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FINAL REPORT

Study on the feasibility of organising a network of secured parking areas for road transport operators on the Trans European Road Network

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CONTENTS

page

1 INTRODUCTION

1.1 Background and objectives of the study

Road freight transport is the dominating transport mode in freight transport in the European Union. With a market share of approximately 72.2% in the total land-based transport of goods the significance of road freight transport for the economy of the EU is obvious. This dominance implies that each day, measured in money terms, many billions of Euros are moved on the Trans European Road Network which constitutes the backbone of the EU economy. This fact has not escaped the criminal mind and with the increase of transport volumes (amongst others because of gradual increase of the EU with new Member States) security concerns with regard to road freight transport have increased as well. Especially parking areas where drivers have to rest seem to be attractive objects for criminals: the total consolidated value of trucks and cargos moved in and out of some of the larger parking places each day easily exceeds the total property value of a small town.

Criminal activities (both attacks on drivers and stealing of cargo) at such parking areas are frequently mentioned as a problem by road freight transport operators. Also Members of the European Parliament recently have expressed concerns regarding the security of such parking areas where drivers often stop to rest[1]. Furthermore, the European Parliament initiated the allocation in the Community budget of € 5.5 million for pilot projects aimed at improving the security. On October 28th 2005 the social partners at European level (the International Road Transport Union and the European Transport Workers Federation) wrote to the European Commission to express their shared concern and need for action. They also drew up a list of relevant criteria for parking area security.

The European Commission has commissioned this study to investigate the extent of the security problems in and around parking areas, explore possible improvements/solutions of the problems and examine the regulatory and financial conditions for the provision of secure rest places.

In this report the results of this investigation are reported. A draft summary of the findings of the report was presented on 19th of September 2006 to representatives of Member States and a number of organisations (like ECMT, IRU and ETF). It has been possible, to some extent. to integrate the comments in the final version of the report.

[1] See for the new rules on driving times and rest periods Regulation (EC) nº 561/2006

1.2 Structure of the Final Report

The structure of the Final Report is determined by the structure of the project, in particular the breakdown of the work in tasks (see figure 1.1).

The methodological framework is described in chapter 2, in which some fundamental concepts will be discussed that will be used in the study.

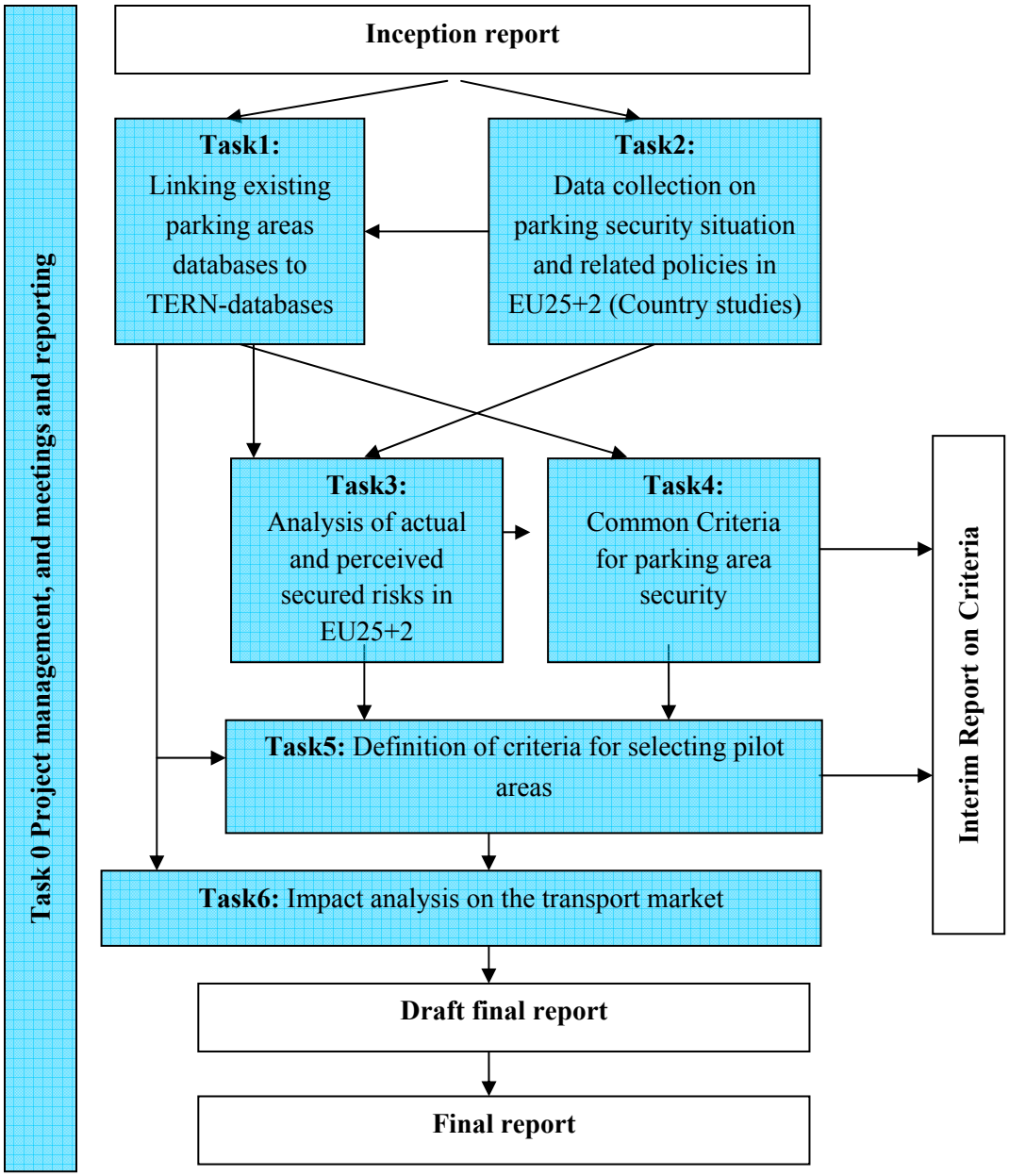
The reporting will more or less follow the task breakdown of the project. The analysis of the demand in the EU of secure parking in international road freight transport is discussed in chapter 4 and (prior to that) in chapter 3 we will look at the extent of crime related to secure parking, based on literature studies and fieldwork done in the framework of the present project.

The supply side of the market (number of parking areas and their characteristics) is investigated in chapter 5 where also the rate of capacity utilisation of parking areas is estimated. Chapter 6 examines the institutional and policy framework of secure parking in the EU25+2, this is also based on part of the field work and in particular the case studies.

Next in chapter 7 part of the work done in task 4 will be presented wherein categories and components of secure truck parking will be discussed.

Most of the material included in this chapter and the Annex was also incorporated in the Interim Report. In chapter 8 the financial aspects (like funding and costs) of secure parking will be discussed, and estimations will be given of the willingness to pay of operators. Finally chapter 9 contains the policy recommendations of the study.

Figure 1.1 *Breakdown of the project in tasks and reporting*



2 METHODOLOGICAL FRAMEWORK OF THE PROJECT

2.1 Key concepts

2.1.1 The concept of (in)security

The concept "security of parking areas" refers in the project to the probability that drivers, vehicles or cargo at parking areas on the Trans European Road Network will be the target of criminal activities.

So the concept of security relates in this study only to intentional (criminal) acts and not to accidental acts or accidental risk. Security concerns for example with respect to hazardous goods transport and such are not part of this study and are only considered to be relevant when this type of cargo is/may be the target of criminals.

Furthermore, it is clear from this definition that we discuss "security" only in the framework when drivers, vehicles or cargo are the victim/target of criminal activities. It is possible that such criminal acts are caused by (other) drivers themselves, but we exclude criminal acts by drivers that do not directly aim to cause harm to (other) drivers, vehicles or cargo. Of course such criminal acts by drivers occur in practice (e.g. smuggling) and security concerns are, justifiably, raised by this, but this type of criminality requires a more distinct analysis.

More specifically one could give a quantitative, operational definition of the level of security of a parking area as 1 minus this probability or else as the inverse of the probability that drivers, vehicles or cargo will be the victim of criminal activities during their stay at this parking area.

A straightforward, direct measure of the probability is the actual, observed frequency with which such criminal acts occur in practice during a specified time interval (e.g. a year).

2.1.2 Actual versus perceived security

The disadvantage however of using only *actually observed* criminal acts is that the "feeling of security" in practice not only depends on the level of successfully accomplished crimes.

For example: one would not describe a situation as "secure" when drivers are frequently confronted with *attempts* of criminals to rob their vehicles or cargo without these attempts having much success (e.g. the use of advanced in-vehicle security systems often prevents success).
So a better operational measure can be obtained by extending the concept to all *actually attempted and actually completed criminal acts* against drivers, vehicles and cargos. Although this would be a more satisfactory measure, it is very likely not a practical measure because the reporting of "attempts at criminal acts" is even less likely than the reporting of the actual criminal acts themselves, which as is known to be far from complete in practice already. So for practical purposes it seems that we have to stick with the definition given in the previous section.

Although the perception of security as such is difficult to measure, it is important to consider this variable because the perception of security determines how the market currently and in the future will react to security problems. In addition solutions to "perception" problems could be very diffent from solutions to actual problems..

We can get some indicators for the perceived levels of security by looking at:
- ✓ Insurance premium rates in the industry;
- ✓ Blacklists of parking areas (or trajectories) used by shippers, transport operators or the insurance industry;
- ✓ Avoidance of certain routes;
- ✓ Investment by transport companies in security systems.

Notice that in the "perfect market" concept of economics insurance rates would be a very good indicator of actual security risks as well. However, in the present road freight transport market we have of course a situation in which the informational context is far from perfect.

2.1.3 Typology of criminal acts

We distinguish three types of criminal acts by the object at which the acts are directed:
- ✓ ***Criminal acts against drivers;***
- ✓ ***Criminal acts against vehicles;***
- ✓ ***Criminal acts against the cargo.***

Each category contains a number of practically relevant acts. The first category not only includes crimes against the life and health of drivers but also includes all crimes against property of the drivers (e.g. theft of money, mobile telephones, credit cards etcetera). Vehicle theft and wilfully damaging vehicles are the most important crimes in category 2 and theft of cargo or wilfully damaging cargo are the important groups in category 3.

A somewhat more refined distinction (using 6 categories instead of 3) is between:

- Cargo theft
- Cargo damage
- Casco theft
- Casco damage
- Violence against drivers
- Theft of properties of drivers

It must be remarked that these distinctions are not exclusive: criminals could actually target simultaneously two or even three of these objects and furthermore, it may not always be possible in practice to distinguish whether or not the driver, the vehicle or the cargo was the target of a specific attack. However, the distinction between these types is meaningful because measures to raise security levels are not the same.

A typology of a different kind is the distinction between:

- Organised crime;
- Opportunistic crime.

Both with regard to the analysis as well as to possible solutions of these types of crimes different approaches are required. To some extent this distinction is parallel to the previous one (as will explained later on).

2.1.4 Security risks

Given the probabilistic nature of the definition of (in)security used in this study, we could also define straightforwardly the concept of "security risk" as the expected loss: product of the probability and the value of the property lost. In case of criminality directed at the drivers as people (in the worst case the life of the driver) one could use "value of life" estimations for an operational definition of security risks.

We propose to use this *economic* measure for the measurement of security risks. This is justified by the fact that one of the two main objectives of the study (see also section 1.2) is "to investigate to what extent a lack, or perceived lack, of security against criminal acts at inappropriately equipped rest places are undermining the functioning of the European road transport market".

Comparing such operational security risk measures it is clear that there is a large difference between the various categories of criminal acts: theft of vehicles and in particular cargo has a much higher security risk than the theft of property of the drivers. Using the above mentioned measure we consider a parking area in which 20 mobile phones have been stolen from drivers to be much more secure than another parking area where 2 vehicles have been stolen.

2.1.5 Crime in transport

Crimes committed at parking areas are of course only a part of the total criminality that road freight transport operators are confronted with.

More in particular companies also have to cope with criminality at depots/terminals either owned by the company itself or depots/terminals of customers. Sometimes it also occurs during transport that trucks are halted and robbed by criminals. Since the total time spent at depots/terminals is much higher than at public parking areas (a longer stay at parking areas is only required in long distance transport) crime at depots/terminals as such is in absolute terms much more important for the total road freight transport industry. However, it is generally true that public parking areas are the "weakest link" in the total road freight transport chain and that they are generally less well protected than private depots/terminals.

This "transport chain idea" is important to consider when trying to improve security. One must be aware that improvements in one part of the chain may not diminish criminality but just shift criminality to another part of the chain. For example increasing the level of security at an individual parking area may lead to a higher interest and activity of criminals at the next parking area on a route or at customer depots.

2.2 Explanatory factors of criminality

As is clear from the structuring of the information requirements in table 2.1 the analysis in the study will have to move at two levels: the level of parking areas (the micro level) and the level of the entire Trans European Road Network (the macro level).

We will firstly discuss the conceptual framework and the approach towards the analysis of data at the micro level and subsequently the approach that will be used for the macro level.

2.2.1Micro analysis

The probability that driver, vehicle or cargo will suffer from criminality in a specific parking area depends on a large number of factors which may be clustered in certain general categories:

- ✓ Properties of the vehicle (presence of alarm systems);
- ✓ Properties of the drivers (e.g. behaviour of the drivers) ;
- ✓ Types of cargo (e.g. value of each specific cargo)
- ✓ Properties of the region in which the parking area is situated (e.g. general levels of crime)
- ✓ Properties of the transport network (e.g. location, traffic intensity)
- ✓ Physical properties of the parking area (e.g. presence of flood light)
- ✓ Organisation of security around the parking area (e.g. regular surveillance)
- ✓ Time (e.g. time of day or in the season: during holidays)

More precisely one could write this in the following way:

P_{ij} = f (vehic, driv, carg, regi, netw, parf, paro, time)

P_{ij} = probability that at parking area type ij criminal acts occur.

The index variable i ranges over the entire set of parking areas and the variable j refers to the three categories of criminal acts distinguished earlier in this chapter.
This probability is seen as a mathematical function of the various categories of explanatory factors mentioned above (e.g. parf= parking area physical characteristics and paro= parking area organisation).

In the micro analysis of the project we focus primarily on two categories of explanatory variables that directly reflect parking area characteristics, namely : the physical properties of the parking area (represented as "parf" in the function) and the organisation of security around parking areas (represented as "paro" in the function). We will also look at a number of transport network characteristics in the macro analysis ("netw" in the function).

As is clear from the functional specification: the level of actual security will depend on many more factors than these two categories and therefore an important question that has to be answered by the study is **"how important are the two categories of explanatory factors compared to the other factors ?"**. Furthermore, it will be necessary to get evidence on the relative importance of the composition of the two categories of variables: **"what are the properties of parking areas (physical or organisational) that will have the highest potential to raise security levels ?"**.

The answers to both of these questions will be very important also for the analysis of the merits of certain policies (e.g. are policies directed at improving parking area security more effective than policies that directly improve vehicle security ?) and for the composition of parking area security labelling systems.

In other (more technical) words: what is required in order to be able to answer the key questions that the study will have to answer is to get some insight in the build-up of the function with respect to the two (or three) categories of possible impact variables. The range of data-analysis techniques that could be used will critically depend on the type of data that will be available. However, it is not realistic to expect that the data collection will allow us to derive a set of fully parametric estimations of the functions (e.g. by means of a statistical regression analysis), in other words the construction of a model.

For the analysis of the data one will very likely have to rely on more primitive data analysis techniques. Possibly the most that can be done is testing of some hypotheses on the relative importance of (clusters) of variables. This means that perhaps the most that can be expected from the analysis will be an ordinal ranking of criteria that will have an impact on parking area security. This ordinal ranking means that one can distinguish “more” or “less” between important explanatory factors but would not be able to precisely quantify the size of the difference between these variables.

2.2.2 Macro analysis

In order to answer a number of research questions (notably those on “gaps” in the supply of secure parking areas), it will be necessary to carry out different types of analysis at the level of the total TERN.

This will mean that data on the entire number of parking areas in the TERN will have to be examined and be analysed in relation to data types like: regional economic and demo-graphic data and traffic flow data.

In particular the inter-relationship between parking areas will be an important element. E.g. the fact whether or not it is feasible to reach other secure parking areas when leaving a certain parking area will be put in practice as also being a factor in determining the security (perception) with regard to the first parking area. Even at micro-level this will be an important factor (this is why we also included a variable “netw” in the explanatory factors of the function discussed in the previous section).

The way to do these analyses is by linking the databases of the parking areas to the databases of the TERN and (primarily) in a Geographic Information System and (primarily) visually (on maps) inspecting the supply of parking areas on the important transport corridor in the various Member States.

In addition to this type of analyses a vast amount of quantitative work at the macro level will have to be done (e.g. on costs and cost impacts) which will primarily be based on aggregation techniques of results on micro level. As such these analyses do not represent additional methodological difficulties.

3 THE EXTENT OF CRIME RELATED TO SECURE PARKING

3.1 Introduction

It is claimed that crimes against drivers, their trucks and cargo constitutes an increasing problem. Trucks with drivers carrying full loads are interesting targets for criminals. The question is: what is the actual extent of this problem in Europe?

In this chapter we will try to find the answers to this question using two methods: by investigating the information available from the research literature and by examining the results of fieldwork among operators, representatives in the Member States (by means of a questionnaire[2]) and other stakeholders (e.g. a insurance company). We will start by reviewing the research literature in section 3.2 and in section 3.3 we will look at the other results.

3.2 Review of results of the literature

3.2.1 Vehicle related crime

3.2.1.1 Study of the ECMT (crime in road freight transport 2002)

According to the ECMT one percent of freight transport vehicles[3] are stolen every year in some countries. Analyses of trends shows that the situation is growing worse in many places. The number of stolen vehicles during 1995 and 1999 in eleven countries analysed, shows a decreasing crime rate in two of them, while the other nine experienced an increase of up to 50 percent in this period. On average an increase of 21 percent was observed during the five year period. The recovery rates of stolen trucks are generally high (60%).

Especially items such as electronics, clotheing and shoes are stolen, but also household goods, food-stuffs, alcohol and cigarettes.

[2] Here we will only look at some main findings of the questionnaire, a more detailed description of the outcomes can be found in a separate report where country data are presented

[3] However these are **all** commercial vehicles (including vans).

There is no collected information about the goods values that are lost on the European level. Furthermore, it was concluded in the study that there are substantial problems with the statistical information on vehicle crime in Europe and that there exist significant differences in the concepts used.

3.2.1.2 Vehicle related crime in Sweden (Transek AB, 2006)

In Sweden the police have carried out a number of analyses of burglaries in trucks and trailers in the southern part of the country. During the last couple of years an increase in these numbers has been observed. The burglaries occur preferably during the dark hours when the trucks have been parked for the night. On several occasions the drivers have been sleeping in the cabin while the theft occurred. The type of goods varies but several times electronics have been stolen. The value lost often amounts to several hundreds of thousands of SEK. The crimes are most frequent at lay-bys along Swedish European roads, at terminals or on industrial estates. The majority of truck thefts occur in the southern part of Sweden, with a concentration in counties around the metropolitan areas. Stockholm, Västra Götaland and Skåne. are the counties where the risk of theft is the highest. Many trucks exceeding 7.5 tons have been reported stolen in the Jönköping, Uppsala and Örebro counties as well. In Sweden one notices an increasing, although not yet acute, security problem and that property of great values is lost. However, this type of vehicle crime is not a priority with the Swedish police, despite many hijackings.

3.2.1.3 Vehicle- and cargo related crime in the Netherlands (Beke, 2006)

In a recent study in the Netherlands specifically aimed at organised vehicle and cargo related crime it was found that trends in thefts of commercial vehicles are only slighly increasing and cargo thefts actually decreasing. Surprisingly many vehicles are stolen without cargo (in almost 50% of the cases vehicles were empty). Most of the stolen vehicles were quicly recovered again. Regional hot spots in the Netherlands for lorry thefs are Rotterdam, the area around Roermond and Venlo. Distribution vehicles are stolen in the larger cities. It is estimated that the direct and indirect damage of the thefts is between 100 million and 500 million Euros.

Stolen cargo is usually quickly sold, frequently in the same area where the thefts occur. Almost all perpetrator groups use the services of persons with experience in the transport industry (usually a driver). In the cases studied, thefts were often thefts of opportunity and the level of organisation was not very high.

In addition to measurers already taken or planned it was a.o. recommended in particular to use electronic devices such as tagging and information systems, improving the co-operation between police forces, emphasizing civil clainms after theft and streamlining information systems and methods.

3.2.2 Crime in the high value cargo segment (TAPA 2004/ 2005)

TAPA is a private organization that aims to improve the security in supply chains of high value goods (especially electronic equipment). Among others TAPA also registers crimes in (road) freight transport.

Recent statistics from TAPA for 2004 show that the number of crimes increased by 20 percent from the year before, while the value of the stolen goods was 13 percent lower. The total value lost in 2004, reported by TAPA members only, amounted to about 63.9 mln US $. in 2005 the number of incidents was lower than in 2004 but the total value lost increased to 80.0 mln US $. In table 3.1 we give a list the total number of incident reports and the value lost.

