of relevant case studies. During 2006-07 this website will be updated.

4.4 The politics of introducing parking policies: gaining acceptance
Parking is always a controversial matter. Incremental (step by step) change is likely to be more accepted than a large sudden change. But the public must be “carried along” with the changes, and whether they are or not will depend to a large degree on the communication that has been carried out. Effective communication involves broad participation of those with an interest in parking in the change process; a monitoring process, so that people know what the effects of parking changes are, as those changes are introduced; management of complaints, as part of communication; and the use of new forms of communication (e.g. special meetings between politicians and “key stakeholders”).

The public’s acceptance of parking policy changes will also depend on whether a number of factors are in place, as follows (after COST 342 pp 68-70):

- That they know and understand the measures.
- That they perceive that there will be a benefit, in terms of the solution of a problem – and that parking fees and other regulations are related to the scale of this problem.
- That there are alternatives to parking (in the controlled area), such as park and ride, or better public transport services.
- That the revenue will be allocated fairly and transparently (people know where it has gone).
- That the parking regulations will be enforced consistently and fairly, and that fines will not be excessive (and, ideally, that the fines are related to the seriousness of the offence – for example, overstaying on a parking meter would be a lesser offence than parking illegally in a bus lane).

These are many things to take into account when changing parking policy. However, if they are not taken into account then the parking planner risks a situation where measures may have to be removed and regulations rescinded when a change is made, without sufficient communication, and therefore without user acceptance.

### 4.5 Parking and land use planning

One area in which it might be imagined that these links might be made more explicit is land-use, and in particular, the amount of parking that is permitted in new developments. However, and once again according to COST 342, although there is guidance in most countries on this issue, its strength/force varies from country to country. In addition, and importantly, such guidance will only act to restrain car use where it stipulates a maximum number of parking spaces that should be permitted in different types of development. There is some move away from minimum standards, towards maxima, but the degree to which this has occurred in different countries is by no means clear – the LEDA project implies that in most EU countries, there is still considerable emphasis on providing a minimum number of parking spaces with new development, or not regulating this issue at all. But, as COST 342 says (p 52):

- Parking standards should be set as maximums.
- In more attractive, densely developed areas, parking standards should be lower, in combination with park and ride.
- It is important to allow the combined use of parking spaces, to avoid too much parking being provided.
Some examples of parking standards for new developments in different European countries are shown below (after Healey and Baker, 1994). The right hand column indicates how many square metres of floor area are required per parking space. For example, in Madrid, a building of 3000 sq metres would be permitted (or would be required?) to build 30 car parking spaces. It is not clear whether these are maxima or minima. In certain cases, a range is shown. In Antwerp, more parking is permitted in areas with worse public transport accessibility. This could of course lead to the unintended effect that developers prefer more parking, so try to locate in areas with poor public transport accessibility, thus undermining the intention of the policy, which is to get development located in areas of high public transport accessibility with little parking space so that people travel to it by public transport. The chances of this policy succeeding may be increased by allowing developers to develop at higher densities in the areas of high public transport accessibility.

<table>
<thead>
<tr>
<th>City/town</th>
<th>m(^2) of floorspace per parking space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paris</td>
<td>250-166</td>
</tr>
<tr>
<td>Lyon</td>
<td>100-43</td>
</tr>
<tr>
<td>Madrid</td>
<td>100</td>
</tr>
<tr>
<td>Barcelona</td>
<td>100</td>
</tr>
<tr>
<td>Hamburg</td>
<td>40-65</td>
</tr>
<tr>
<td>Frankfurt</td>
<td>30-50</td>
</tr>
<tr>
<td>Antwerp (high public transport accessibility)</td>
<td>300-600</td>
</tr>
<tr>
<td>Antwerp (low public transport accessibility)</td>
<td>60-120</td>
</tr>
<tr>
<td>Brussels</td>
<td>No standard</td>
</tr>
</tbody>
</table>

*Table 4.3 – Parking Standards for New Developments*

It seems from COST that policy on restraining parking in new developments is highly developed in the UK in comparison with other European countries, so it is looked at in more detail in the following section.