Tabe 3.1 *Number of Incidents and estimated loss by TAPA (2000-2005)*

Year	Value US $	incidents
2000	30.5 mln	131
2001	39.3 mln	118
2002	69.2 mln	234
2003	72.9 mln	337
2004	63.7 mln	423
2005	80.0 mln	308

One can not draw conclusions on the growth of crime from this table because the figures also reflect changes in the membership of the TAPA organisation.

Over 400 incidents were reported to TAPA during 2004. Of these some 17 percent happened at terminals/warehouses, thereby making this the single most common type of crime. It is also the type of crime where the greatest values in total are lost. In 2004 some 16 percent of the reported incidents occurred at lay-bys and only incidents (the equivalent of 3 percent) took place at so called secure parking places. The crimes are most frequent at large international centres in Great Britain and the Benelux countries, as well as in Paris, Rome and Madrid.

Such crimes are more widely spread over several countries in Europe. Repeated incidents have occurred at La Jonquera on the French-Spanish border, at Järfälla in Sweden and at the Whitwood Truck Stop in Great Britain.

In 13 percent of the cases the vehicle was hijacked. Everything from small to larges values is hijacked. The total amount lost through hijackings in 2004 was the second largest, after crimes at terminals/warehouses. Hijackings are most common in Great Britain and in France. Stolen trucks amount to 12 percent of the crimes. Trucks are mainly stolen in Great Britain and in France, but also in the rest of Europe. The remaining 37 percent are concerned with fraud, goods stolen from open vans in densely built-up areas, attempted theft etc.

3.2.3 Crimes against drivers

3.2.3.1 Survey in Denmark amongst export drivers (AHTS, ITD,DTL,SID et al. 2002)

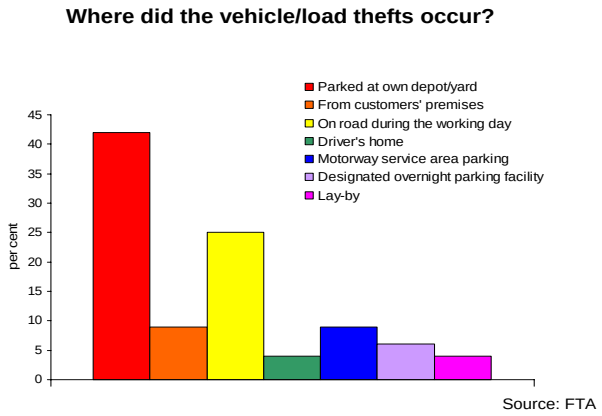
From a large survey (more than 1800 drivers responded to the survey) it was established that one in six Danish chauffeurs driving in Europe at some point experienced some form of a crime, from theft to armed robbery (this questionnaire will be discussed more in detail in the Denmark case study). Crimes in Italy were most frequent but after weighing traffic patterns it turns out that visits to Spain have the highest risk (its is calculated that there is a 0,08 % chance that a Danish driver will become a victim of a crime when entering Spain). What is important is that Germany (a neighbouring country of Denmark and a country in which the drivers will use many parking areas) has a comparatively low score on criminal incidents and should therefore be considered as relatively secure.

3.2.3.2 Survey among operators in the UK (FTA, 2003)

In October 2003, FTA surveyed 3,000 of its members to try and ascertain the extent to which theft of commercial vehicles and their loads was indeed a major problem to the industry. Members were asked questions concerning their experience of vehicle related theft during the previous 12 months. Returns were received from nearly 600 companies across the UK.
Overall seven per cent of the respondents (43 companies) reported that a driver of theirs had been attacked in the last 12 months.

In over 40 per cent of the cases, the vehicle or load theft occurred while the vehicle was parked in the operator's depot. A further 25 per cent of thefts occurred while the vehicle was on the road during the working day. Nine per cent of thefts occurred at motorway service areas (MSAs)[4] compared to just three per cent five years ago.

Figure 3.1 *Location of thefts*



Its should be noticed however that this survey does not distinguish between international and domestic transport. It might be expected that the share of crimes at parking areas in international transport is higher than that in domestic transport.

3.2.3.3 Survey in the Netherlands among road transport operators (TLN, 2004)

This survey was held among the members of the transport organization TLN. Three out of four (76%) of the companies that have participated in a Dutch study have once (16%) or several times (61%) been subjected to crime in a parking area. In every third case the driver was robbed or drugged. In every twentieth case physical injuries were inflicted. Three quarters of the crimes occurred on parking lots adjacent to petrol stations or restaurants. More than 21% of the companies are being forced by insurance companies or shippers to avoid making use of certain parking areas (black listing). More than 79% of the companies in the survey state that they are prepared to pay more for more secure parking areas.

[4] Parking area connected to gasoline station or restaurants.

Although this questionnaire does not allow us to draw conclusions on the annual probability of crimes at parking areas, because it refers to an indefinite past, it provides interesting information on the frequency of crimes at parking areas and also on the geographic spread of the crimes (see tables 3.2 and 3.3).

Table 3.2 *Frequency of types of crimes at parking areas according to Dutch operators (2004)*

Type of crime at parking area	Frequency
Driver-related: threats	32%
Driver-related: robbery	38%
Driver-related: rendering unconscious	23%
Driver-related: physical injury	5%
Cargo related-theft of parts of the cargo	55%
Cargo related-theft of complete cargo load	13%
Cargo related-damaging cargo	40%
Vehicle related-theft of complete vehicle	16%
Vehicle related-theft of parts of the vehicle	39%
Vehicle related-fuel stolen	53%
Vehicle-related- damaging vehicle	22%

It is interesting that the typology, distinguished corresponds with the typology as proposed in chapter 2 of this study. Frequencies can not be added however: in any particular criminal incident a combination of the types distinguished in table 3.2 may have to be ticked.

Table 3.3 *Criminal incidents at parking areas broken down to the country where they occurred according to Dutch operators (2004).*

Country	Frequency
the Netherlands	25%
Germany	22%
France	22%
Belgium	14%
Italy	6%
Spain	5%
United Kingdom	3%
Other countries	3%

What is remarkable in table 3.3 (which in contrast to table 3.2 sums to 100%) is again the percentage of criminal incidents in Germany, which is just as high as the frequency of incidents in France while Dutch operators spend far more time in Germany than in France (transported volumes to Germany are 5 times higher than to France). Belgium has more or less a similar risk as Germany, while Spain is riskier than Italy (although the frequency is almost the same in Spain. Transported volumes to/from Italy are 2 times higher).

3.2.3.4 Survey among drivers and operators of ECMT-IRU (2006)

Crimes and attacks against international Heavy Goods Vehicle (HGV) drivers, as well as the number of vehicle theft and freight robbery incidents are increasing in many countries. To address these concerns the European Conference of Ministers of Transport (ECMT) and the International Road Transport Union (IRU) commenced joint survey in June 2005 on attacks on International HGV drivers, as part of a wider study on the growing security problem of crimes in road freight transport.

This study has been based on a survey of International HGV drivers, their managers and governmental authorities. It drew from an Internet-based questionnaire and a series of random face-to-face interviews with drivers in four key locations, Germany (Berlin), Hungary (Budapest and Szeged), UK (London) and Italy (Turin) with a total of almost 3,000 completed questionnaires obtained and analysed.

According to information in advance, the survey has shown that attacks on drivers is a serious problem, with 1 in 6 drivers having suffered an attack over the past 5 years. Furthermore, the ECMT-IRU study has found that 42% of reported attacks occur in truck parking areas, whilst 19% of attacks take place at motorway service stations. The lack of proper crime reporting and inadequate response mechanisms in many countries revealed in the report highlight the need to raise the awareness of key actors of this type of crime and encourage actions to better protect HGV drivers from violent attacks. The study is in completion and the final results will be released thereafter.

Unfortunately at the time of the writing of this report the details of this survey were not known yet. The information provided, in particular given the large sample size, can however not be neglected and is also interesting because the estimated frequency of attacks is more or less in between the size of estimates given by the Danish study (2-2.5% see above) and earlier estimates for UK drivers (4%). If these figures are right there is strong support for the fact that the probability that a driver in a 1 year period will be attacked will be about 3.3% in the EU. The probability that he will be attacked at a parking area is about 1.3 % per year.

3.2.3.5 Transport security for goods, vehicles and drivers in the Pan European Transport Corridor IV (Secretariat for the Pan European Transport Corridor IV, 2006)

In the late Summer of 2004 the Secretariat for the Pan European Transport Corridor IV (a corridor between Germany, Romania, Bulgaria, Greece and Turkey) carried out a survey among forwarders of international freight as well as among freight insurers on the security situation in the corridor.

The surprising finding was that the situation turns out to have much improved compared to the past: criminal attacks on goods transport carriers and on drivers are currently a minor problem in the corridor and security risks are no higher than anywhere else in the European Union.

The main reasons for the improvement of the situation are: institutional strengthening of state authority in the corridor, primarily because of the measures taken to accede to the EU, a noticeable improvement of the social situation in the states in the corridor, abolishment of customs check points at the internal borders of the EU and the increased use of security systems in vehicles. More in particular the level of organized crime has clearly gone down but petty crime remains more or less at the same level.

However, the Secretariat still finds that the levels of crime in the Southern part of the corridor are unsatisfactory and efforts must be continued to achieve additional improvements.

3.3 Other information on the extent of criminality

3.3.1 Information on “hot-spots” from transport operators, industry organisations and an insurance company

There are other sources of information on crimes that can throw light on where crimes take place, namely the victims themselves, i.c. the transport operators. Although even the largest transport operator with several thousands of vehicles on the network everyday, has at best a subjective view on crimes at truck parking areas. When combining relevant information from several operators there might emerge a quite realistic picture of hot-spots in Europe. This is presented in table 3.4.

Remark: the cities mentioned in table 3.4 should be interpreted as a region, e.g. “Venlo” in fact means “greater Venlo”; the region in which the city is situated.

Types of causes of hot-spots

At hot-spots two types of missing parking facilities can be distinguished:

1. The available parking area has a too limited capacity, sometimes drivers have to park for the night "in the wild". Experts suggest that these capacity problems are the main reason for the existence of hot-spots.
2. The security level of the parking facility is too low. The main problem may be found in the fact that at most hot-spots only non-dedicated parking areas exist, forcing the trucks to mix with other traffic.

Remark: Security improvement initiatives in hot-spot areas are believed to have a profound effect on the crime rates against trucks and drivers. However, one has to bear in mind that eliminating a hot-spot in a certain region may cause a new hot-spot to emerge in a neighbouring region; the criminals will just move their business. It is therefore advisable to attack hot-spots by way of an approach based on main transport corridors of which one or several hot-spots are part of. An example of such a corridor is "Rotterdam- Eindhoven- Venray- Venlo- Nürnberg- München".

Table 3.4 *Hot-spots (regions) as mentioned by operators and industry organisations*

Hot-spot/corridor description	Source1	Source 2	Source 3	Other sources
Spain:				
- Barcelona	X	X	X	
France:				
- Paris	X	X	X	X
- Lille	X	X	X	
- Bordeaux	X		X	
United Kingdom:				
- Dover	X	X	X	X
- London	X	X	X	
- Harwich		X	X	
- Birmingham	X		X	
Italy:				
- Milano	X	X	X	X
- Napoli		X	X	
- Verona	X		X	
The Netherlands:				
- Eindhoven	X	X	X	
- Maastricht		X	X	
- Venlo	X	X	X	X
- Hazeldonk		X	X	X
Romania: Bucharest		X		X
Belgium:				
- Brussels	X		X	
- Charleroi/Mons			X	X
Germany:				
- Hamburg	X		X	X
- Nuernberg	X		X	
Sweden:				
- Malmo	X			X
- Stockholm	X		X	
Poland: Poznan	X		X	
Austria: St Polten	X		X	
Hungary: Gyor	X			X
Lithuania: Kaunas	X			X

Inspection of the table learns that the most frequently mentioned "hot spots" are either metropolitan areas or border regions. This seems to suggest a close relationship with traffic density or population density (high crime rate regions). There are however also alternatives, perhaps more important, reasons. As will be explained later in the metropolitan areas ensuring a sufficient supply of secured parking areas is especially difficult because of the high prices of land use.

In order to get another view on the risk per country we mention the following foreign country[5] three-level ranking, derived from data on 461 criminal incidents on a large Dutch insurance company (approximately 15% of which were crimes related to parking) in 2004 and 2005:

1. France and Belgium;
2. Italy, Spain, United Kingdom;
3. Poland, Germany, Denmark. Sweden.

The three levels are levels of decreasing security risks. The assessment has some familiarities with the lists as reported by the surveys in the Netherlands and Denmark that were previously discussed in this chapter. In particular the assessment that Germany is a comparatively low risk country is a striking similarity. However, in this assessment Belgium is considered to be much riskier by the Dutch operators questionnaire (see section 3.2.3.3).

3.3.2 Questionnaire

An important source of information has been a questionnaire that has been sent to national representatives of both the Government (Ministry of Transport or its equal) and the (national) Police. The questionnaire is listed in Annex 1 of the country studies report. This questionnaire consists of three parts of which the first part was designed to get some statistical information (facts and figures) on criminal acts against the road goods transport at parking areas. This questionnaire is discussed more in detail in the accompanying country study report.

It turns out that only a limited number of countries (8) indicate that they do have statistics on crimes related to vehicles, cargo and drivers, but no country is able to specify statistical data at the level of parking areas along the TERN.

[5] Of course most of the criminal incidents (60%) in this database were committed at Dutch parking areas, because domestic transport was not excluded.

There are 7 countries however that feel that they can make an estimate of the size (in terms of a percentage) of the number of criminal acts on parking areas along the TERN in relation to the total number of criminal acts. On average the estimate for the sample is about 10 %, although there is a wide variety (between 30 for the Czech Republic and 1 for Latvia).

As it turns out the availability of statistical data is primarily limited to the theft of vehicles. Driver and cargo related crimes (independent from the theft of vehicles) are apparently very difficult to derive from the available crime statistics. An exception is France where some data on thefts of cargo were obtained. It appears that in the period 1997-2002 there was a 85% increase in the number of cargo thefts and in the period 2002-2004 a 29% decrease[6].

Although a number of countries subsequently produced data on vehicle thefts these data could not always be accepted, because the data produced could not be directly interpreted as data related to the theft of tractors/(semi-) trailers/lorries but were mixed with data on small commercial vehicles (vans) or sometimes even with the theft of cars (e.g. in the case of Italy). After a sifting process of such data we were left only with the data from 7 countries that we can consider to be more or less reliable. In table 3.5 we list these data.

Table 3.5 *Commercial vehicle theft in various countries (theft of trucks >3.5 ton)*

	1999	2003	2004	2005
Belgium		236	269	
Czech republic			76	84
Germany			1930	2012
Netherlands	352	349	368	319
Slovenia	150	46	68	68
Sweden		204	258	
United Kingdom			2237	2092

It is difficult to extract a trend from such a limited data set. Looking at theft levels in the early 1990's as reported for example in the study of the ECMT (see section 3.2.1.1) it appears that the levels of vehicle thefts in the last 5 years are higher. It must be remarked however, that in this period also the transport performance has grown significantly and it is very doubtful that vehicle thefts have increased more.

[6] Data from OCLDI 229/09/2006

So existing crime statistics in the EU do not match very well with the needs of transport policymaking and should be improved. Furthermore, data are difficult to compare and different concepts are used in different Member States. The joint declaration by the Ministers of Justice and Home Affairs of the Member States of the European Union and the candidate countries in association with the European Commission on the protection of commercial drivers engaged in export trade from becoming victims of organised crime (2003/C 24/02) addresses the need to keep central statistics on registration of violent attacks on drivers in order to make (policy) actions more targeted and effective. We will discuss registration of criminal incidents also in the framework of ‘’labelling” parking areas in chapter 7, where we will recommend that statistics on crimes will also be kept on individual parking areas.

It turns out that policymakers in the various countries strongly disagree about the trends in criminality. When directly asked in the questionnaire they express different views. For example policymakers in Poland, the Baltic States and a number of countries in Central Europe do not see a trend of increasing crime. Only countries in Western/Northern Europe (Sweden, UK, the Netherlands) as well as in Italy and The Czech Republic see a trend of increasing levels of crime.

3.3.3 Actual versus perceived security risks

So far the information presented on the extent of crime has primarily been focused on objective facts. In practice (in the market) facts are often less important than expectations. With regard to safety and security the subjectively perceived risks will frequently not agree with the objective risks as determined by statisticians and surveys. In this section we will discuss the possible gap that may exist between these two concepts in the framework of parking area security.

As we have seen various sources indicate that the probability that an international truck driver will be confronted with a criminal incident is about 2-4 % per year and that the driver will experience an incident at a parking area somewhere in the EU is about 1-2% per year. From the previous pages we know that these probabilities may significantly vary between countries and regions, but that on average this will be the size of the probability.

Furthermore, it is known that about 79% of the respondents to the survey among Dutch operators (discussed in section 3.2.3.3) indicate that they consider certain parking areas unsafe. It is interesting that only a minority of the operators (44%) base their opinion on direct experience with crime and that the other 56% base their opinion on hearsay or on what they have read. So apparently opinions on the issue of parking area security are to a large extent indeed influenced by communication networks in the industry and not by direct facts.

This will make it very likely that in practice the actual victimization rates as such will not be a dominating factor in the behaviour of drivers and operators and that the risk perception may be determined by other factors. This is not unusual, many examples can be given of similar phenomena when human beings need to process small probabilities. Extreme levels of *risk averse* behaviour can be observed in the case of small probabilities of a potentially large loss (e.g.compare attitudes on nuclear power stations, terrorist attacks, BSA etc.)[7]. This will mean that in practice people are ready to pay a price for abatement-measurers that may be much higher than the (objectively calculated) actual risks. Although less extreme than the examples given, attitudes towards criminality may be very similar: the actual probabilities of victimization are low and the possible damage may be large (especially when crimes may be life threatening).

What makes a parking area secure/not secure according to potential users ? This question was asked in various surveys (e.g. the Danish and Dutch surveys) and perhaps the answers may throw light on factors and may also influence the perceptions.

Improving visibility at the parking area is thought to be very important (cutting shrubs and bushes, good lighting, reducing the number of "dark corners" etc.), regular police presence/surveillance has a high score, limited access of the general public to the parking areas, and also the presence of a camera surveillance system helps to make the truck parking areas more secure. These are all examples of measures that may be taken and will have a positive impact on security levels as such and on the perception of security of the users of parking areas. Such measures will be discussed in chapter 7 in a more general framework.
Finally we will discuss the difficult issue of acceptability of security risks. Is the objective probability of 1-2% per year that long distance truck drivers fall victim to crimes at parking areas acceptable?

One way to answer this is to try to compare this victimization rate with similar rates for staff in other industries, but such a comparison is not conclusive. It is clear that the size of the probability is much higher than the probability that staff in offices and many manufacturing plants will experience a criminal incident. But on the other hand, it must be observed that the probability is much lower than the probability that staff working in shops, bars and hotels in many metropolitan city center environments will experience a criminal incident. Often the latter will, with a near certainty, experience an attack at least once a year.

[7] This could be called the mirror effect of the *risk seeking* behaviour of people when confronted with a small probability on a larger gain (e.g. lotteries)

There are however particular circumstances that make crimes against truck drivers very serious indeed. The victims of these crimes often are, when incidents occur, working in (relative) isolation and unfamiliar circumstances, so the impact and consequences of such crimes on the victims is likely to be much larger than elsewhere. In addition the economic consequences of such crimes may be much higher than cases of theft in shops, given the economic value of some types of cargo. So that which makes crimes against truck drivers extraordinary is not the size of probabilities as such, but the combination of the size of the probabilities and the size of the potential human and economic damage.

4 THE MODELLED DEMAND OF SECURE PARKING

4.1 Estimation of the total demand of parking rest areas for international road freight transport market

The use of truck parking areas on which the present study focuses, is the need for drivers active in the road freight transport market to long stay resting *in international and domestic long-distance transport*. This need to rest moreover is legally required by the current driving- and resting time regulation[8]. The study does not look at the use of truck parking areas arising from other types of motives. However, it should be pointed out that in practice such parking areas are frequently used to accommodate short distance transport (though usually with stops of smaller duration), coaches and mobile homes. The latter types of vehicles of course in particular in holiday periods.

In order to derive some estimates for the demand of rest areas the actual road freight transport flows for the year 2002 (the most recent year for which actual data were available) between origin/destination pairs in the EU25 +2 were assigned to the EU road transport network via an optimal routing program.

For this we have:

- determined the routes for each Origin Destination pair in road freight transport;
- selected those pairs where, given the driving/resting time regulation, will be a need for 1 or more rest places, assuming that drivers also rest while using ferries ro/ro forms of intermodal transport (for Channel crossings we only substract the crossing time itself) ;
- we took into account the fact that in some countries during weekends there is a ban on driving.

[8] See regulation (EC) no 561/2006 of the Europen Parliament and of the Council of 15 March 2006 on the Harmonisation of certain social legislation related to road transport and amending Council Regulations (EEC) No 3821/ 85 and (EC) no 2135/ 98 and repealing Council Regulation (EEC) No 3820/85.

Assuming that every trip of more than 600 km will result in the need to use (at least) one resting area, we get the following key estimates for the international road freight transport:

- 44% of total number of trips are trips needing at least 1 parking area for resting during transport
- 78% of the total vehicle kilometers in international road freight transport is on trips needing (at least 1) parking area to rest during transport
- In 2002 approximately 27.6 mln. vehicles each year needed (at least 1) parking area for resting during transport.

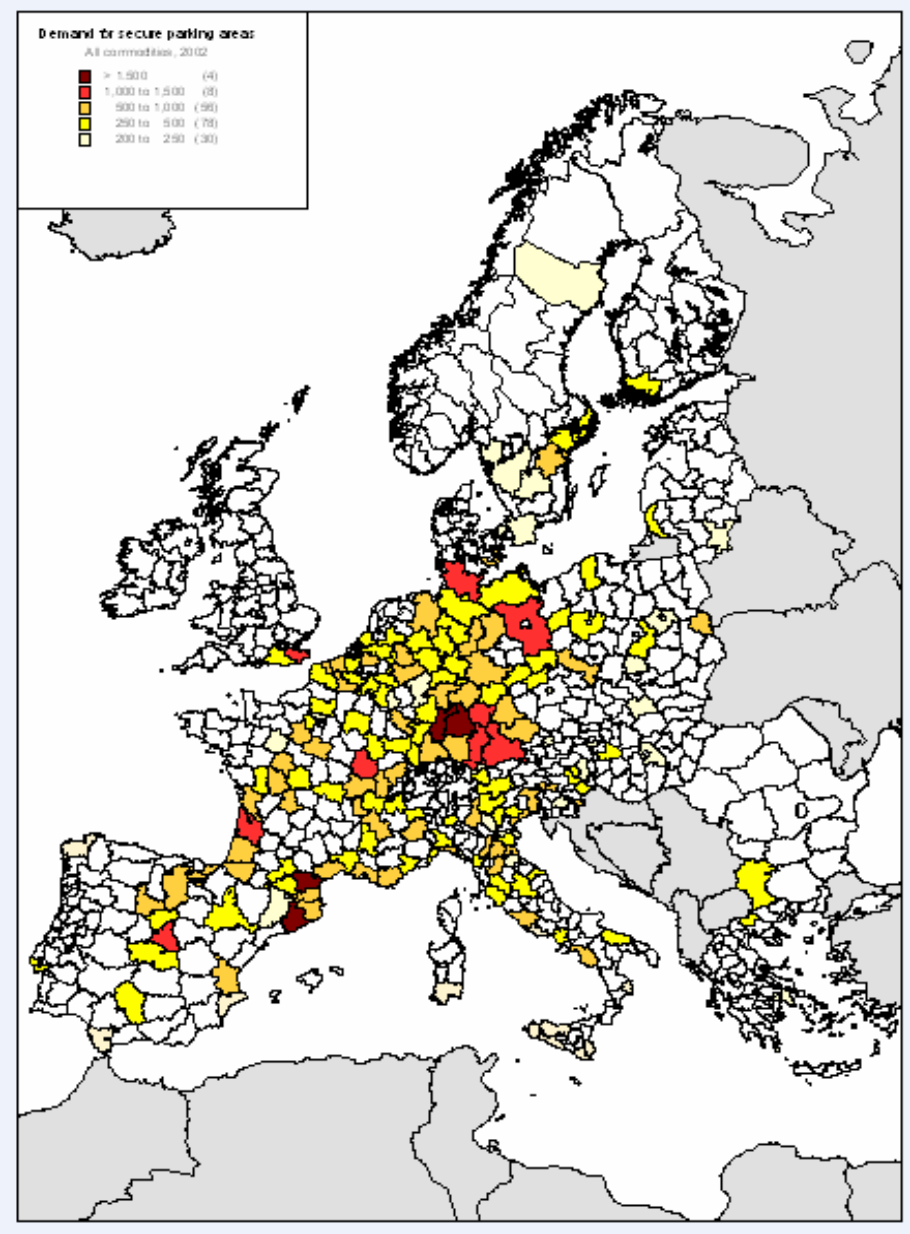
The share of trips differs strongly depending on the type of goods transported, see table 4.1.

Table 4.1 *Estimated percentage of the share of trips in international road freight transport needing rest area per NSTR-group*

NSTR-group number	Commodity group	**%**
0	Agricultural products	50
1	Foodstuffs	40
2	Solid mineral fuels	46
3	Crude oil	2
4	Ores, metal waste	25
5	Metal products	47
6	Building minerals & material	22
7	Fertilisers	21
8	Chemicals	47
9	Machinery & other manufacturing	55

For the regionalisation we used the so called NUTS 3 level for most countries except Germany that is on NUTS2 in order to get more or less equally sized regions. Using this zoning system it is also possible to allocate the demand for rest areas to certain regions (see figure 4.1).

Figure 4.1. *Modelled demand for parking places of trucks per NUTS region (2002)*



4.2 Indication of the demand of secure parking areas per security class of the parking area

Not all types of cargo and not all routes have an equal need for transport security. A more refined analysis is needed, in which different security classes are distinguished. We have tried to do this by using a modelling approach.

However, it should be emphasized that given the limitations of available statistics (we do not possess reliable crime rate indices per region) in the analysis we can only take into account risks related to type of cargo. This means that we for example can take into account differences in risk related to the value of the cargo (see later on) or the intensity and size of transport flows. However crime rates per region, although desirable as an explanatory variable, are not available.

On the basis of the actual (for the year 2002) size of the transport flows per commodity group for the EU25+2 the demand for parking areas per security class per region will be determined.

BMV "Black Market Value"

Not all commodities have the same risks of being subject of theft. To be able to take these differences into account the concept of "Black Market Value" (BMV) has been introduced. Cargo with an average value per kilogram of more than 10 € is grouped in BMV-category 1, requiring high security and cargo with a value less than 3 € per kilogram is ranked BMV category 3, the low security class. Cargo with a value between 10 € and 3 € is classified as category 2.

So we get:

- Category 1: High BMW, high crime-risk levels
- Category 2: Medium BMV and medium crime-risk levels
- Category 3: Low BMV, low crime risk levels

We again derive demand for truck parking areas per region. Some threshold values are used in determining demand per security category: demands for secure parking areas within a certain region of 50 parking slots per day or less for categories 1 and 2 and 200 per day for category 3, will not be taken into account. The background for this is that a demand smaller than the thresholds mentioned will not be significant for the establishment or for the daily operation of the minimum sized truck parking area. The reason is that (commercial) exploitation of a truck parking area has its lower limits when concerning size in the number of slots.

The following methodology has been applied to determine the demands for secure parking areas:

Step 1: Valuating freight flows with Black Market Value

Input:

- interregional freight flows for the years 2002 per commodity group
- (NSTR-chapter); source: modeling system NEAC;
- values per kilogram. The values are based upon UN 2004 data, which describe the international trade flows for all countries.

Output: conversion table (see figure 4.2)

In the conversion table an estimate of the share per NSTR- chapter level of the Black Market Value categories is presented. It is clear that the highest BMV-category is primarily included in NSTR-group 9. In the other NSTR-chapters the shares of cargo with a value higher than 3 € per kg are very small (only in group1 (processed food products) and group 1 (chemical products)) shares of higher valued products are more than 5%.

Step 2: Determining the number of trips per BMV-category

The freight flows from NEAC are also used for the determination of the number of trips per day per commodity group per route. As a result from step 1 the shares per BMV-category per commodity group are known. Combining these figures results in an overview for the EU25+2 of the number of trips per BMV-category.

Step 3: Determining the locations of (long) stops

Because the direction and the travel distance are known per trip in the BMV-category, an estimate can be made for the demand for secure parking areas by determining the region(s) in a certain trip where a rest will have to be made. Two categories of rest moments are distinguished:

- Stops 1: After a certain time of travelling a driver is legally bound to take a rest. In this study only the long duration stops for sleeping are taken into account. These stops are determined by dividing the total trip in portions of about 600 kms (average 9 hours driving with an average speed of 65 km/hr). Short stops like sanitary visits, are not taken into account.
- Stops 2: Borders between countries with substantial delay (e.g. between EU. and Russia) or at sea ports (e.g. ferries).

Figure 4.2 *Conversion table*

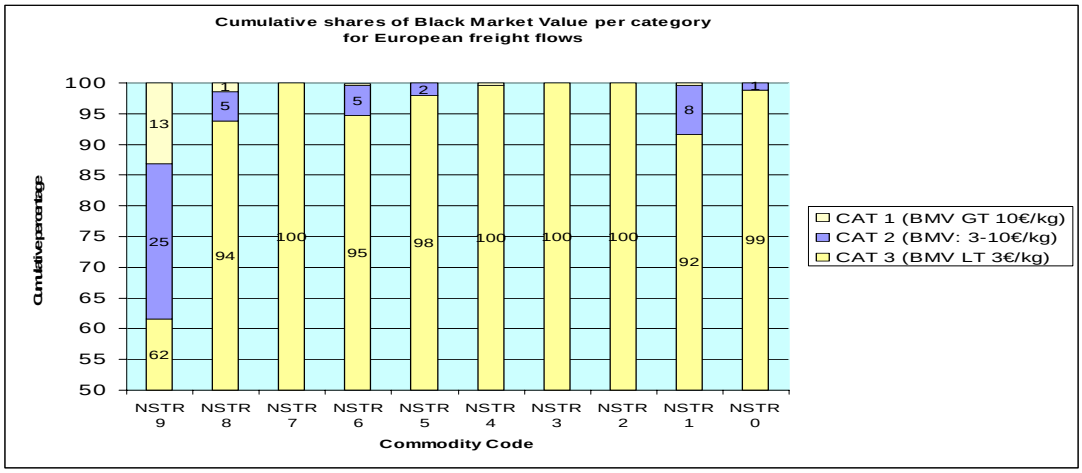


Table 4.2 *Explanation of NSTR codes from the above figure 4.2*

NSTR Code	Commodity group	**Abb. name**
0	Agricultural products	AGRIC
1	Foodstuffs	FOOD
2	Solid mineral fuels	SOLID FUEL
3	Crude oil	CRUDE OIL
4	Ores, metal waste	ORES
5	Metal products	METAL
6	Building minerals & material	MINER
7	Fertilisers	FERTIL
8	Chemicals	CHEMICAL
9	Machinery & other manufacturing	MANUFACT

Step 4: Determining the location for truck parking areas per BMV-category per region

By combining all stops as determined in step 3 an overview is generated of the number of stops of long duration per route per year. Dividing these figures by the average number of days that are demanded for truck parking areas, will produce an estimate for the size and the security-category of the parking area in a certain region. Calculations are made on the basis of 325 days per year (so about half of the Sundays are not taken into account).

The resulting figures of this analysis are shown in figures 4.3a-c on the next pages.

Figure 4.3a *Modelled demand of secure truck parking areas for long stay, long distance transport in 2002*
Category 1: High security; minimum number of parking slots

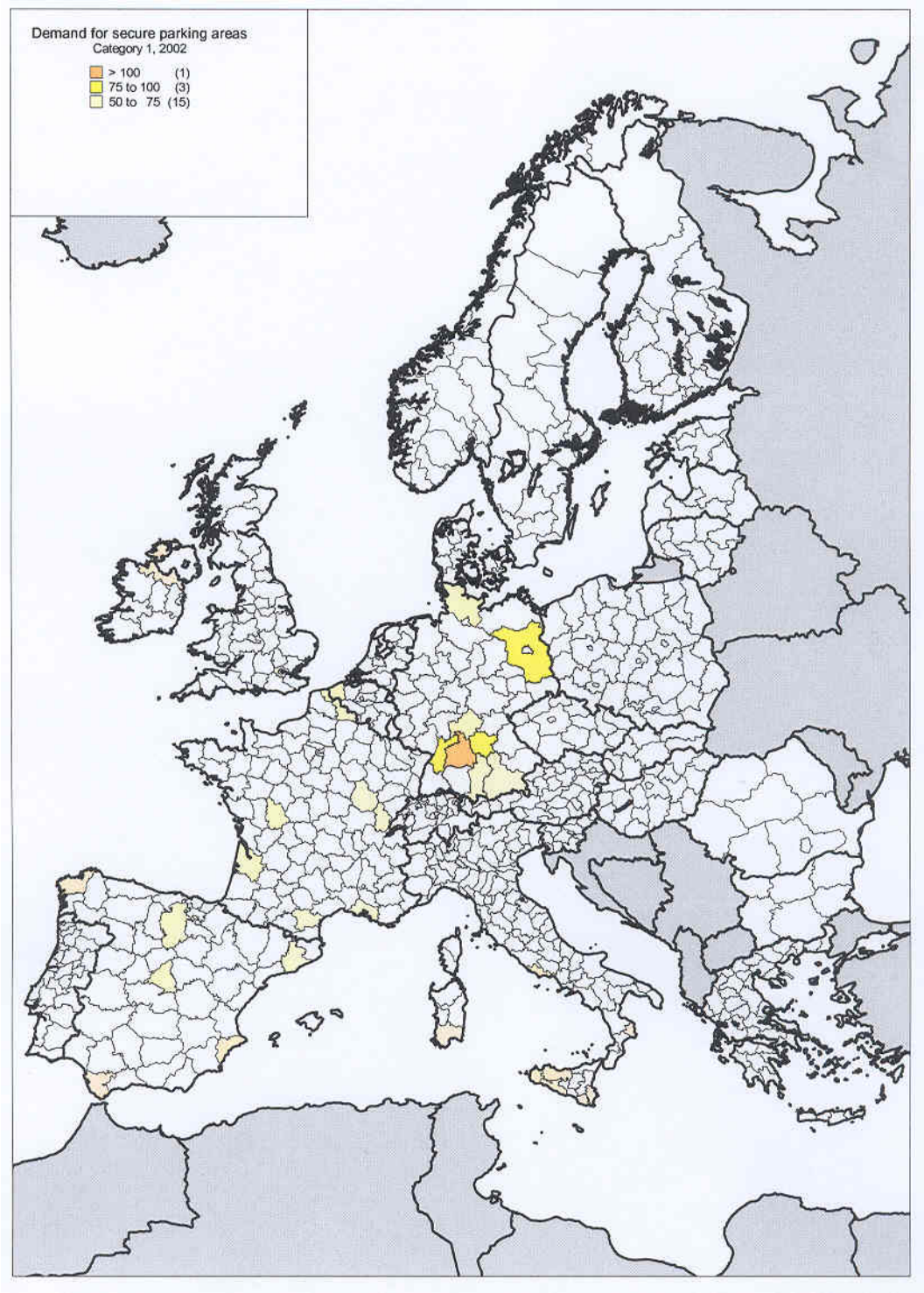


Figure 4.3b *Modelled demand of secure truck parking areas for long stay, long distance transport in 2002*
Category 2: Medium security; minimum number of parking slots

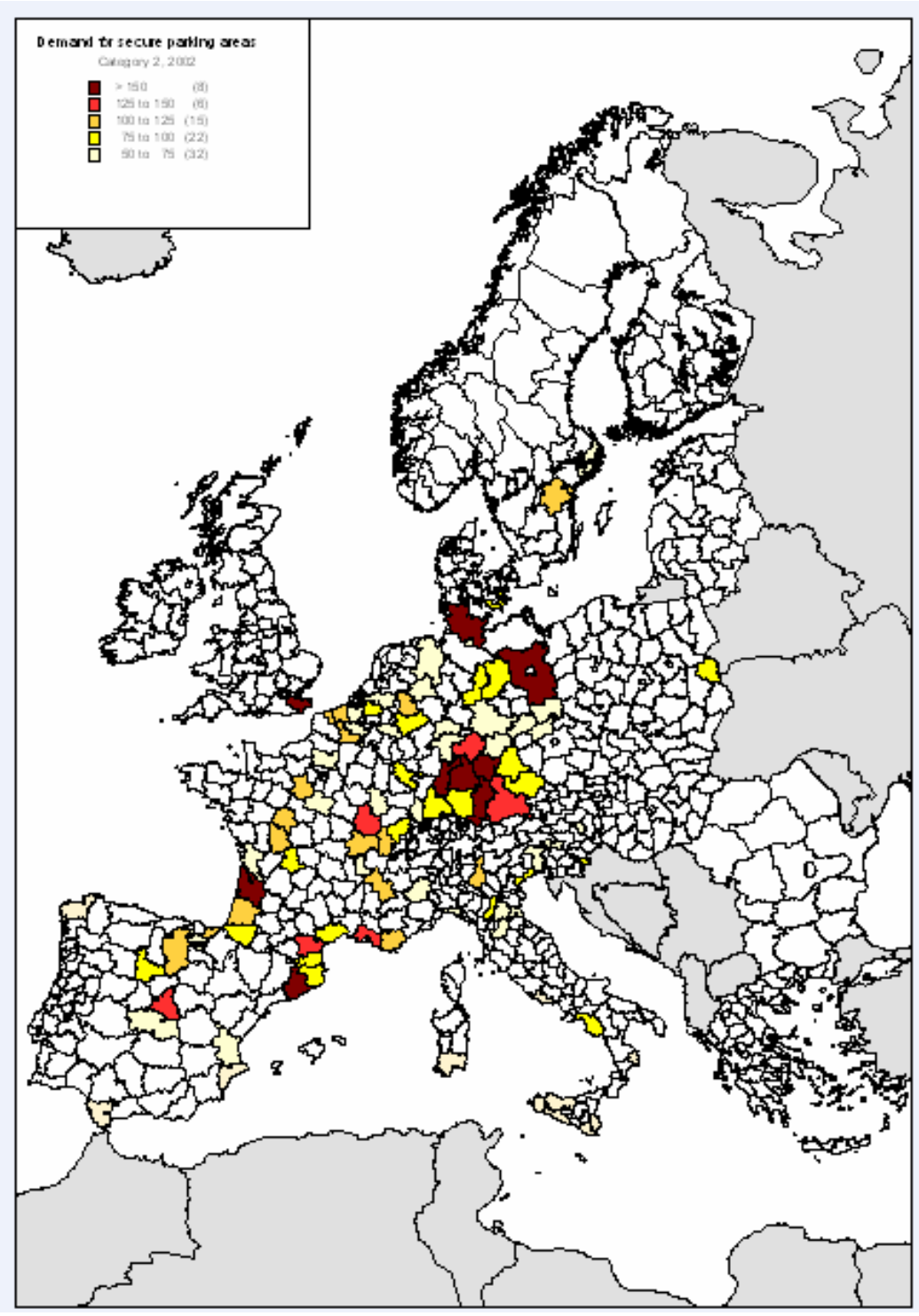
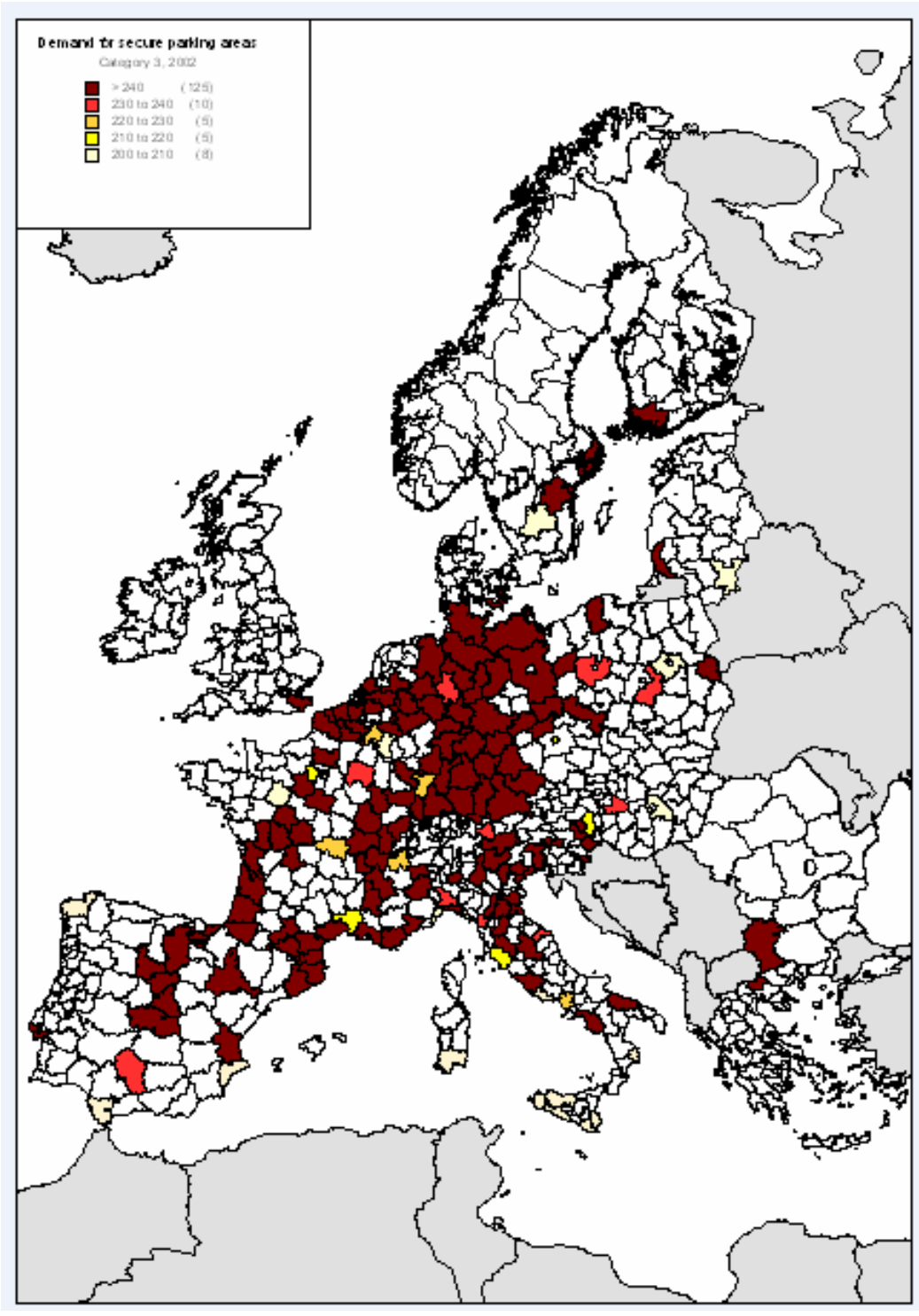


Figure 4.3c *Modelled demand of secure truck parking areas for long stay, long distance transport in 2002*
Category 3: Low security; minimum number of parking slots



4.3 Future developments 2020/2002

4.3.1 Increased demand of truck parking areas

In section 4.2 the demand of truck parking areas per security category was determined for the year 2002. Using a similar methodology an estimate for the demand of parking areas per security class for the year 2020[9] can be made. We use forecast data that were also used in the TEN-STAC project. Very recently (June 2006) new transport forecasts for the EU were published that were made in the framework of the ACCESS project. The more recent forecasts were made using more recent economic development (GDP) estimates and are pointing to a more modest (smaller growth rate) development of road freight transport than the forecasts we will use.