Current UK central government policy advice is clear that there is a need for local authorities to adopt more restraint-based parking standards, both in order to reduce reliance on the private car, and to produce a built environment that is more conducive to walking, cycling and public transport use. At the same time, guidance also emphasises the need to ensure that the economic viability of shopping centres in particular is not compromised. English PPG3 (http://www.odpm.gov.uk/index.asp?id=1143940), on Housing, for example, recommends (Paragraphs 60 and 61) that residential parking standards should be set as maxima, with flexibility in their application, particularly in areas of high public transport accessibility, or for certain types of housing, or housing for different likely groups of occupants. It also emphasises the need to build at higher densities and with a mix of uses, both of which imply lower parking standards (since there will be scope for joint use of parking, and because there will be less space to provide parking).

Evidence that such advice can be implemented is available. For example, the London Borough of Camden adopted a car-free housing policy in 1998 and, to 2002, had given planning permission for over 1,000 new housing units without on-site parking, in 144 developments (see www.eltis.org). However, it can be argued that the particular circumstances of this inner
London Borough make it a highly specific case that cannot be generalised to other areas. The City of Edinburgh has now granted planning permission for three car-free residential developments in inner suburban locations. All of these have lower income rented elements and are in areas of high public transport accessibility. Nonetheless, residents of these developments are still able to own a car and park it on street in uncontrolled areas. This is in contrast to the examples in Camden, where residents in such developments are not allowed to purchase a resident’s parking permit, so can only park a car if they have access to private off-street parking. In general, it would appear that those areas that have had most success in linking parking controls and standards with their planning objectives are historic (university) cities such as York, Chester, Oxford and Cambridge. Oxford’s “Balanced Transport Policy” has been in place since 1973 and has combined a reduction in city centre on- and off-street parking (both public and privately controlled) with the provision of improved cycle and pedestrian facilities, bus priority and the UK’s most successful park and ride system. This policy can be seen to have achieved its objectives in that the number of vehicles entering the city centre every year over the past 25 years has been kept constant, it is crucial to note that this success has been achieved by the consistent application of a policy over a long period of time. Some evaluation of the impacts of Oxford’s policy is available at http://portal.oxfordshire.gov.uk/content/publicnet/council_services/roads_transport/plans_policies/local_transport_plan/apr5.pdf

Maximum parking standards – as opposed to minima, over and above which developers are free to build as much as they think is required for their development – were first advocated in UK central government guidance in the 1994 version of PPG13. There is a sound theoretical basis for applying maximum standards, as it should, in the long term, limit parking supply and therefore influence travel demand. It will also lead to higher density development that is conducive to walking and cycling. Further, it reduces the opportunity cost of the land that is used for parking. And, finally, there is considerable evidence from the US – where parking minima are very much the norm – that an excess of parking will be provided, over and above actual demand (Pratt, 2003).

However, local authorities in the UK had been relatively slow to adopt maximum standards, perhaps because central government has not until very recently set recommended national maxima, finally providing for local authorities a national benchmark beyond which other authorities may find it difficult to go. (These maxima are available in the 2001 edition of PPG13 in England http://www.odpm.gov.uk/index.asp?id=1144015, and in an Annex to NPPG17 in Scotland http://www.scotland.gov.uk/library5/planning/spp17-00.asp.) The English standards are shown in summary below:

• Food retail 1 space per 14m²
• Non food retail 1 space per 20m²
• Cinemas and conference facilities 1 space per 5 seats
• B1 including offices 1 space per 30m² = 1 space per 2-3 staff
• Higher and further education - 1 space per 2 staff + 1 space per 15 students
• Stadia 1 space per 15 seats
• Residential (PPG3) max 1.5 spaces/house or flat

Until this national benchmark was set, authorities may have been fearful that, in setting their own maxima, they would simply encourage development to relocate to areas with less stringent standards – a constantly recurring theme in parking policy.
Faber Maunsell (2002) reviewed the parking standards in use by Scottish local authorities and found that the majority retain minimum standards although, as Structure and Local Plans are revised, many are moving towards parking maxima instead. The exceptions, which currently have maxima in place, are City of Edinburgh, and Aberdeen. Glasgow is about to adopt maxima and, in common with Edinburgh, these are related to public transport accessibility standards – the idea being that parking standards are more restrictive in locations of higher public transport accessibility.