In regions in which a substantial increase in demand is expected, expressed in the form of an indicator by dividing the demand for 2020 by the demand for 2002 (index), a shortage in secure truck parking areas a/o size a/o security-category of existing areas may be expected too.

A picture of such demand–indices is presented in figure 4.4. It shows a.o. that a large increase of truck parking area demands is foreseen at the borders between the European Union and the rest of Europe. *We again point to the fact that in these estimates we only incorporate the expected changes in type of cargo of goods flows and that we do not (and can not because there re no such forecast data) incorporate in the estimates the projected change in criminality in various regions.*

4.3.2 Future demand, security-category 1

Figure 4.5 shows the development in the demand for ***highly secured truck parking areas***. The lower limit for the economically feasible size of the (new) truck parking area is put at a minimum of 50 parking slots. In other words, demands for security-category 1 truck parking areas of less than 50 slots are not taken into account.

[9] For the year 2020 we used the forecast of the s called European Scenario that was also used in the TEN-STAC study. Amongst others this scenario takes planned transport network improvements into account and policies aimed at stimulating intermodal transport.

The following regions are of special interest:

- The borders between the Baltic States and Russia;
- The borders between Romania, Bulgaria (expected to be members of the EU by the year 2020), Greece and Asia;
- The Netherlands;.
- Portugal and the west of Spain;
- South-West of France.

Remark: Demands for highly secured parking areas seem to be low in the United Kingdom and Ireland. However, one has to bear in mind that the determination of this demand is entirely based on the developments of freight flows. This means that the extra demands initiated by for instance high crime rates, are not taken into account.

4.3.3 Future demand, security-category 2

Figure 4.5 shows the development in the demand per region for ***medium security*** dedicated truck parking areas of more than 50 parking slots.

The following regions are of special interest concerning pilots overlapping largely with the demands for dedicated parking areas:

- The borders between the Baltic States, Finland and Russia;
- The borders between Romania, Bulgaria (expected to be members of the EU by the year 2020), Greece and Asia;
- The Netherlands;
- Portugal and the Western part of Spain.

Remark: Interesting to notice is the demand for dedicated truck parking areas in the South-East of England.

4.3.4 Future demand, security-category 3

Not only an increase is expected in the demand for high- and medium security truck parking areas, but also the capacity of (existing) truck parking areas with ***no special security measures*** may have to increase.

Major deficits will occur in the following regions (see also figure 4.7):

- External borders with Russia and Asia, in particular: Slovakia, Romania and Bulgaria;
- Region of Rotterdam;
- South-East of England;
- Southern part of Norway.

The lower limit on the demand for parking is put on 200, meaning that the minimum (commercially feasible)size of the (non-dedicated) parking area is 200 parking slots.

Remark: The cause for the high demand for (non-dedicated) parking slots in the North of Finland is not clear, but one has to bear in mind that an index is presented. If the starting value is very low; a little growth in absolute figures may cause substantial growth in relative terms.

Figure 4.4 *Total demand for truck parking areas*
Index 2020/2002

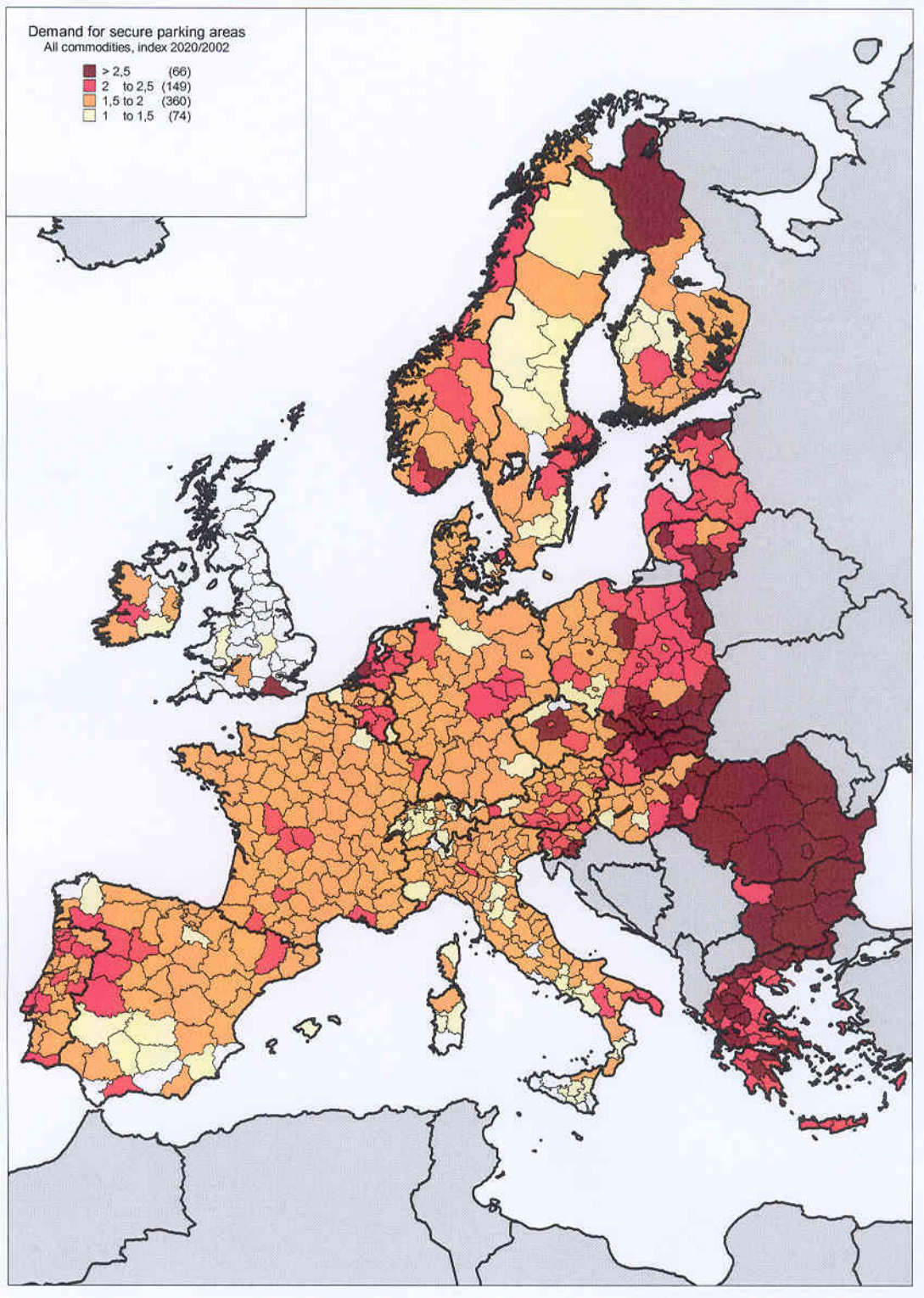


Figure 4.5 *Future demand for truck parking areas, security-category 1*

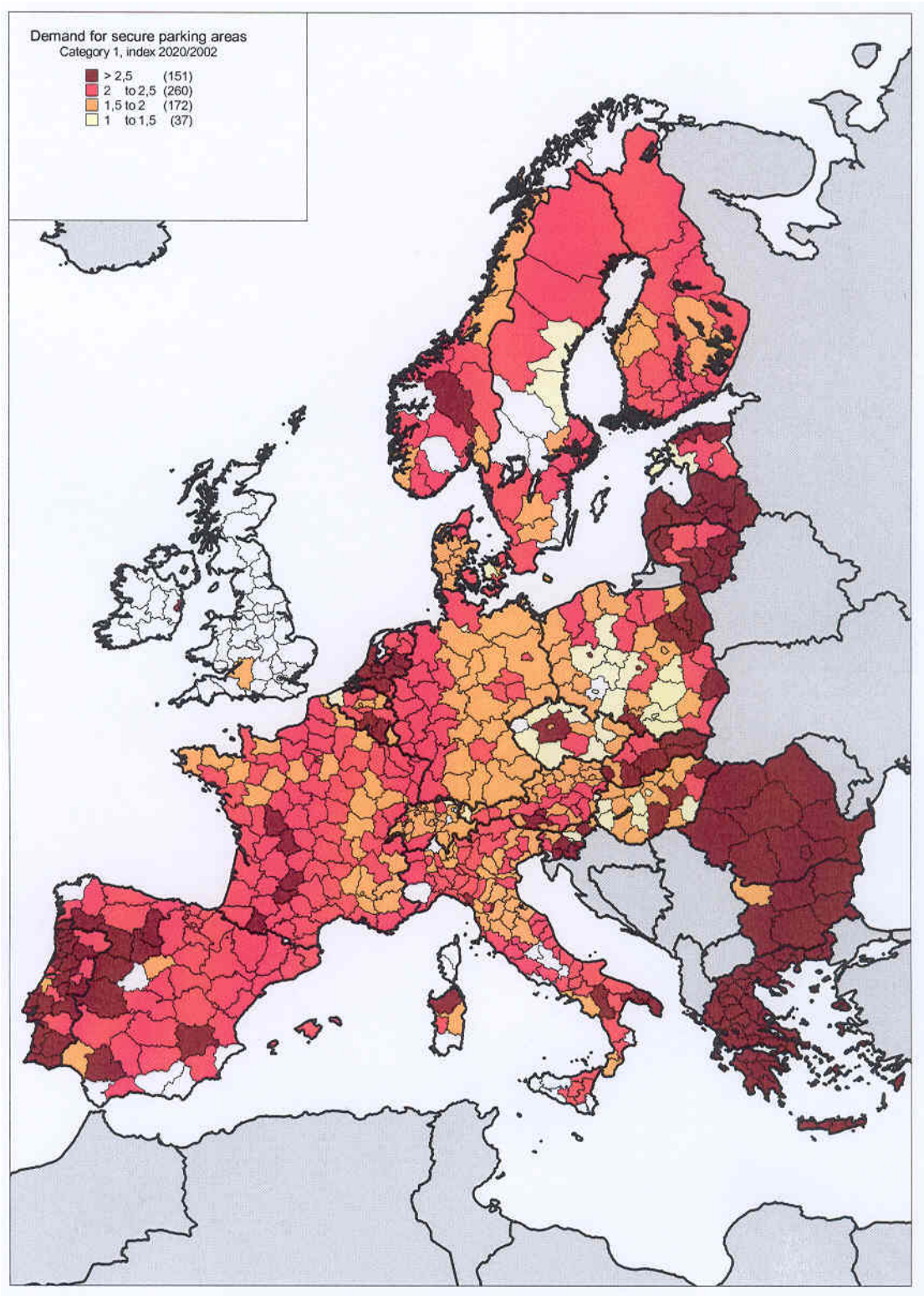


Figure 4.6. *Future demand for truck parking areas, security-category 2*

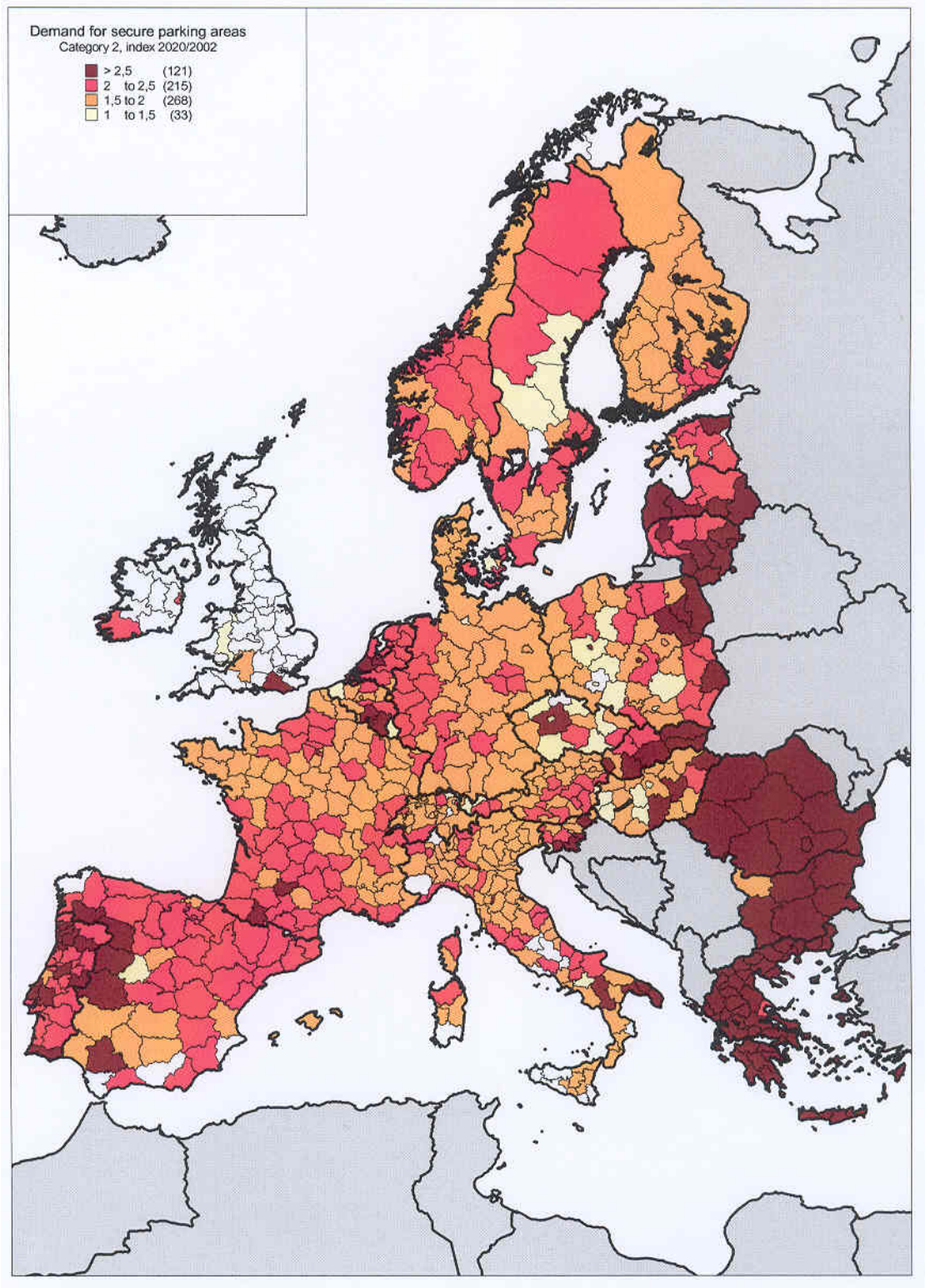
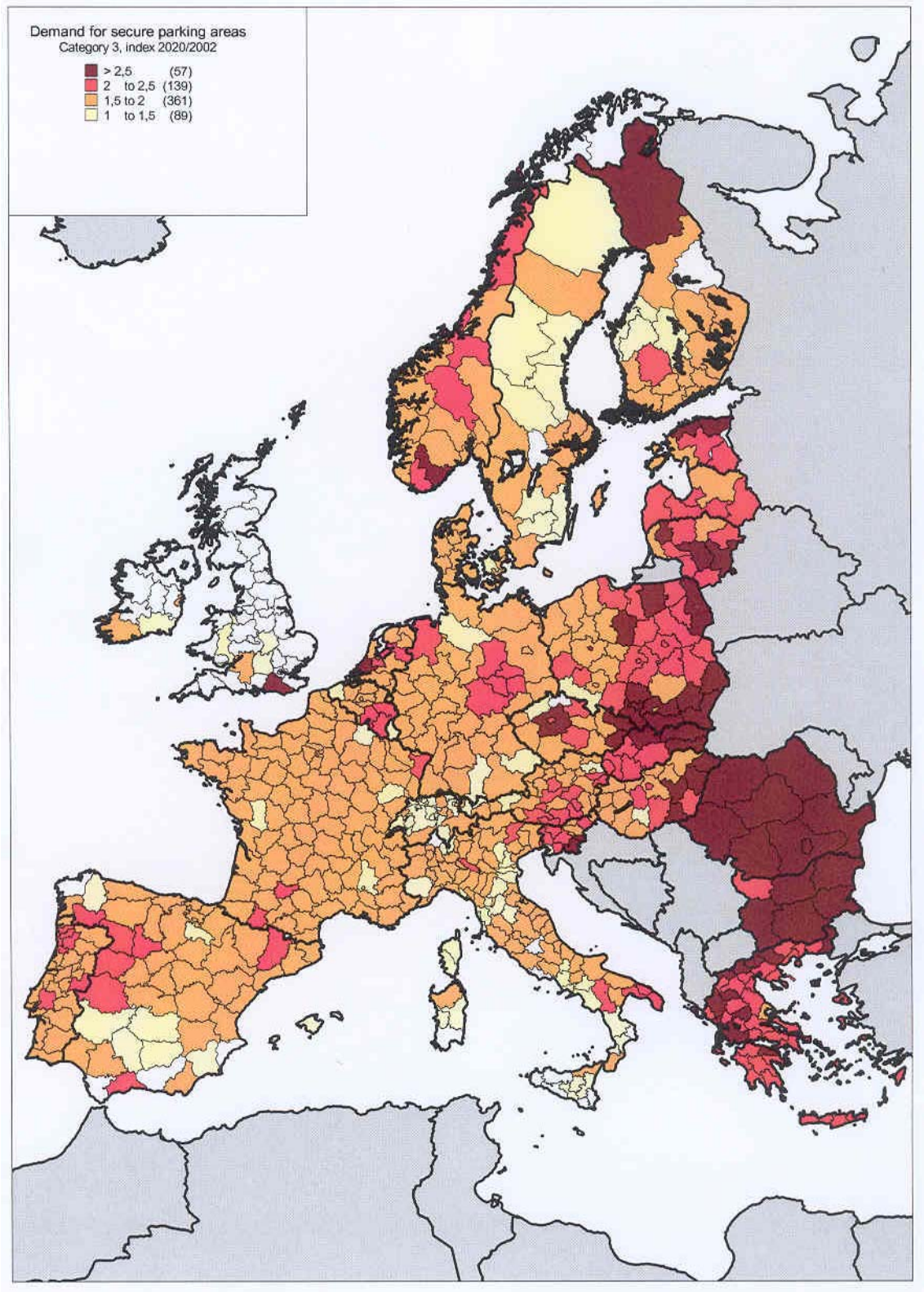


Figure 4.7 *Future demand for truck parking areas, security-category 3*



4.4 Demand of parking slots and areas

The previous sections of chapter 3 provide some insight into the location or regions where truck parking areas are needed and an indication can only be derived concerning the size and security-category of these parking areas for the year 2002 depending on the size, composition and origins/destinations of road freight transport flows.

The total demand of truck parking areas turns out to be very high in the Southern part of Germany and the border regions between France and Spain near Barcelona. The total demand exceeds in these regions the number of 1500 slots. However, one has to bear in mind that these figures stand for all security-categories combined. Table 4.3 shows the demand of truck parking areas broken down in different security-categories.

Table 4.3 *Demand ofr truck parking slots per security- category in 2002 (Based on freight flows)*

Number of slots	**Security-category (number of parking areas)**		
	Cat.1: High	Cat.2: Medium	Cat.3: Low')
50- 75	15	32	Na
75-100	3	22	Na
100-125	1	15	Na
125-150	0	6	Na
More than 150 (200')	0	8	153

') For the security-category 3 only demands are distinguished of 200 or more parking slots

It should be observed that the analysis in this chapter of the demand of secure parking is only based on (size, composition, geographical distribution) road freight traffic flows on the TERN. These flows are however to some extent theoretical because, although the 2002 figures are based on the real road freight OD-flows, the assignment-to-traffic flows on the road network is by means of optimal cost route choice. *This routing does not for example include information on the crime risks on certain routes or certain regions. So the derived flows are not entirely realistic. However, we do not think that this introduces a bias in this stage of the analyis. Moreover including such risks in the routing would be misleading, because taking avoidance behaviour into account would not result in a"natural" estimate of the demand of secure parking.*

On the contrary the "natural estimate" would be the one that allows every driver to choose the most economic routes.

However, it is very likely that geographic differences that are perhaps not directly or indirectly related to traffic volumes in criminality (e.g. "regional crime index") may also have an additional effect on the demand for secure parking (additional after having made a route choice) and may lead to modifications of the pictures as presented in this chapter.

5 THE SUPPLY OF TRUCK PARKING AREAS AND CAPACITY UTILISATION

5.1 Introduction

In table 5.1 estimates are given of the available truck parking capacity for a number of countries in the year 2002. The database used to derive these estimates was provided to the project team by the IRU and the ECMT. These organisations also published the data in the booklet "Truck parking areas in Europe", that appeared in 2003. Currently IRU and ECMT are working on an update of this publication, which unfortunately was not completed before the end of the present study. It has to be stressed that both organisations do not consider the inventory made in 2002 complete and satisfactory, and also a number of experts contacted in the last months have expressed serious doubts about the quality of the data. However, the database from 2002 is the only more or less comprehensive source on truck parking areas that is currently available and will remain the only available source until the IRU and the ECMT publish the updated survey of parking areas (probably later in 2006).

5.2 Available capacity

With the possible limitations of the database in mind, we examine table 5.1. The table contains 2 columns in which per country the number of truck parking slots are listed that are included in the database. The columns correspond to parking areas with a high/medium security level and to parking areas that have a low security level.

Various remarks need to be made on this:

- Security levels are based on the labeling system in the database of the IRU and ECMT. This is a four-star system with stars corresponding to 4 distinct characteristics (presence of entry/exit barriers, lighting of parking area, fencing of the parking area, presence of camera surveillance at the parking areas)[10]. In table 5.1, it is assumed that parking areas that have 2 or more stars have a medium and high level of security and parking areas with only 1 or no star have a low level of security.

[10] The labelling system in the database does not correspond precisely with the distinctions made in the present study (e.g. see chapter 7). In particular the requirements for the top-security segment can not be identified separately from the medium level.

- The size of the supply of truck parking areas is measured in number of slots. A slot is the average space (including space for manoeuvering) a large truck will occupy at a parking area. The typical size of a slot is 90 m^2 .The size of truck parking areas is not always included in the parking area database. When the data on the size is not included country averages are used, to express the supply in number of slots.
- For a number of small countries only 1 truck parking area is included in the database (Ireland, Slovakia, Luxembourg, Malta). These countries were not included in table 5.1.

According to the figures in the table it appears that the total number of the medium/high security level of parking slots is substantial: 38% of the total number of parking slots. However, a closer inspection reveals that the number of the high/medium secured parking areas is concentrated primarily in Italy, UK, France and a number of Middle and Eastern European countries. Other countries have a low or completely lacking supply of the more secure parking areas. So although the total supply seems to be large there is a marked skewness in the distribution of these parking areas across countries in Europe.

Table 5.1 *Estimates of the number of existing parking slots in different countries based on the database of IRU/ECMT (2002)*

Country	Security level of parking slots		
	High/medium security	**Low security**	**total**
Austria	0	1248	1248
Belgium	250	3948	4198
Czech Rep	1369	0	1369
Denmark	210	168	378
Estonia	250	80	330
Finland	0	730	730
France	5714	15207	20921
Germany	2000	14659	16659
Greece	0	95	95
Hungary	36	3102	3138
Italy	18199	1594	19794
Latvia	739	0	739
Lithuania	300	480	780
Netherlands	30	2200	2230
Poland	596	15168	15764
Portugal	80	0	80
Slovenia	510	0	510
Spain	0	1035	1035
Sweden	0	146	146
UK	9547	8925	18472
Bulgaria	1421	60	1481
Romania	1413	20	1433
Total EU	**42665**	**68864**	**111529**

5.3 The rate of capacity utilisation

The aim is to compare the ***available c***apacity of truck parking areas with the capacity ***required*** for long distance transport. We make this comparison in tables 5.2 and 5.3. In the first table we try to estimate the required capacity for long distance transport in the EU 27 and subsequently we report in table 5.3 the results of the comparison of the available and the required capacity of truck parking slots.

In order to estimate the required capacity we proceed as follows:

- We take the road freight transport demand data of international road haulage in the year 2002 as described in the chapter 3;
- We add to this data the domestic long distance freight demand for those countries in which road freight transport of distances of more than 600km occurs (this domestic long distance transport is of course only for the large European countries relevant. These domestic flows are small compared to the long distance international flows (approximately 5-10%));
- Subsequently the total transport demand is multiplied by a factor of 1.3 in order to base the required capacity calculation on a peek demand situation;
- Transport of category 1 and category 2 type of goods (see chapter 3) is considered to be needing a medium level or high level of parking area security
- We express the demand again in number of slots, where we delete the regional demand where the total size is below the threshold where parking area exploitation is feasible (these thresholds depend on security classes: high and medium security 50 slots, low security 200 slots). We assume in this calculation that a parking slot will not be used for long distance transport rests more than once a day.

It should be recalled at this stage that the estimated demand of parkking areas in chapter 3 did not take regional crime differences into account and was only based on risks related to type of cargo.

Table 5.2 contains the results of the calculation and in table 5.3 we subtract the required capacity of table 5.2 from the available capacity in table 5.1.

We immediately notice that the calculation of the total required capacity over all countries is a little higher than the total available capacity as listed in table 5.1. From table 5.3 we learn that there is an overall deficit of about 15.513 parking area slots, which is not large given the fact that the parking area database may also be incomplete (very likely there are more parking areas not recorded in the database).

It should be remarked that many of the parking areas may not be specialized in long distance transport and probably would have to accommodate a vast demand of domestic road freight transport with short duration stops as well, like stops for lunch or coffee breaks. Although the normal duration of these stops is indeed typically limited to -0.5-1 hours the total number of those stops per day/year may be very high. In addition (often to the annoyance of truck drivers) coaches and mobile homes frequently also occupy the parking spaces.

So given this background, the sufficiency of the capacity for long distance transport does not mean that the supply is sufficient for the actual (total) demand that the parking area managers would like to service. However, we have to remark that because it is assumed that the slots are used for long distance transport only once a day, some spare capacity exists in the estimates to accommodate other types of users[11].

From the table we can conclude that in the year 2002 there does not seem to be much evidence for the fact that the overall (total) supply of parking area capacity is insufficient. However, when the situation in individual countries is examined, one finds countries with an apparent large overcapacity (Poland in particular, UK, other Eastern European countries) as well as countries with an apparent large deficit (Germany, France, Austria, Sweden and Spain).

Notice again that these estimates of shortages and deficits only refer to long distance transport, we do not produce estimates for short stay parking area use. So one should not automatically conclude that, given a low or zero estimate of demand, a country would have no need for secure parking areas at all. It may very well have a need for these, e.g. in (non-long distance) domestic transport..

The ECMT has indicated that some of the country data on shortages may be explained by understimation in the orginal database. In particular it may be conjectured that part of the deficits in Germany and France (and perhaps also Spain) may be explained by incompleteness of the orginal parking area database for these countries. Furthermore, it seems that the "security rating" of a number of Italian parking areas in the database may be too high.

However, there is on the other hand also some independent evidence that deficits in Germany and France exist. E.g. in the same questionnaire among Dutch operators as discussed in 3.2.3.3, Germany and France were identified as countries where a serious parking area capacity shortage exists. Furthermore, the German organisation ADAC has noticed that there are shortages in truck parking areas[12].

[11] Remark that the slots will very often be used for night rests so that during the day the slots may be used. By other types of users.
[12] A check on the current list of German "Autohöfen" (about 140 parking areas) reveals that about 2/3rds of the present parking areas can also be identified in the 2002 IRU/ECMT database, suggesting a maximal error of underestimation in 2002 of about 30%.This error size would be insufficient to explain completely the size of the deficits for Germany.

Table 5.2 *Estimates of the number of required parking slots for long distance transport in different countries in 2002*

Country	Security level of parking slots		
	High/medium security	**Low security**	**total**
Austria	0	2438	2438
Belgium	267	4388	4654
Czech Rep	0	488	488
Denmark	117	1950	2067
Estonia	0	0	0
Finland	0	488	488
France	3088	35100	38188
Germany	3198	31363	34561
Greece	0	488	488
Hungary	0	0	0
Italy	501	18525	19026
Latvia	0	0	0
Lithuania	0	0	0
Netherlands	0	1950	1950
Poland	117	3900	4017
Portugal	0	488	488
Slovenia	0	0	0
Spain	598	11050	11648
Sweden	150	1950	2100
UK	384	4063	4446
Bulgaria	0	0	0
Romania	0	0	0
Total EU	**8418**	**118625**	**127043**

As we already expected the actual total demand for medium and high secure parking areas is much smaller than the available supply of secure parking areas. This overall supply seems to be more than sufficient as well. The main deficits, according to table 5.3, are to be found in the low security parking category and not in the high and medium security category. Again it should be pointed out that because of the possible incompleteness of the database the extent of the deficits may be more modest than calculated here.

Table 5.3 *Estimates of the level of capacity utilization of the supply of truck parking areas. The data in the table lists the overcapacity (positive numbers) or deficits (negative numbers) in the total number of parking areas per country. The data were derived by simply subtracting table 5.2 from table 5.1.*

Country	Security level of parking slots		
	High/medium security	Low security	total
Austria	0	-1190	-1190
Belgium	-17	-440	-456
Czech Rep	1369	-488	882
Denmark	93	-1782	-1689
Estonia	250	80	330
Finland	0	243	243
France	2627	-19893	-17266
Germany	-1198	-16704	-17902
Greece	0	-393	-393
Hungary	36	3102	3138
Italy	17699	-16931	768
Latvia	739	0	739
Lithuania	300	480	780
Netherlands	30	250	280
Poland	479	11268	11747
Portugal	80	-488	-408
Slovenia	510	0	510
Spain	-598	-10015	-10613
Sweden	-150	-1804	-1954
UK	9164	4862	14026
Bulgaria	1421	60	1481
Romania	1413	20	1433
Total EU	**34247**	**-49761**	**-15513**

It should be remarked that the data do not allow us to identify the high and medium security categories separately, so it may very well be (and this is moreover also confirmed by many stakeholders in the market- see for the opinion of the policymakers the next chapter table 6.1) that there is a general shortage in particular of high security parking areas. In addition further regional refinements may reveal other types of shortages (even within countries with an overcapacity). The hot-spot list (table 3.4) suggests that in particular in metropolitan areas there may be problems. This matter will be looked into more in chapter 8.

One should realize that the comparisons were made for the year 2002. It is expected that in particular the situation for many Eastern European countries will be different after the enlargement of the EU. In order to get an impression of the extent of such changes we also list in table 5.4 the impact of the growth in transport on the rate of capacity utilization. Table 5.4 shows an expected tenfold increase of the total deficit. Furthermore, in this situation all countries clearly suffer from severe capacity shortages in the number of truck parking areas. So the number of truck parking areas will have to increase substantially in order to prevent such problems with shortages.

Table 5.4 *Expected changes in the level of capacity utilization of the supply of truck parking areas when demand increases to the 2020 level and assuming the supply will remain at the 2002 level.*

	Total overcapacity 2002	Total overcapacity 2020
Austria	-1190	-7690
Belgium	-456	-3927
Czech Rep	882	-4644
Denmark	-1689	-3847
Estonia	330	-158
Finland	243	-3333
France	-17266	-49604
Germany	-17902	-38429
Greece	-393	-2343
Hungary	3138	-213
Italy	768	-13194
Latvia	739	252
Lithuania	780	-683
Netherlands	280	-3783
Poland	11747	814
Portugal	-408	-3333
Slovenia	510	-51
Spain	-10613	-21715
Sweden	-1954	-5484
UK	14026	-300
Bulgaria	1481	504
Romania	1433	300
Total EU	**-15513**	**-160861**

6 THE INSTITUTIONAL AND POLICY FRAMEWORK OF SECURE PARKING

6.1 Introduction

By means of a questionnaire policymakers in the EU25+2 countries were asked about the present supply of the truck parking areas in their countries and the current processes, institutions and stakeholders involved in creating new truck parking areas. For a selected number of countries the institutional and financial framework and the current political environment was investigated more thoroughly in the form of case studies. The results of the questionnaires and case studies are presented in the form of country reports that are included in a separate accompanying report[13]. In this chapter we will look at the results from a more consolidated point of view and try do draw some general conclusions across the sample.

We have to point to the fact that not all countries responded and that case-studies were not carried out for all countries. However, the responses we received are sufficiently spread across different types of countries and different parts of the EU that we do not think that the conclusions will be invalid than if the sample would have had a higher (or even a 100%) response rate.

6.2 Sufficiency of the number of parking areas and quality of security measures for the present market supply of parking areas

In table 6.1 we indicate the countries (by means of a "√"- sign) that did not agree with the statement that the present supply of truck parking areas (at the TERN or at border regions along the TERN) is sufficient. As is clear form the table: the majority of the policymakers think on the contrary that the present market supply in their own country is insufficient. A number of countries in the middle of Europe and Scandinavia as well as Italy however agree with the statements or at least do not disagree.

In table 6.2 we focus on secured parking areas. In the first column the countries which think that the present number of secured parking areas along the TERN or at borders in their countries is insufficient, are marked in the table.

[13] Final report :Country Studies

In the second column the countries thinking that the security level of the present truck parking areas is inadequate are marked and in the third column countries that even think that the measures taken at present *secure* parking areas my be inadequate are marked.

Table 6.1 *Countries reporting an insufficient number of parking areas along the TERN and or an insufficient number of parking areas along the TERN at border areas*

	Along the TERN	Along TERN at borders
Austria		
Cyprus		
Czech republic	√	√
Denmark		
Estonia	√	√
Finland		
France	√	√
Germany	√	√
Hungary	√	
Italy		
Latvia	√	√
Lithuania	√	
Netherlands	√	√
Poland	√	√
Portugal	√	√
Slovakia	√	√
Slovenia		
Sweden		
UK	√	√

Table 6.2 *Countries reporting an insufficient number of secured parking areas along the TERN or borders and/or an inadequate level of security at existing parking areas*

	Insufficient number of secure parking areas along the TERN at borders	Insecurity of existing parking areas	Inadequate measures at secured parking areas
Austria			
Cyprus			
Czech republic	√	√	√
Denmark			
Estonia	√	√	√
Finland			
France	√	√	
Germany	√	√	
Hungary		√	√
Italy			
Latvia	√	√	√
Lithuania	√		
Netherlands	√	√	√
Poland	√	√	√
Portugal	√		
Slovakia	√	√	
Slovenia	√		
Sweden	√	√	√
UK	√	√	√

It is clear from table 6.2 that in the perception of policymakers in most of the Member States in the sample there are serious problems with the security of truck parking areas, both with the size of the present market supply as well as the quality of the security measures and security levels of the present supply of parking areas.

From the case studies we learn that in a number of countries there are initiatives to improve the security level of existing parking areas or expand the number of secured parking areas, however these initiatives are generally initiatives from private parties, except in Italy where a program exists aiming to expand the number of secure parking areas (which may be a little surprising looking at the answers of the Italian policymakers in tables 6.1 and 6.2). In general the authorities only support these private initiatives indirectly and in providing framework conditions (like in the Netherlands).

Some governments (like in the UK) explicitly state that no money will be made available to improve truck parking facilities; the policy of the Department of Transport is restricted to facilitate private parties and local authorities in the realization of improvements of truck parking areas.

A major problem is that because of the high prices of land, both private investors and the local authorities often see more profitable uses of the land than the exploitation of truck parking areas.

However, initiatives by authorities exist in a.o. Italy and the Netherlands. In Italy there is a program financially supporting the building or improvement of secure truck parking areas. Approximately 20 target regions have been selected where actions could take place. The construction of the secured parking area is subjected to precise rules:

- The parking area should be enclosed by fences and under surveillance both in the entrance and the exit points;
- It should be equipped with lighting installations allowing during night time security and mobility;
- It should be designed in order to ensure sufficient water drainage
- The parking area should offer a prescribed minimum number of slots for certain types of transport (dangerous goods, perishables, long-term rested cionneted to lang ditance transport);
- The parking area should be designed in order to allow the ordinary track maintenance, e.g. equipment for washing vehicles, washing loading units, making small repairs, tire substitutions, etc;
- The parking areas must contain a "service area" in which the following services are required: restaurant, mini-hotel, toilettes, shower, laundry, fax, mailing service, phone boxes. Additional, non-required, provisions are the following: mini market, eco-diesel fuel distribution and emergency assistance.

In the Netherlands there is an interesting initiative from the government and the transport industry stakeholders (shippers and operators) aiming at a number of actions to significantly reduce vehicle crimes. Parking area security is a part of the program, that furthermore includes measurers aiming at improving information on crimes, improving education/ training in security management, improving staff selection in companies, promoting the use of anti-theft devices and tracking and tracing systems. In the Netherlands dedicated truck parking directly along the TERN is virtually non-existent and at odds with the policy to keep parking areas open for all traffic. However private initiatives to build secured parking areas in the neighbourhood of the TERN are supported by the authorities.

The mentioned program aims to realise more of these parking areas in the Netherlands. Main elements are:

- passive security measures: concerning layout of parking areas and trucks themselves.
- active security measures: guarding and patrol, better procedures for drivers and (parking area) operators.
- adequate follow-up after an incident has happened.

In France the insurance industry has recently incorporated explicitly financial incentives in contracts to make use of secures parking areas. Operators risk not to be fully compensated for thefts when they do not comply with the requirements.The use of secured parking areas is only a part of the security requirements imposed: in addition operators have to take a number of security measures like equiping vehicles with anti-theft devices and to comply with anti-theft working procedures. The nature of the requirements depends on type of cargo transported and (when using parking areas) whether or not the stays are of a long or short duration. This intiative of the insurance industry has also resulted in some initiatives in France to build/expand secure truck parking areas. The requirements to be met are a.o. realized by fencing theparking ara (2 meters), 24 hours video camera surveillance units (and/ or surveillance or monitoring by staff), good lighting of the parking area and using entry/exit barriers to the parking area.

It is clear from these examples that a) the type of measurers proposed to directly improve parking area security often are very similar (this will be further dicussed in the next chapter) b) parking area security is only part of the general security problem in road freight transport and measurers aiming to improve the security of parking areas should preferably be embedded in more general programmes.

In the Netherlands there are general (security related) requirements/ recommendations for parking areas along the TERN, but these are not specifically aimed at secured parking. These requirements should apply to all parking areas. Just as in the UK the exploitation and building of secured parking areas is left to private initiatives.This contrasts with the situation in Italy where (in the framework of the above mentioned program) specific requirements are formulated for the parking areas (fencing, lighting, separation of different types of transport etcetera) and the authorities take a more active role. In France the “change-agents” are apparently insurance companies (another private party) which have formulated requirements for the type of parking areas which should be met by operators in order to get full insurance coverage.

Irrespective to whome is formulating requirements which secure parking areas have to meet it appears that the type/ nature of requirements are always very similar. We will have a closer look at such types of requirements in chapter 7.

6.3 Legal and financial framework

The number of and location or size of truck parking areas is in almost all countries in the sample an integral part of infrastructure planning. Only in the UK does this not seem to be the case. However, specific security concerns with regard to truck parking areas do not play a role in the planning process in most countries. Furthermore, it appears from the case studies that for countries indicating that security concerns play a role, these are often restricted to general requirements, or the relationship is indirect (e.g. in location planning of parking areas, where one restricts the choice of the locations to ensure that visibility of the parking areas from the highway is optimal).

According to column 3 of table 6.3 the actual development of truck parking areas is in most countries in the sample planned by both private and public parties. In some countries the development is planned only by public organisations and only in the Netherlands do private parties initiate the development of parking areas. It turns out that in the Netherlands in the planning process land is reserved and allocated for truck parking purposes but that private parties then have to come with their own initiatives.

In table 6.4 the column 1 on land ownership and in particular column 2 on the exploitation of truck parking areas shows a wide divergence between the countries in the sample.

From the case studies it appears that there is a close connection with the infrastructure funding systems that are applied in the countries. In countries with a tolling culture truck parking area exploitation usually is directly outsourced to the highway concessionaires. Such concessionaires may exploit parking areas themselves or otherwise contract the exploitation out to sub-concessionaires. As is clear from the French case study a tolling system may be very beneficial, since the private concessionaires are strongly oriented to the needs of the transport operators. So in France we see a number of practical initiatives from private parties to improve truck parking security. However, as the German case study shows: this is not necessary and will in general depend on the nature of the tolling system. When tolling revenues flow directly into government budgets the direct link between payments for infrastructure related services as truck parking areas is no longer present. The incentive to improve security levels of parking areas will in this case be much weaker. Perhaps this could explain to some why there seem to be much more initiatives in France than in Germany, while both countries have to cope with equally high levels of demand for rest areas of drivers.

However, there are also disadvantages of this model. It may lead, when proper controls are inadequate, to a form of monopoly (when truck parking area exploitation is in the hands of one company) or to a reduction of competition between parking areas in the region of a single concessionaire (e.g. pressures to "harmonize" tariffs).

So an effective control by the authorities to prevent such situations is required. Moreover, as could be seen both from the case study results and the results in chapter 4, the ultimate performance measures of all initiatives are crime rates and these are no better than in countries with road tolling. On the contrary: the indications are that Germany is more secure for truck drivers than France.