In England, and particularly in London, authorities have had such parking policies in place for a longer period but, nonetheless, this literature review was unable to find any evaluations of the effects of these policies on locational choices by firms, or modal share. Current Greater London Authority (GLA) advice to Boroughs on parking standards sets maxima that are linked to public transport accessibility; but it goes further, and states a presumption against permitting certain types of development (e.g. leisure and bulk shopping) in areas of low public transport accessibility.

The author is aware that in the London Borough of Hammersmith and Fulham, the pioneer in linking public transport accessibility to parking standards, some success was achieved in avoiding the perverse effect of companies locating in areas of poor public transport accessibility by allowing them to develop at much higher densities at public transport nodes. In Edinburgh, anecdotally at least, the parking standards regime has not deterred city centre investment – indeed, the Royal Bank of Scotland’s initial choice for a world HQ was not Gogarburn, near the airport, but New St Andrew’s House, in the city centre. It was the cost of redeveloping this location, rather than restrictive parking standards, that moved its focus to a suburban location.

In Montgomery County, Maryland, (close to Washington D.C.), developers are encouraged to build close to MetroRail (suburban rail) stations because such sites may be developed at higher densities and with lower numbers of parking spaces than elsewhere in the County. Further, there is a “level of service ordinance” in the County that requires new developments to limit the effects of the traffic that they generate on nearby junctions. This dual effect has encouraged development at the MetroRail stations, with lower levels of car trip generation than in other locations in the County. It should be noted that Montgomery County is economically buoyant due to its proximity to the Federal capital. (Pratt, 2003.)

Perhaps the most well-known example of an attempt to link parking standards and public transport accessibility is the Netherlands’ ABC policy. Set at national and provincial level, this designated development sites in structure plans according to their accessibility profile. A locations were the most accessible: an example is Utrecht Centraal station, or Hoofddoopp to the west of Schiphol airport, or Amsterdam Sloterdijk to the east. B locations were subsidiary public transport nodes; and C locations were other areas – especially industrial areas close to motorway junctions. Employment land uses were to be allocated to different locations according to their mobility profile. Offices generate many trips, therefore had a high mobility profile and were therefore supposed to locate at A locations. Warehousing has a low mobility profile for staff, but high for freight, requiring a C location. A locations were supposed to have limited parking since most employees would be able to reach them by public transport or bicycle.

In practice a number of difficulties arose. Firstly, there were not enough A locations; this was addressed by creating more nodes, through large scale central Government investment in public transport (Amsterdam Sloterdijk station is a good example); and also by creating a slightly less accessible version of A, the A1 location. But the bigger problem was that the decision on development control and parking standards rests, not with the Province, but with the often quite
small municipalities who are competing with other municipalities for inward investment and the
local taxation that it generates. Further, as far as the author can ascertain, central Government
in the Netherlands does not have the same power to “call-in” non-conforming planning
applications and decisions as it does in Britain. Consequently, Dutch municipalities were
tending to permit high trip generating land uses to locate in C locations (see for example the
office development along the motorway ring in the south of Amsterdam), and/or to have much
higher parking standards when they did locate at A locations. In the UK, if this occurred, the
local authority’s decision could be over-ruled by central government – but not in the
Netherlands. Consequently, the policy fell into some disrepute and was abandoned in 2002.