Table 6.3 *Countries reporting the planning process of the number, location or size of truck parking areas and what type of party initiates development of parking areas along the TERN*

	Planning is an integral part of infrastructure planning	Security concerns are included in planning decisions	Private (PR), Public (PU) or Mixed private/public parties(M)
Austria	**Yes**	**Yes**	**PU**
Czech republic	**Yes**	**Yes**	**M**
Denmark	**Yes**	**Yes**	**M**
Estonia	**Yes**	**No**	**M**
France	**Yes**	**No**	**M**
Germany	**Yes**	**No**	**M**
Hungary	**Yes**	**No**	**M**
Italy	**Yes**	**Yes**	**M**
Latvia	**Yes**	**Yes**	**M**
Lithuania	**Yes**	**Yes**	**M**
Netherlands	**Yes**	**Yes**	**PR**
Poland	**Yes**	**Yes**	**PU**
Slovakia	**Yes**	**No**	**PU**
Slovenia	**Yes**	**No**	**PU**
Sweden	**Yes**	**Yes**	**M**
UK	**No**	**Not applicable**	**M**

Table 6.4 *Countries reporting landownership and exploitation of truck parking areas along the TERN*

	Landownership of truck parking areas Private (PR), Public (PU) or Mixed private/public parties(M)	Exploitation of truck parking areas by Private (PR), Public (PU) or Mixed private/public parties(M)
Austria	**PU**	**M**
Czech republic	**M**	**PU**
Denmark	**M**	**PR**
Estonia	**M**	**PR**
Finland	**M**	**M**
France	**M**	**M**
Germany	**M**	**PR**
Hungary	**PR**	**PU**
Italy	**Ms**	**M**
Latvia	**M**	**M**
Lithuania	**Ms**	**M**
Netherlands	**M**	**M**
Portugal	**PR**	**PR**
Poland	**M**	**M**
Slovakia	**PU**	**M**
Slovenia	**PU**	**PU**
Sweden	**Ms**	**PR**
UK	**M**	**PR**

It is clear that there are only a few countries in the sample that have included in current legislation security related requirements for the exploitation of truck parking areas (see column 1 in table 6.5). Some countries plan on a change of legislation in this respect, like the Netherlands, Lithuania and the Czech Republic but most countries do not (see column 2).

In many countries in the sample there are examples of collaboration in the field of security between organisations that exploit parking areas (column). In the case studies some examples are described (e.g. in Germany the VEDA organisation is a good example of collaboration between private parking areas that a.o. set standards on security).

In table 6.6 column 1 shows that current parking tariffs in the various sample countries generally are not or only to some extent related to the actual supply and demand conditions in the market. This reflects the fact that the involvement of the authorities in this service provision is still significant.

Apparently tariffs in a number of countries where the market mechanism does not determine the tariff levels are even unrelated to the cost prices of the security facilities (see column 2).

Table 6.5 *Countries reporting legal security related requirements for the exploitation of truck parking area security and collaboration on parking area security between exploiting organisations along the TERN*

	Legal requirements present in current legislation	Extension planned of current legislation	Are there examples of collaboration between organizations?
Austria	**Yes**	**No**	**No**
Czech republic	**No**	**Yes**	**Yes**
Denmark	**No**	**No**	**No**
Estonia	**No**	**No**	**No**
Finland	**No**	**No**	**No**
France	**No**	**No**	**Yes**
Germany	**No**	**No**	**Yes**
Hungary	**No**	**No**	**Yes**
Latvia	**No**	**No**	**Yes**
Lithuania	**Yes**	**Yes**	**Yes**
Netherlands	**No**	**Yes**	**Yes**
Poland	**No**	**No**	**Yes**
Slovakia	**No**	**No**	**No**
Slovenia	**No**	**No**	**No**
Sweden	**No**	**No**	**No**
UK	**No**	**No**	**No**

Table 6.6 *Countries reporting about truck parking tariffs for parking areas parking areas along the TERN*

	Are tariffs determined by supply/demand in the market ?	Are parking tariffs dependent on security facilities ?
Austria	**No**	**No**
Czech republic	**To some extent**	**Yes**
Denmark	**No**	**No**
Estonia	**No**	**No**
Finland	**No**	**No**
France	**To some extent**	**Yes**
Germany	**No**	**Yes**
Hungary	**Yes**	**Yes**
Latvia	**To some extent**	**Yes**
Lithuania	**Yes**	**Yes**
Netherlands	**To some extent Yes**	**Yes**
Poland	**Yes**	**Yes**
Portugal	**To some extent**	**Yes**
Slovakia	**No**	**No**
Slovenia	**To some extent**	**No**
Sweden	**No**	**No**
UK	**To some extent**	**No**

7 CATEGORIES AND COMPONENTS OF SECURE TRUCK PARKING

7.1 Available data/lists of common criteria for parking area security

From the research of available literature and information we learn that in practice many security related criteria and procedures are known and that in some cases also lists of criteria were drawn up and are being used.

Suggestions with regard to security related criteria were amongst others made by: individual transport operators, various organisations of operators (e.g. IRU and Transfigoroute but also national organisations), organisations of shippers and forwarders (e.g. with regard to the high security segment like TAPA), insurance companies and authorities. Furthermore, in some questionnaires that were held in the past in some countries on crime in road freight transport (such questionnaires were found a.o. in the UK, Denmark and the Netherlands) respondents were also asked about measures to improve security.

All these lists and suggestions for improvement of security show a large overlap in the type of measures considered to be relevant, so there seems to be a wide consensus on this between different types of stakeholders. In table 7.1 a more or less systematic overview is given of various improvement measures as suggested by these stakeholders.

We will discuss briefly two examples of lists of security measurers: the list of the IRU/ETF and the TAPA approach to security.

An important list of relevant criteria for parking places, amongst which security is an important component, has recently been drawn up by the social partners at European level (the International Road Transport Union and the European Transport Workers Federation). This list is contained in Annex I of this report. Notice that the list makes a distinction between general/obligatory characteristics and recommended characteristics and that such characteristics can both refer to physical properties of parking areas (e.g. fences), the organisation of security on parking areas (surveillance) as well as communication on incidents (e.g. alarms). However, it is not further specified under what circumstances the recommended characteristics are indeed “required” and how the various types of listed measures should interrelate.

The list seems to be fairly typical and most of the suggestions encountered are open to criticism:

- little attention is paid to the complexity of the road transport market (different types of security needs in different types of market segments and different types of parking areas);
- some lists (however not the list of the IRU/ETF!) do not clearly distinguish between measures of a technical and organisational/management nature;
- in most cases the relationship between criteria and improvement measures has not been clearly worked out, is unknown or even contradictory;
- generally the cost-effectiveness of possible improvement measures is not very clear.

Table 7.1. *Overview of different types of measures to improve parking area security*

Physical
> Entry/exit control
Fence
Physical entry barriers
(automatic) registration incoming and departing vehicles
Driver identification
at point of entry/exit: Weighing of vehicles
> Interaction with other traffic
Exclusive for truck-parking
Exclusive for tanking, restaurants, etc for truck parking drivers
> Control during stay
24-hour camera surveillance
Monitors for drivers when outside secure parking area (e.g. in restaurants)
Optimal lighting of parking slots
Additional lighting high risk cargo
Organisation and communication
> Security management
Security manager
Integration of security management and security management of other facilities
Registration and central administration of (security) incidents
Security plan/protocol and security manual
> Security services
24-hour manned entry/exit control
24-hour camera security surveillance and regular physical surveillance
Options of (remote) checks of availability of parking slots/parking capacity
Options of reservation of parking slots
> Communication with authorities/police
Communication of incidents
Direct alarming of police
Regular surveillance of police
Active participation of (police) authority with security plan of parking area
> Communication with users organisations
Communication of available facilities and organisation
Communication of (security) incidents

The approach of TAPA (see for an example Annex II) to security in transport meets a number of objections. TAPA does not yet have explicit criteria for parking area security but covers many other supply chain components (e.g. also depots/terminals). The TAPA approach to security is an integral supply chain based approach. The lists of criteria are related to the order of security levels (C-B-A) which represent, at each supply chain component increasingly. higher levels of security for e.g. transport suppliers or depots/terminals. So here one has a clear security strategy to which also a certification/auditing procedure is connected, to be carried out by external auditors.

So although the physical characteristics in the TAPA list for depots for example show a clear similarity to lists like those of the IRU/ETWF there is a marked distinction in the organisational embedding of these measures. In TAPA security criteria for specific supply components are conceived and part of a plan, a strategy to improve the security in logistics in the entire supply chain.

TAPA is an entirely commercial initiative of (large) shippers in the electronic equipment industry. Unfortunately the approach of TAPA is currently still rather unique and restricted to (primarily) supply chains of electronic equipment. Generalisation to other supply chains is not straightforward. Furthermore, one may expect that in market segments where the willingness to pay for security is much smaller (willingness to pay for shippers and operators) there will be much less enthusiasm to participate is such security improvement schemes.

So just recommending a generalisation of the TAPA approach to the entire transport market is not feasible. On the other hand one must be aware that the IRU/ETF list seems to be based on a market average approach that will not be satisfactory for those companies that either need much higher parking area security standards or another group of companies that need much lower security standards.

7.2 Effectiveness of measures to improve security

The measures identified are not equally effective or even relevant for all types of crime. In table 2.2. therefore a qualitative assessment is given of the importance of each measure of the comprehensive list of table 7.1. for various types of crime. We distinguish the following categories:

0 : not relevant
X : relevant
XX : relevant and important

Table 7.2. *Overview of different types of measures to improve parking area security*

	Cargo theft	Cargo damage	Casco theft	Casco damage	Property theft drivers	Violence against drivers
Physical properties						
> Entry/exit control						
Fence	X	X	X	X	X	X
Physical entry barriers	X	X	X	X	X	X
(automatic) registration incoming and departing vehicles	XX	0	XX	0	0	0
Driver identification	XX	0	XX	0	0	0
at point of entry/exit: Weighing of vehicles	XX	0	0	0	0	0
> Interaction with other traffic						
Exclusive for truck-parking	X	X	X	X	XX	XX
Exclusive for tanking, restaurants, etc for truck parking drivers	X	X	X	X	XX	XX
> Control during stay						
24-hour camera surveillance	XX	XX	XX	XX	XX	XX
Monitors for drivers when outside secure parking area (e.g. in restaurants)	X	X	X	X	X	0
Optimal lighting of parking slots	XX	XX	XX	XX	XX	XX
Additional lighting high risk cargo	XX	XX	0	0	0	0
Organisation and communication						
> Security management						
Security manager	XX	XX	XX	XX	XX	XX
Integration of security management and security management of other facilities	0	0	0	0	XX	XX
Registration and central administration of (security) incidents	XX	XX	XX	XX	XX	XX
Security plan/protocol and security manual	XX	XX	XX	XX	XX	XX
> Security services						
24-hour manned entry/exit control	XX	X	XX	X	X	X
24-hour camera security surveillance and regular physical surveillance	XX	XX	XX	XX	XX	XX
Options of (remote) checks of availability of parking slots/parking capacity	XX	0	XX	0	0	0
Options of reservation of parking slots	XX	0	X X	0	0	0
> Communication with authorities/police						
Communication of incidents	XX	XX	XX	XX	XX	XX
Direct alarming of police	Xx	XX	XX	XX	XX	XX
Regular surveillance of police	XX	XX	XX	XX	XX	XX
Active participation of (police) authority with security plan of parking area	X	X	X	X	X	X
> Communication with users organisations						
Communication of available facilities and organisation	XX					
Communication of (security) incidents	XX	X	XX	X	XX	XX

It must be remarked that some measures may make others obsolete. For example when there is a watertight entry/exit control of the parking area and it is physically impossible to enter or leave the parking area except by the guarded entry/exits, one does not need anything more to prevent vehicle theft (e.g. camera control during the stay for this purpose would not be required). So these seem to be sufficient measures for this type of crime (of course camera control can still be very useful e.g. for preventing damage to vehicles).

From table 7.2 it appears that some measures are equally important for all types of crimes but that other measures show marked differences in effectiveness for particular types of crimes.

The explanatory factors why there is a variation in the effectiveness of measures are:

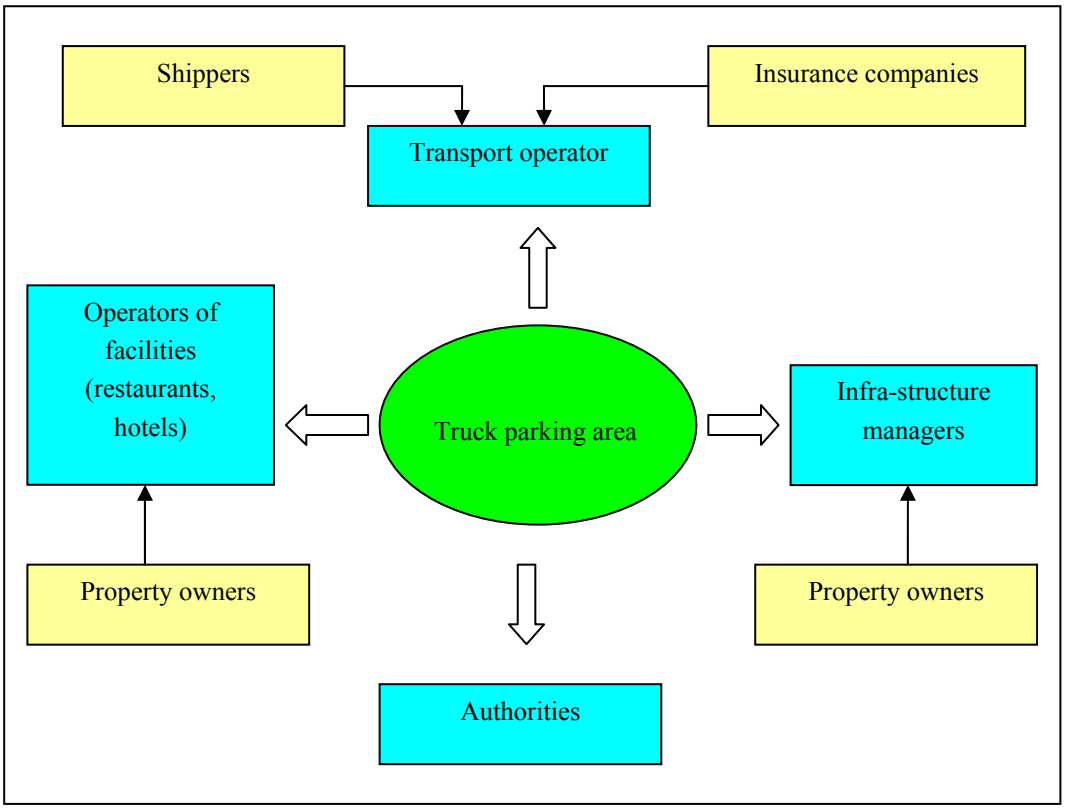
- difference in the nature of the object of the crimes;
- difference in the type of criminality corresponding with the objects of the crimes;
- difference in the value (expected loss) corresponding with the objects of the crimes;
- differences in stakeholders primarily involved/victims of the crimes.

Roughly one could make a distinction between: cargo and vehicle theft on the one hand and the other crime categories mentioned in table 7.2. The first group of crimes generally requires a much higher level of organisation and involvement. In many cases such crimes are committed by what one could call “organised crime groups”; gangs, active in various countries often co-operating with insiders and working with distribution channels for stolen products and or stolen vehicles. It turns out that usually the cargo value on the black market is one of the main triggering factors of this type of crime. Vehicle theft is usually only an indirect consequence: it is just the means to get the cargo. The main victims of these types of crimes are shippers and to a lesser extent operators, insurance companies and drivers. The recovery rate of stolen vehicles is high (in many countries higher than 60%) but the recovery rate of stolen cargo much lower (10-20%). Since shippers are the customers that pay for the transport, their willingness to pay for this type of crime is much higher than for the other types of crime. Finally the economic value/loss of this category of crimes is much higher than the other group of crimes.

The main stakeholders (see figure 7.1 for the various stakeholders involved) and victims of this category of crime are (property of) drivers and operators and indirectly to a lesser extent shippers and insurers. This type of crime generally has a much lower level of organisation and often can just be described as vandalism or petty crime. Of course the cost of human suffering from violence against drivers and theft of properties from drivers can be very serious indeed. Furthermore, a high frequency of this type of crimes at certain parking areas may also seriously disturb transport chains and therefore also have a serious economic impact, although individually the crimes may be small from an economic point of view.

Because of the much more improvised nature of this type of crime the type of criminals committing these criminal acts are much more difficult to pinpoint.

Figure 7.1 *Main stakeholders in truck parking area security*



7.3 Some remarks on lists of common criteria for secure truck parking areas

In this chapter we will present a proposal for common criteria for secure parking areas in the EU. The following remarks will motivate and guide the approach that we will describe in the next sections :

- In our view the list of common European criteria is not simply a set of loose criteria that parking areas will have to meet. According to us the criteria will have to be derived **from a consistent, security improvement strategy or plan**, having different stages corresponding with different levels of security in parking areas. **Criteria lists like the important recent list of the industrial partners at EU-level will have to be incorporated in such a strategy**

- A **staged approach** will be necessary in order to take into account the needs of different market segments in road freight transport (the parking area security level needed for the transport of electronic equipment will not be the same as for the transport of potatoes- and also the parking tariffs that operators are prepared to pay would be very different)

- The criteria corresponding to different security levels will have to be **verifiable in an external certification procedure.** This requires us also to provide clear specifications of what is meant with terms such as "flood light" etcetera and further to clearly distinguish technical issues (e.g. close camera television circuit) from organisational and management issues connected with the techniques (e.g. is CCTV part of a central surveillance system or is it only used to let drivers keep an eye on their vehicles?).

- The periodic certification results could be made public in the form of a **"blue flag" or labelling system.** Notice however that this may be a somewhat misleading comparison and concept since it might suggest that parking areas with a label indicating a "low security level" are somehow inferior and should improve the parking area lay-out or organisation around security We have however pointed out in previous remarks that the parking area may simply target to accommodate another market segment of road freight transport.

- The certification results (the flag) should be made known to truck drivers both directly by road signs in the vicinity of the parking area, but also by generally available information systems (books, internet websites).

- Notice that it is in general even undesirable that all parking areas will meet the highest security level, since this will mean that a large part of the industry will probably have to pay too much for parking and will have to cope with unnecessary procedures. **What is required is simply a sufficient number of parking areas in order to accommodate each type of transport and each type of corresponding security needs**

- Parking area security is influenced by many factors and the group of factors considered in common criteria lists is only a subset of a much larger list[14]. This will make the indicators or labels of "security levels" based **alone on the common list criteria** in parking areas in different parts of Europe difficult to compare and interpret.

[14] In the description of the methodological framework in chapter 2 other groups of influencing factors were discussed

This could for example lead to difficulties in distinguishing between cause and effect. For instance it is well known that 24-hour guarded parking areas **alone** may **not cause parking to be very secure** but may instead itself be **caused by a high level of insecurity in the region!** E.g. as one could see in some border regions with many illegal immigrants. This is a typical case of a cause-effect reversal which frequently occurs when quantities (in this case: security levels) are measured indirectly by related factors.
A solution that may be considered is to distinguish between various types of parking areas (e.g. in regions with high and low criminality) and make them blue-flag system type dependent.

- We would therefore consider including a list of common criteria and a security labelling system as part of (from the first or lowest stage onwards) **the requirement to directly register all security sensitive incidents.** So there will have to be a common form of registration of all criminal acts committed against drivers, vehicles and cargo for every parking area. In addition we would want **a regular, periodic publication of this type of data** to be made available from each parking area to the industry (e.g. via Internet). Only this direct registration of criminality data combined with data on the intensity of traffic and the type of the region where the parking areas are situated will allow a balanced appreciation of the security label. **We recognize that in particular the publication[15] of this kind of data might be controversial for some of the stakeholders (e.g the companies commercially exploiting facilities on parking areas) and therefore could constitute an obstruction on the use of the list.**

- The registration of criminality will also be the best quantity to be used to measure the impact of improvement measures. **So also from the point of view of policy evaluation a registration requirement seems to be desirable.** The registered data on criminal incidents at parking areas should be centralised per Member State and constitute an important building block of a central register on crime statistics, which should contribute to more effective policymaking in this field.

[15] The registration as such should not be a problem, because e.g. also in ISO-quality certification systems "customer complaints" registration is a common feature.

The setting-up of such central registers in the Member States is also a measure advocated by the Ministers of Justice and Home Affairs of the Member States and candidate countries [16].

- Although a list of criteria should be defined independently of considerations with regard to the commercial exploitation of facilities on/around parking areas (e.g. like restaurants or gasoline stations) it is clear that in practice the height of parking tariffs will be a limit. A simple upper bound can be obtained by hourly labour cost levels of drivers: if tariffs for secure parking will surpass the costs of driving with two drivers than parking areas will become indeed very secure because there will be no need for them anymore!

- The criteria list should take into account future developments in the road transport market and potential new possibilities that may arise from these developments (e.g. road-pricing/number plate recognition, driver identification cards (digital tachograph, GALILEO, WIM etcetera)

7.4 Common criteria and proposed typology of parking areas

7.4.1 Variations in security needs

In the remarks in the previous section it was pointed out that the security needs of road freight transport may differ depending (amongst others) on the type of transport and the type of region visited. Furthermore, it was remarked in section 7.3 that one can distinguish two distinct categories of crimes that differ in types of measure, types of criminal organisation, expected loss of victims, willingness to pay and type of victims or stakeholders involved. For both categories we will specify the basic security needs.

[16] See also "The joint declaration by the Ministers of Justice and Home affairs of the Member States of the European Union and the candidate countries in association with the European Commission on the protection of commercial drivers engaged in export trade from becoming victims or organised crime" (Official Journal C 024, 31/01/2003)

Cargo/vehicle theft

The basic dimensions we suggest to consider for specifying security needs for this type of criminality are:

- The value of transported commodities on the black market;
- The level of criminality at parking areas in regions.

As has been noticed: not all commodities are equally interesting for criminals or have the same level of theft-sensitiveness. Certain types of cargo are much more interesting for criminals than others. Compare for instance a load of "flat screen television sets" with a shipment of "rock wool".

This suggests a strong relation between the security level needed and the "resalable value" of the cargo on the black market. Obviously there is a strong relationship between actual value or value density of products and this black market value (BMV). However, one can imagine that a certain unique piece of machinery may have a very high replacement value but a fairly low value on the black market, so this relationship may occasionally not be straightforward.

To be able to cope with this fact, we have introduced the term: "Black Market Value". Typical examples of cargo with a high BMV are tyres of personal cars and consumer electronics.

Secondly, according to the opinions of stake-holders, major differences exist in levels of criminality between regions in Europe. They suggest a strong relation between the level of transport activities and actual crime levels. Many (major) shippers and transport operators maintain a black list of "no-go"-areas and also various organisations have published lists of criminal hot-spot areas. So a "crime-index" as a dimension in specifying the security needs seems to be appropriate. Such a crime-index may be operationally defined e.g. by multiplying the number of crimes in the region with an estimate of the economic value of the crimes (using e.g. "value of life" estimates for violence against drivers). However, because of missing a/o incomplete statistics, index values are difficult to determine in the current situation in the market and thus "hot-spots" and corridors are difficult to identify. In the longer term this problem may be solved by simply requiring the registration of criminal acts at parking areas (see the remarks made on this in the previous section). For the time being this problem can be solved by matching several black-lists, which may be to some extent subjective.

Categories of secure truck parking areas

In table 7.3 an overview is presented that describes various types of parking area security needs. The most heavily secured parking area is needed for cargo with a high BMV (cargo value: more than 10 € per kilogram) in regions with high (parking area related) crime rates (high "crime-

index"). This area is referred to as A1. At the other end of the scale, a truck parking area with only minimal security measures, is already sufficient.

The levels we used to label BMV classes are not completely arbitrary: we have determined these levels by looking at UN statistics from 2004 on transport value density per type of commodity. However, one could also alternatively simply specify per commodity type whether or not it belongs to a high/medium/low BMV segment. Of course in this instance one will need a detailed, refined commodity type system.

Although in theory a total of nine different "BMV- crime-index" secure parking areas could be distinguished, it is suggested in table 7.3, to use "traffic light" colours to combine several sets because the security needs may be similar:

- A1
- A2+B1
- A3+B2+C1
- B3+C2
- C3

Table 7.3 *Categorisation of the security needs for truck parking areas: cargo/vehicle theft*

Black market value	Crime-index region		
	A: high	B: medium	C: low
1: High (> 10€/kg)	A1	B1	C1
2: Medium (3-10€/kg)	A2	B2	C2
3: Low (<= 3€/kg)	A3	B3	C3

For each of these five groups we propose certain criteria. Using the comprehensive list of criteria that was also used we indicated by crosses in table 7.3 which properties we require for the five different security levels. Roughly this results in the following characterisation:

- A1: fenced high security parking area; 24-hour surveillance
- A2+B1: fenced; dedicated truck area with 24-hour entry/exit registration
- A3+B2+C1: fenced; dedicated truck parking area with some surveillance
- B3+C2: fenced; dedicated truck parking area with only elementary security measures

- C3: non-dedicated truck parking area with only elementary security measures; sufficient number of parking slots

Other types of crimes

The basic dimensions we suggest to consider for specifying security needs for this type of criminality are:

- The level of traffic density of the highway activity in the area;
- The level of criminality on parking areas in regions.

This category is more difficult to pinpoint so we think it will be sufficient to only distinguish two levels ("high" and "low" for both traffic density on the highway and the level of criminality in regions). The second dimension considered is the same dimension as previously discussed for cargo/vehicle theft. This type of criminality is generally not planned and depends on incidental contacts, so we therefore have chosen traffic density as the relevant variable.

Table 7.4 *Categories of secure measures concerning cargo/vehicle theft*

	security class				
Physical	**A1**	**A2+B1**	**A3+B2+C1**	**B3+C2**	**C3**
> Entry/exit control					
Fence	x	x	X	x	
Physical entry barriers	x	x	X	x	x
(automatic) registration incoming and departing vehicles	x	x			
Driver identification	x				
at point of entry/exit: Weighing of vehicles	x				
> Interaction with other traffic					
Exclusive for truck-parking	x	x	X	x	
Exclusive for tanking, restaurants, etc. for truck parking drivers	x	x	X		
> Control during stay					
24-hour camera surveillance	x	x	X		
Monitors for drivers when outside secure parking area (e.g. in restaurants)	x				
Optimal lighting of parking slots	x	x	X	x	x
Additional lighting high risk cargo	x				

Organisation and communication	**A1**	**A2+B1**	**A3+B2+C1**	**B3+C2**	**C3**
> Security management					
Security manager	x	X	X	x	x
Integration of security management and security management of other facilities	x	X	X		
Registration and central administration of (security) incidents	x	X	X	x	x
Security plan/protocol and security manual	x	X	X		
> Security services					
24-hour manned entry/entry control	x	X			
24-hour camera security surveillance and regular physical surveillance	x				
Options of (remote) checks of availability of parking slots/parking capacity	x				
Options of reservation of parking slots	x				
> Communication with authorities/police					
Communication of incidents	x	X	X	x	x
Direct alarming of police	x	X			
Regular surveillance of police	x	X	X	x	x
Active participation of (police) authority with security plan of parking area	x	X			
> Communication with users organisations					
Communication of available facilities and organisation	x	X	x	x	
Communication of (security) incidents	x	X	x	x	

Categories of secure parking areas

In table 7.5 we list the security needs. We again group some cells in the table corresponding with the colouring.

Table 7.5.3 *Categorisation of security needs of truck parking areas: other types of crimes*

	Crime-index region	
	High	Low
High level of traffic density on the highway	HH	HL
Low level of traffic density on the highway	LH	LL

Similarly we specify measures for each type of security level needed.

Table 7.6 *Categories of secure measures concerning violence against drivers*

Physical	**HH**	**HL+LH**	**LL**
> Entry/exit control			
Exclusive for truck-parking	X	X	
Physical entry barriers	X		
Driver identification	X		
> Control during stay			
24-hour camera surveillance	X	X	
Monitors for drivers when outside secure parking area (e.g. in restaurants)	X		
Optimal lighting of parking slots	X	X	X
Additional lighting high risk cargo	X		

Organisation and communication	**HH**	**HL+LH**	**LL**
Communication of incidents	X	X	
Direct alarming of police	X	X	
Regular surveillance of police	X	X	X

Security measures
The main features of the (additional) security measures are per category (see also table 7.6):

- Category LL

o Optimal lighting
o Sufficient number of (free) parking slots

- Category HL+LH:

o Dedicated truck parking area.
o Automatic registration of incoming and departing vehicles
o 24-hours camera surveillance
o Direct communication with authorities

- Category HH (high economic activity; high crime-index):

o Dedicated (fenced) truck parking area.
o Physical entry barriers.
o Driver identification.
o 24-hours surveillance
o Direct communication with authorities

Notice that the colours per type of security level for the cargo/theft category (table 7.6) correspond with those in table 7.4. The range of measures in table 7.6 is a subset of the group in table 7.4 so we do not need to consider new parking area types: the categories distinguished in table 7.4 for cargo/vehicle theft are sufficient enough to also take into account the specific security needs of the other categories of crimes.

However, working with 5 security classes seems for practical purposes somewhat too refined. Therefore we propose for the purpose of simplification to condense the five security classes into three security categories of truck parking areas by combining the yellow and orange coloured classes. In this way we get :

- ***Category 1: High BMW, high crime-rates (comparable with security class A1)***
- ***Category 2: Medium BMV and medium crime-rates (A2, A3, B2, B3, C1, C2)***
- ***Category 3: Low BMV, low crime rates (comparable with security class C3)***

This categorisation was also used in chapter 3 to derive the market demand indications in the EU.

7.4.2 Practical applications

For short term, practical applications one should choose another aproach that the one outlined in the previous subsection. For example in stead of objective crime rate data, combined with the "Black Market Value", one may use for categorisation purposes the concept of "hot-spots", which could be made operational e.g. by operator or industry organisation information .

Possible components that may be recommended in order to ensure a high level of security are listed in table 7.7 for parking areas located in hot spots (red colour) and non hot spots (green colour).

Table 7.7. *Possible physical and organisational measures that can be considered*

Physical	**Hot spot**	**Non Hot spot**
> Entry/exit control		
Fence	x	
Physical entry barriers	x	x
(automatic) registration incoming and departing vehicles	x	
Driver identification	x	
at point of entry/exit: Weighing of vehicles	x	
> Interaction with other traffic		
Exclusive for truck-parking	x	
Exclusive for tanking, restaurants, etc. for truck parking drivers	x	
> Control during stay		
24-hour camera surveillance	x	
Monitors for drivers when outside secure parking area (e.g. in restaurants)	x	
Optimal lighting of parking slots	x	x
Additional lighting high risk cargo	x	
Organisation and communication		
> Security management		
Security manager	x	x
Integration of security management and security management of other facilities	x	
Registration and central administration of (security) incidents	x	x
Security plan/protocol and security manual	x	
> Security services		
24-hour manned entry/entry control	x	
24-hour camera security surveillance and regular physical surveillance	x	
Options of (remote) checks of availability of parking slots/parking capacity	x	
Options of reservation of parking slots	x	
> Communication with authorities/police		
Communication of incidents	x	x
Direct alarming of police	x	
Regular surveillance of police	x	x
Active participation of (police) authority with security plan of parking area	x	
> Communication with users organisations		
Communication of available facilities and organisation	x	
Communication of (security) incidents	x	

7.5 Some remarks on the technical implementation of the criteria

- *Entry/exit control*

For vehicle theft the relevant checks are on identity of the driver and vehicle at entry and exits. So at the exit a comparison must be made with the entry data. This could be an automatic check: a number plate recognition system may be used for vehicles (this could be an automatic interface to electronic toll systems in some countries e.g. toll systems relying on number plate recognition). For identification of drivers one could use specific driver cards or (also the driver card of the digital tachograph could be used) or else other common identification documents such as driver licences or passes.

Weighing of vehicles is again only relevant when comparing exit/entry data. Of course this can also be realised automatically.

In addition to entry barriers one could also use ditches around parking areas or anti-ram hills as protection against illegal access.

- *Interaction with other traffic*

Separated or dedicated truck parking: not only separated from private cars but also from mobile homes and coaches. Furthermore, it is recommended always to use separate areas for trucks with hazardous goods etcetera.

- *Control during stay*

Surveillance cameras should also cover/be able to make images of the entry/exit points of the parking area

The lighting of parking places should of course be sufficient to allow the CCTV-systems to make clear images.

Images of cameras should be stored for a period of 1 week.

- *Security management*

There should always be a security manager at the parking area who organises and supervises all security matters and who is also responsible for reporting security related incidents to police and users of the parking areas. These managers should at least be able to communicate in English and should have had personal training.

For incident registration preferably a common format should be used: time/date/location/parties involved and type of incident should be registered. For an example of a format for incident registration: see TAPA document on incidents registration.

The security plan/protocol of the parking area (if present) ought to be written down formally.

- *Security services*

There should be regular internal checks on installations, equipment and procedures.

On distance reservation/checking of parking space capacity should be available in principal for every operator (e.g. reservation via the Internet). However, sender verification should be applied.

- *Communication with the authorities/police*

Direct communication lines to the police should be available.

- *Communication with organisations of users*

(Changes) in the security level/measures implemented at a particular parking area should be communicated to the industry.

Parking area security managers should periodically publish a summary of the number, type and time of security related incidents and make these data available from each parking area to the industry (e.g. via Internet).

7.6 Certification of security measures

In a "blue flag" system parking areas should be periodically audited in order to independently assess the security level. In the proposed system with the five levels of security at parking areas (corresponding to the traffic light colours) the following parties may be good candidates to organise the auditing:

- The police;
- User organisations;
- Professional verification institutes;
- Insurance companies.

At first sight the police seems to be the most appropriate candidate. The police is of course the best security expert of these candidates, present in all regions in the EU25+2 and will moreover benefit as an organisation from the improvement in parking areas.

Raising standards of security at parking areas and improving communication with parking area security personnel helps the police to do their job better. So the police should be highly motivated to do the auditing. However, various parties we spoke to complained about the level of international co-operation between Member State police organisations and expressed doubts on whether or not the auditing could efficiently be organised by the police.

The second best candidates are user organisations. They are highly motivated to do the auditing (as a matter of fact an organisation as the IRU, in co-operation with ECMT, already publishes on parking area security) because their members will directly benefit form this work. Furthermore, user organisations will automatically take care of the communication of the results to the operators and drivers in the field. However, a disadvantage is that generally these organisations do not employ security experts.

Professional verification institutes are the third candidate. They employ security experts who are perfectly capable of doing the job (e.g. TAPA works with professional certification institutes) However, it is likely that since they are not direct beneficiaries of the results of the work (like the police and like user organisations) the auditing will be much more costly than auditing by the other candidates.

8 THE COSTS OF SECURE PARKING

8.1 Introduction

In section 8.2 we will examine the willingness to pay for operators for secure parking areas. We will first make some methodological remarks on this issue and then present some estimates of the willingness to pay. Subsequently in section 8.3 we will have a look at the costs of secure truck parking areas. This will be done initially based on a full cost model of the use of truck parking areas. In order to examine impacts in different regions (urban/non-urban) it will be required that we should also take different full cost basic situations into account e.g. depending on different land prices in regions.

In section 8.4 we will compare and confront the results on parking tariffs and willingness to pay (as derived in sections 8.3 and 8.2) and draw some conclusions. In this section we will also present an estimate of the size of the total costs for TERN truck parking area improvements.

8.2 The willingness to pay for secure parking

8.2.1 Methods to determine willingness to pay for parking at rest areas during road freight transport

In general there are two types of methods that can be used to determine the willingness to pay in a certain situation of economic agents: stated or revealed preference methods.

The difference between the methods is that the first method relies on direct questioning of the agents while the second method examines observed behaviour and tries to infer the willingness to pay from this behaviour. Each method has its advantages and disadvantages. Stated preference methods are simple but are likely to under- or overestimate the willingness to pay in situations where the agents might have an interest to misreport or simply lack the information (or imagination) to represent the situation in which they are asked about their willingness to pay. Revealed preference methods do not have this problem since they are based on the analysis of actual behaviour, but these methods generally are more difficult to carry out, in particular when the willingness to pay can only be derived from indirect, roundabout ways. Unfortunately there are many examples in research literature where the results of applying two methods simultaneously are very different. However, there is a general consensus that if revealed preference methods can be applied, they should be chosen.

8.2.2 The choice to park

The choice whether or not to park at a certain (secured) parking rest area for trucks will be dependent on the parking tariff and a certain number of available alternatives for parking at this rest area. These alternatives in general are:

- To park at a (secured) parking rest area for trucks elsewhere (which may involve a choice of another route)
- To park elsewhere but not at (secured) parking rest areas for trucks
- Not to park at all but to drive with an additional driver (this option applies when the duration of continued driving (driving without long rest periods) is not too long)
- Not to park at all but to change drivers during the transport;
- Not to park at all but and knowingly risk a fine because one breaks the rules on required resting times.

It turns out that all these alternatives in the road freight transport industry are chosen in practice by operators and/or drivers to a greater or lesser extent. So they are not merely theoretical options. Although in specific situations one or the other alternative may be unlikely since one has to acknowledge that situations in which none of the alternatives are available are difficult to imagine.

This means that the choice of whether or not to park (assuming rational decision making agents) involves comparisons of the costs of parking and the costs of all available other alternatives, also incorporating all the risks connected with these alternatives (e.g. the reduced safety of parking clandestine or risks of fines if one chooses not to park). More in particular rational agents will only choose the option with the lowest cost. Furthermore, it is reasonable to argue that the willingness to pay for parking in practice can not be larger than the minimum of the cost of available alternatives. The only reason to suppose that the willingness to pay actually could be much larger is that there should be large "hidden" market external benefits of parking. "External" means in this connection: not included/reflected in the market mechanism. It is difficult to imagine in the purely commercial environment in which road freight transport currently operates what these benefits could be.

8.2.3 Quantification: revealed and stated preference

This practically means that we could derive an upper bound for the willingness to pay if we could determine the costs of one of the alternatives. So one may call this a revealed preference approach.

The costs of the various alternatives are in practice more or less difficult to determine but that the cost of alternative 3) (driving with a double manned truck) can be approximated.
In certain transport sub-markets it is common to have two drivers (double manned) in turn one is driving the truck while the other is taking his mandatory rest. This strategy increases the total trip distance to be travelled without to stop (by the way: this is not a simple "doubling" of the distance, but at best a 75% increase), because the rules (Regulation 561/2006) do not allow for the daily rest taken in a vehicle in movement, so at best a second driver could increase the distance travelled by 75% but not 100% (based on a five-day period)).

In practice this may result in a sharp drop in the demand for (secure) truck parking areas by (possibly more than) 50% because of the fact that within a single trip distance of about 1050kms large parts of the destinations are within reach. However, manning trucks with two drivers is costly because both drivers have to be paid. As driver costs count for about one third of the total costs for the transport operator, the total costs of double manned trucks will increase by about 30%.

As driver costs per hour typically range between 22-25 Euro per hour for Western European drivers, one may conclude that the upper limit of the tariffs at highly secure truck parking areas is about the driver costs per hour for the second drivers, e.g. about 23 Euro per hour. However, drivers' salaries in Eastern Europe are (still) on a much lower level. Indications can be derived from the literature[17]. The costs per hour of drivers across different states is however strongly divergent in the E27: this range is 2 or 3 - 25 Euro). One should however be closer to the minimum of this range than the maximum, on the long distance international transport market (and not on domestic markets) labour mobility is much higher than on domestic markets and consequentially low costs are dominant in the market. Of course, working with such drivers may be easier said than done. It gives an upper limit for the tariff that transport operators are willing to pay at secure truck parking areas.

The actual willingness to pay will therefore be lower than say 4/5 Euro per/hr. We see that currently parking tariffs for different types of truck parking areas in the EU range from 0-3 Euro per/hr. Many parking areas do not charge anything but there are a few public secured parking areas with tariffs in the range of 2/3 Euro. So this tariff range seems to be consistent with the upper bound of 5 Euro.
The actual willingness to pay for parking generally will depend on the underlying risk factors (value on the black market of cargo, crime rates in regions).

[17]Source: "Cost comparison and cost developments in the European road haulage sector"; NEA, 2006. The hourly tariffs are not simply "for hire tariffs" but normal hourly driver costs.

The willingness to pay for parking will also vary with risk reducing factors like driving special routes and investments in security systems and risk shifting possibilities like insurance premiums. The actual willingness to pay for parking will be inversely related to the latter payments: one is prepared to pay higher parking tariffs if insurance costs will be lower or one will not have to drive special routes or the investments in security systems can be lower.

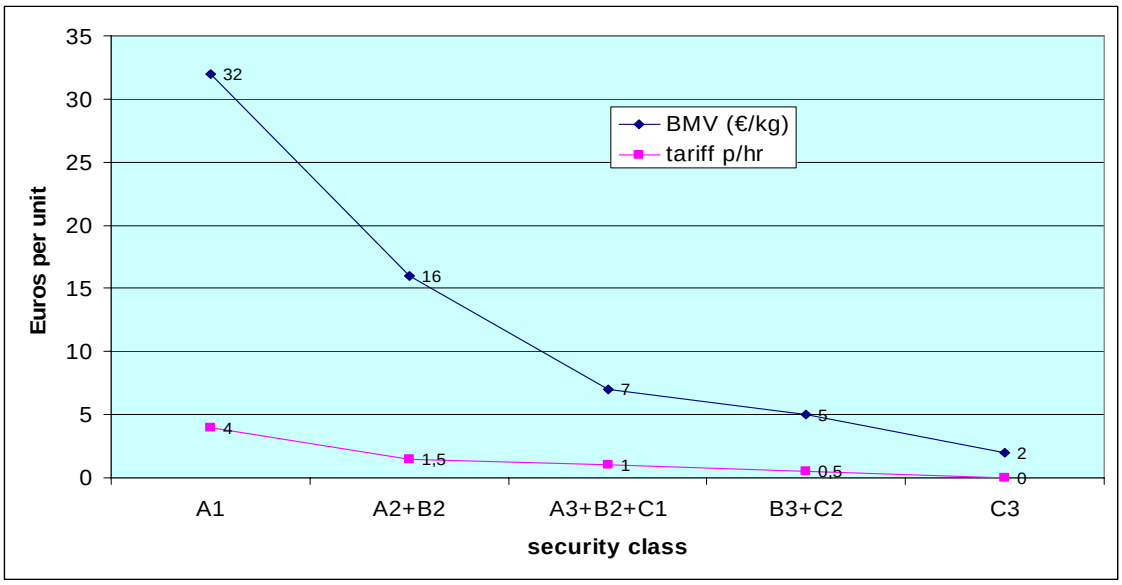
We also asked various experts (organizations, operators, forwarders but also parking area investors) about the height of the willingness to pay in the current market for truck parking tariffs(notice that this is a stated preference approach).