Perhaps anticipating the problems that befell the ABC policy, others in the UK who have tried
to pursue similar policies have introduced modifications to make them more pragmatic. One
example comes from Nottinghamshire. This is not a parking policy per se, but rather a policy
on developer contributions to transport. Nottinghamshire has introduced a formula to provide
some certainty to both sides as to the level of contribution that will be required. Contributions
are higher in areas of lower public transport accessibility. However, in the formula, all
contributions are halved in the former coalfield areas of north Nottinghamshire, compared to
those in economically buoyant Greater Nottingham. (See www.optimum-interreg.net Pilot 3 for
full details.) In Hampshire, parking standards across the County are set according to public
transport accessibility levels (and, when considering how much parking is required for a new
development, existing car parking in the area must be taken into account), but the standards
specify a number of “local factors” that can be used to adjust the Hampshire-wide standards
either up or down (see www.hampshire.gov.uk/carparking/appParking.html). Such local
factors include:

- the level of economic activity in the area (regeneration areas “may warrant less reduction in
  parking”);
- the type of area – e.g. historic town centres or environmentally sensitive areas may justify
  lower parking standards;
- self-containment – reductions may be inappropriate where a location is competing with
  other areas; or
- cycle accessibility – high levels may justify reduced car parking standards.
5. Conclusions and Recommendations

5.1 Recommendations

COST 342 makes a number of recommendations which are likely to be of relevance to many towns and cities that are implementing changes to their parking policies, but which are also of relevance to national government. These are as follows:

- That the role for parking as a means of restraining car use should be recognised in transport policy documents and actions.
- That there is a need for national maximum parking standards (expressed as guidance) for new development.
- These national guidelines should be translated to regional maximum standards.
- National level legislation is need to set a framework for parking charges and fines, and to put liability for any fine with the owner of the car.
- National legislation should provide local authorities with the powers to enforce parking regulations if they wish, and to keep the revenue so generated, and to follow up those who do not pay fines, and to contract out the parking enforcement operation.
- National legislation will be needed to provide local authority control over PNR parking (as exists, in part, in England and Wales).
- Many areas will need residents’ parking zones.
- As demand for parking increases there will be an increasing need to introduce paid parking, as opposed to just disc parking (limited waiting in certain streets but without payment).
- Parking spaces for disabled drivers should be provided at around 1 per 50 standard spaces.
- There is a need for secure parking for trucks.
- Parking tariffs should be higher for on-street than off-street, to encourage people to use the latter.
- There may be a case for combining the function of parking warden with “visitor host” to improve the image of the town/city.
- Park and ride has a role to play in maintaining the accessibility of central areas of larger towns and cities, but it will work best where there is a shortage of central area parking.
- All changes to parking must be communicated well in advance, and skilfully. If this is not done, there may be a lack of acceptance and the image of the city can be damaged for many years.
- A positive approach towards working with the public may increase compliance with parking regulations.
- There is a need to monitor periodically the parking situation in a town or city, and its effects on how people travel, and on economic activity.
Activity

Consider the COST 342 recommendations, above. How applicable are they to a medium-sized or large town or city (at least 50,000 population) with which you are familiar? How easily could they be applied? What barriers would there be to their implementation? Do you think that there are further recommendations that have not been made, but should have been made?

5.2 Final conclusions

This material for COMPETENCE has aimed to show that parking policy and parking management are key to urban mobility and to managing its negative effects. As car ownership grows, so demand for parking will grow, and most towns and cities will have to deal with many of the issues that have been outlined in this material. It is possible to develop a car parking policy that will manage the negative impacts of urban car use whilst also supporting business and the economy; but this is a careful balancing act, which is why it is important to learn from the experience of other places, as we have shown in this training session. Good luck with developing your own parking policy!

Activity

Imagine that you are (further) developing the parking policy for a town or city that you know well, with a population of at least 25,000 people. You are trying to balance the 3 aims of demand management, revenue raising and maintaining the perception that parking is not limiting economic vitality. What do you do?

References
6. Literature and Websites

The following literature and websites have been used to set up this written materials. Here you can find further information, project results and good / best practice case studies. Please note that websites may be closed after a certain period.

**GOAL**
GOAL – Healthy without car and noise – Final Report [www.goal-graz.at](http://www.goal-graz.at)

**ICARO**
Increase of Car Occupancy through innovative measures and technical instruments – Implementation Guidelines for Increasing Car Occupancy (1999)


DETR (1997) National Travel Survey