As stated there exists a strong relationship between the value (or better the black market value (BMV)) of cargo and the maximum tariff that the transport operator is willing to pay for a stay. However, from interviews conducted with operators and other stakeholders in the market it became apparent that *it is generally not the transport operator* who decides the security level of the truck parking area to be parked at *but the shipper*.

The transport operator will park at a secure parking area as long as the shipper is willing to pay the parking tariff. In some segments it is even the shipper who dictates the transport operator to park at (highly) secure truck parking areas and by doing this also dictates the security measures necessary.

Based on figures collected in the market we have drawn in figure 8.1 both the willingness to pay as well as the BMV corresponding with the 5 security levels as distinguished in table 7.3. As can be concluded from figure 8.1 the transport operator (i.e. the shippers) is willing to pay a tariff of maximum 4 Euro p/hr in case of cargo with a high BMV and travelling in a region with a high crime rate. At the other end, when transporting a cargo with a BMV of 2 Euro p/kg or less in a secure area, the transport operator is not willing to pay at all.

Figure 8.1 *Willingness to pay*



So in the "worst case" (high valued goods, high crime rate) the investments would be 4 Euro for the highest security truck parking (in which estimate we also include changes in expenditures related to security –own investments in systems etcetera). However, for most other types of goods one is not prepared to pay more than 1,5 Euro per/hr and many operators that transport low value cargo will not pay anything at all.

So this stated preference approach leads in this case to more or less similar estimates of the (bounds of) willingness to pay for truck parking in the current market as the revealed preference approach.

8.3 The costs of secure truck parking

8.3.1 Some remarks on funding alternatives

Different assumptions can be made on the funding of costs for secure parking. One may simply apply the full "user pays principle". In other words: proposals to improve security should be fully financially self sustainable. Alternatively it may be assumed that forms of public funding of (secured) parking areas should be taken into consideration.

This point of view could perhaps be justified by the argument that security can be considered as a basic collective which governments should offer to all inhabitants and the supply of which should not be left to market parties. It seems that at least some parts of European legislation (e.g. Eurovignette-Directive) do not exclude the possibility that revenues from infrastructure may be allocated to improve security of parking areas although there is also to date no formal obligation to do this.

As has been indicated at the start of this chapter we will look at various funding alternatives that may reflect the situation in different regions. Furthermore, in order to examine impacts in different regions (urban/non-urban) it will be required that we should also take different full cost basic situations into account e.g. depending on different land prices in regions.

8.3.2 Forms of alternative funding

Subsidizing truck parking only has an impact if it lowers the tariffs for the potential user of the parking area. One of the ways in which this could be easily implemented is when the authorities (which frequently are the landowners of the land along the TERN) will make the land freely (or to special/low prices) available for companies that would like to build or exploit parking areas. Especially in metropolitan areas land prices will be comparatively high and are a major component of the cost of parking. The result will be that the costs of (secured) parking for potential users are substantially lower and that (ceteris paribus) the use of such parking areas will be higher. The increased demand may lead to a significant increase of the number of (secured) parking areas especially in those regions which moreover, it should be remembered, frequently occur on blacklists of operators. One may expect that the overall level of security of transport will improve, because in addition to the increased use of secured parking itself it will also have positive effects on levels of insecure and/or illegal parking elsewhere and perhaps even on the level of compliance with the legally required rest times.

8.3.3 The basic full cost model

In table 8.1 we list some indications of construction costs of secured parking areas of different sizes and assuming different price levels of the land. We distinguish between the one-time investment costs and the annual variable costs. The cost indication data were supplied by different companies that are active in Western Europe in parking area construction and exploitation.

Table 8.1 *Indications of costs of constructing parking areas of different types, different sizes and different levels of land use costs*

	Guarded 1000 pl 10 € m²	**Guarded 1000 pl 150 € m²**	**Guarded 100 pl 10 € m²**	**Guarded 100 pl 150 € m²**	**Guarded on distance 100 pl 10 € m²**	**Guarded on distance 100 pl 150€ m²**
One-time Investment costs	€ 11 mln	€ 46 mln	€ 1.6 mln	€ 5.1 mln	€ 1.5 mln	€ 5 mln
Annual variable costs	€ 2.8 mln	€ 4.9 mln	€ 0.5 mln	€ 0.7 mln	€ 0.4 mln	€ 0.6 mln

In tables 8.2 and 8.3 we include relative shares of different cost components in the costs as listed in table 8.1. Notice in particular in these tables that the relative shares of costs of the buying of land increases sharply in the overall costs when land prices increase (despite a decrease in the size of the site) but also in the variable costs. We calculate with only the interest of investments in the buying of land when these are variable costs (there is no depreciation on the land).

Table 8.4 lists for various assumptions the calculated required (full costs) tariffs per hour (assuming 20% profit rate) by the rate of occupancy of the parking area
It is clear from table 8.4 that land use costs and the size of the parking area are important variables that affect the height of the tariffs.

Table 8.2 *Relative share of different cost components for parking area construction for a parking area of 1000 places and land price 10 Euro m²*

one-time investments	
Buying of Land	22,73%
Land improvement measures	56,82%
Fences	1,04%
Ditch with water surrounding pai	0,18%
Gates, barriers, weight bridge	4,09%
Lighting	1,09%
Camerasystem	0,55%
Building gatekeepers	1,36%
Kitchen and sanitation	2,73%
fire installation	2,73%
Total	6,69%
	100,00%
annual variable costs	
Interest	23,43%
depreciation(excl land)	30,18%
maintenance	15,98%
Costs staff	15,98%
Cleaning staff	9,94%
fee franchise holder fix part	3,55%
soft/hardware registration/entry t	0,71%
Total	0,24%
	100,00%

Table 8.3 *Relative share of different cost components for parking area construction for a parking area of 100 places and land price 150 Euro m^2*

one-time investment costs	
Buying of Land	73,21%
Land improvement measures	12,20%
Fences	0,22%
Ditch with water surrounding parl	0,04%
Gates, barriers, weight bridge	4,39%
Lighting	0,78%
Camerasystem	0,39%
Building gatekeepers	1,46%
Kitchen and sanitation	2,93%
fire installation	2,93%
Total	1,44%
	100,00%
annual variable costs	
Interest	46,41%
depreciation(excl land)	20,72%
maintenance	6,80%
Costs staff	13,59%
Cleaning staff	8,46%
fee franchise holder fix part	1,51%
soft/hardware registration/entry ti	1,51%
Total	1,01%
	100,00%

Table 8.4 *Hourly tariffs for the use of parking places for different types. different sizes and different levels of land use costs*

	Guarded 1000 pl 10 € m^2	**Guarded 1000 pl 150 € m^2**	**Guarded 100 pl 10 € m^2**	**Guarded 100 pl 150 € m^2**	**Guarded on distance 100 pl 10 € m^2**	**Guarded on distance 100 pl 150€ m^2**
50 % occupancy	€ 1.71	€ 2.98	€ 2.74	€ 4.02	€ 2.12	€ 3.40
65 % occupancy	€ 1.25	€ 2.18	€ 2.01	€ 2.94	€ 1.56	€ 2.49
80% occupancy	€ 1.02	€ 1.77	€ 1.63	€ 2.39	€ 1.26	€ 2.02

8.3.4 Impacts of subsidization on parking tariffs

As has been discussed in subsection 8.3.2 we will also look at the impacts on tariffs of alternative funding possibilities (non 100% full cost models) for the costs of secured parking. In this subsection it was also indicated that the land use costs are perhaps a good candidate for (partial) subsidization.

Therefore we also calculated tariff tables for the cases of 50% and 100% subsidization of the land use cost (see tables 8.5 and 8.6). In the case of 100% subsidization costs the differences in the tariffs disappear between the variants that only distinguish between these costs. It appears that the tariffs are strongly affected when land use costs are high like in metropolitan areas.

Table 8.5 *Hourly tariffs for the use of parking places for different types, different sizes and different levels of land use costs with 50% subsidy on the costs of land use.*

	Guarded 1000 pl 10 € m²	**Guarded 1000 pl 150 € m²**	**Guarded 100 pl 10 € m²**	**Guarded 100 pl 150 € m²**	**Guarded on distance 100 pl 10 € m²**	**Guarded on distance 100 pl 150€ m²**
50 % occupancy	€ 1.66	€ 2.30	€ 2.70	€ 3.33	€ 2.08	€ 2.71
65 % occupancy	€ 1.22	€ 1.68	€ 1.98	€ 2.44	€ 1.56	€ 1.99
80% occupancy	€ 0.99	€ 1.37	€ 1.61	€ 1.98	€ 1.24	€ 1.62

Table 8.6 *Hourly tariffs for the use of parking places for different types, different sizes and different levels of land use costs*

	Guarded 1000 pl 10 € m²	**Guarded 1000 pl 150 € m²**	**Guarded 100 pl 10 € m²**	**Guarded 100 pl 150 € m²**	**Guarded on distance 100 pl 10 € m²**	**Guarded on distance 100 pl 150€ m²**
50 % occupancy	€ 1.62	€ 1.62	€ 2.65	€ 2.65	€ 2.03	€ 2.03
65 % occupancy	€ 1.18	€ 1.18	€ 1.94	€ 1.94	€ 1.49	€ 1.49
80% occupancy	€ 0.96	€ 0.96	€ 1.58	€ 1.58	€ 1.21	€ 1.21

Because the previous tables were based on Western European cost figures we also calculated tariff tables for two Eastern European situations : “Eastern Europe “high” and “Eastern Europe low” where we corrected for price and cost differences (of other costs than costs of land use) taking respectively high and low Eastern European price indices. We only do this for the full cost situation and the results of this analysis are contained in tables 8.7 and 8.8.

Table 8.7 *Hourly tariffs for the use of parking places for different types, different sizes and different levels of land use costs: "Eastern Europe high"*

	Guarded 1000 pl 10 € m²	**Guarded 1000 pl 150 € m²**	**Guarded 100 pl 10 € m²**	**Guarded 100 pl 150 € m²**	**Guarded on distance 100 pl 10 € m²**	**Guarded on distance 100 pl 150€ m²**
50 % occupancy	€ 1.28	€ 2.23	€ 2.05	€ 3.00	€ 1.59	€ 2.54
65 % occupancy	€ 0.93	€ 1.63	€ 1.50	€ 2.24	€ 1.16	€ 1.86
80% occupancy	€ 0.76	€ 1.33	€ 1.22	€ 1.79	€ 0.94	€ 1.51

Table 8.8 *Hourly tariffs for the use of parking places for different types, different sizes and different levels of land use costs:" Eastern Europe low"*

	Guarded 1000 pl 10 € m²	**Guarded 1000 pl 150 € m²**	**Guarded 100 pl 10 € m²**	**Guarded 100 pl 150 € m²**	**Guarded on distance 100 pl 150 € m²**	**Guarded on distance 100 pl 150€ m²**
50 % occupancy	€ 0.76	€ 1.33	€ 1.22	€ 1.78	€ 0.94	€ 1.51
65 % occupancy	€ 0.56	€ 0.97	€ 0.89	€ 1.31	€ 0.69	€ 1.11
80% occupancy	€ 0.45	€ 0.79	€ 0.73	€ 1.069	€ 0.56	€ 0.90

8.4 Confronting supply and demand for parking areas

Looking at the figures in table 8.4 and comparing these with the indications of the size of the willingness to pay in section 8.2 it is clear that the parking tariffs in particular in the case of Western European metropolitan areas (with high prices of land use) are very close to and in some cases even above the maximum boundary of the willingness to pay of operators.
A profitable exploitation of secured parking areas within a full cost model seems to be difficult to realize since there is primarily a need for small and medium sized secured parking areas of the highest a security class. Notice that due to scale effects the tariffs for smaller sized parking areas are higher.

So it seems that forms of subsidization (see tables 8.5 and 8.6) may significantly help to increase the number of secured parking areas that can be run profitably in those regions where, according to the hot-spot lists from operators and shippers, many security problems exist.

In contrast such forms of support of secured parking are not very helpful in rural areas, except in Eastern Europe where on the whole range the parking tariffs are much lower and where even within a full cost model secured parking can be realised much easier than in Western Europe (see tables 8.7 and 8.8 and compare for instance with figure 8.1 with willingness to pay limits).

But how large are the total costs of improving the situation for the entire TERN? Using the exploitation cost estimates that we presented in this chapter in section 8.3 and the data from table 5.3 which lists the size of overcapacity/deficits in the supply of parking areas, we estimate that one would need about 1.2-1.5 billion Euro to eliminate all deficits[18]. Although this applies to the situation in 2002 (for which data on the supply of truck parking areas are available) the present situation is not believed to require much more or much less investment efforts.

Furthermore, it is more likely that the 1.2-1.5 billion Euro is a maximum amount of money, since one should remember that the actual truck parking area supply may be higher than was assumed in chapter 5[19].

[18] Per parking area slot the average investment costs in Western Europe will vary between € 33700 -€ 26700
[19] If the IRU/ECMT list should be incomplete.

9 POLICY RECOMMENDATIONS

In this chapter the policy recommendations of the project, ***"Study on the feasibility of organising a network of secured parking areas for road transport operators on the Trans European Road Network***", will be presented. Again it should be remembered that the study is specifically concerned with crimes and criminal incidents in and around truck parking areas along the Trans European Road Network. So, only a part of the total number of crimes and criminal incidents in the road freight transport industry has been studied. ***As a matter of fact various sources indicate that in international transport only about 40% of attacks occur at parking areas***. Other locations where attacks could take place are: (private) parking areas or loading/ unloading docks of transport companies, (private) parking areas of customers, during driving (hold-ups) or sometimes even at the home address of drivers.

Supply and demand of truck parking areas

1. In considering the demand for truck parking areas, policymakers should clearly distinguish between different types of demand. Firstly, the demand for the use of truck parking areas because of short stays should be distinguished from the demand for long stays. The demand for long rests is in particular generated by long distance domestic transport and by international transport. In addition, there is also a demand for short stays primarily occurring in short distance transport. The types of demand are to a large extent uncoupled (rests in long distance transport in particularly occurring at night and for short distance transport during the day time). So, parking area capacity requirements for both types of parking area use should not be added but can to a large extent be shared.

2. Secondly, one should clearly distinguish different levels of security needs at parking areas. Moreover, these security needs are not fixed but dependent on situations. The main determinants of the specific level of security needed are types of cargo transported and crime rates of regions. One should realize that the demand for parking areas for long rests with a low/minimal security level is far higher than the demand for truck parking areas with a high security level and to a less extent than the demand for parking areas with a medium security level. So, increasing the number of high security parking areas should be considered carefully; indiscriminately increasing the number of high security parking areas may have adverse effects (e.g. parking at regular parking areas may become too costly and drivers may switch to alternative forms of parking).

3. According to available European data on parking supply and transport demand models, a shortage of truck parking areas for the demand for long distance transport in the EU occurs currently in several EU Member States, while in the others there is an overcapacity of parking slots. Shortages occur in specific regions. Countries with an overall overcapacity

are in particular Poland and to a lesser extent the UK and other Eastern EU Member States. Large deficit countries are Germany, France, Austria, Sweden and Spain. A general overall shortage may also occur if the rate of building and/or utilization of existing parking areas will not keep up with the forecasted growth of the demand in the next decade.

4. With regard to secure parking areas, it has not been possible to include in the model the risk-index of the regions concerned, given the lack of data on the European level. The deficits have been calculated only on the basis of the black-market value of the goods and the traffic flows and not considering actual risks. One could however, derive the same conclusions as in the general case: there are only deficits in specific countries/regions and not in every country. But again deficits along the entire range will soon occur if the rate of expansion of the number of parking slots should slow down. Furthermore, it must be remarked that deficits of the medium and high security class are smaller than the deficits in the low/minimal security class. In other words, the shortage problem is more important for general parking than secure parking.

5. In addition, further regional refinements of the market analysis are expected to reveal other types of shortages (even within countries with an overcapacity). The list with hot-spots mentioned by industry representatives and individual operators according to their own criteria and perceptions suggests that in particular in metropolitan areas and in several border regions there may be shortage problems with regard to secure parking areas. Shortages in metropolitan areas can often be explained by high prices of the land whereas shortage in border regions can be explained by uncoordinated traffic bans or slow border control (queues at external borders).

6. "Hot-spot" areas should feature high on the priority list of policymakers. Existing hot-spots are frequently located in metropolitan areas (especially in the South of the UK (London, Dover, Harwich, Birmingham), France (Paris, Lille, Bordeaux), Belgium (Brussels, Charleroi/Mons), South of The Netherlands (Eindhoven, Maastricht, Venlo, Hazeldonk), Italy (Milano, Napoli, Verona), Germany (Hamburg, Nuernberg), South of Sweden (Stockholm, Malmo), Romania (Bucharest), Poland (Poznan), Austria (St. Polten), Hungary (Gyor), Lithuania (Kaunas)). In addition the following locations will be of special interest for the establishment of high security truck parking areas, *given the expected increase in the demand in the next years:*

- The borders between the Baltic States, Finland and Russia;
- The borders between Romania, Bulgaria and between Greece and Turkey;
- The Netherlands;
- Portugal and the Western part of Spain;
- South-West of France.

Framework conditions and financing of investments in truck parking areas

1. Partially available data and results from transport modelling indicate that the total new parking area investments in the EU needed to accommodate transport demand (investments potentially profitable and financed by the private sector) would be in the range of € 1.2-1.5 billion. However, this refers to all shortages and only a part of the budget is needed to repair the deficits of medium and high security parking (approximately € 150 million).It should be emphasised that the database on parking area supply is incomplete. A more detailed and reliable inventory could reduce the required budget.

2. Comparisons of the outcomes of cost models and the operators' willingness to pay clearly indicate that parking tariffs of secured parking areas in particular in the case of Western European metropolitan areas (with high prices of land use) are very close to, and in some cases, even above the maximum boundary of the operator's willingness to pay.

3. In this instance a form of subsidization by local Member States may significantly help to increase the number of secured parking areas that can be run profitably in those regions where, according to the hot-spot lists of operators and shippers, many security problems exist. The subsidization of land use may be an attractive option to improve the situation in metropolitan areas in particular.

4. The business case for investments to improve the security of truck parking in rural areas should normally be better than in metropolitan areas since land use prices are much lower, so reliance on subsidization in this case appears to be less important. Furthermore, in Eastern EU Member States on the whole range price levels and costs of staff are lower, so parking tariffs are much lower as well. It is therefore easier than in Western Europe to keep within the boundaries of the operators' willingness to pay for secure parking and consequently to realize secured parking within a full cost model.

5. It should be pointed out that the European legislation (e.g. Eurovignette-Directive) does not exclude the possibility that revenues from infrastructure may be allocated to improve the security of parking areas although there is also to date no formal obligation to do this. So allocation of such revenues is a source that will have to be seriously considered by Member States.

6. In countries where the motorway network is operated and developed through Public-Private Partnership (concessions), a number of initiatives to improve the security of truck parking areas already exist. In those countries the truck parking area exploitation is usually directly outsourced to the highway concessionaires or indirectly via these parties to sub-

concessionaires. Concessionaires have therefore a direct interest in taking initiatives to improve security levels because it may attract users. Practical initiatives from private parties to improve truck parking security are therefore undertaken because that is demanded by the users.

7. One should be aware that Public-Private Partnership contracts (concessions) may lead to a form of monopoly (when truck parking area exploitation is in the hands of one company), when proper controls are inadequate, or to a reduction of competition between parking areas in the region of a single concessionaire (e.g. pressures to "harmonize" tariffs). So effective controls and Public-Private Partnership contract management to prevent such situations by the authorities is required.

8. Although most Member States include the provision of the number, size and location of truck parking areas in the infrastructure planning process, specific security concerns (e.g. with regard to the location- visibility of parking areas, need for fencing etcetera) are mostly not included. It is recommended that such security related elements should already be considered/incorporated in the planning process.

9. It turns out that there is a wide divergence with regard to the legislative framework conditions between Member States regarding building and exploitation of truck parking areas along the trans-European road network. The lack of coordination between Member States in infrastructure planning is of course not favourable for an efficient investment level in parking areas, in particular in cross-border areas. To some extent differences are unavoidable because they are related to differences between infrastructure funding systems and national regulations with regard to ownership of the land along the motorways. A more systematic, harmonized inclusion of truck parking security requirements e.g. in the concession contracts is recommended. Currently in some countries there are such requirements and in others there are no such requirements.

Measures to improve security levels of truck parking areas

1. A whole range of measures can be taken to improve the security level of truck parking areas. Measures can be aimed at *physical* properties of parking areas (e.g. fences), the *organisation* of security at parking areas (surveillance) as well as improving the *communication* on incidents (e.g. alarms). It should be noticed that crimes at parking areas are of course related to crimes in other parts of the logistic chain (driving, loading/unloading at depots and terminals or also the offices of operators), so more general measures taken to improve security (e.g, using anti-theft systems in vehicles) may also contribute to improve the security of truck parking. In particular measures aiming to combat organised crime, which will not generally target parking areas as such, may

contribute significantly to reduce the more serious type of crimes (like theft of cargo or vehicles).

Improving and intensifying the co-operation between police forces and judicial authorities of Member States is such a measure.

2. Furthermore, there seems to be a gap between the actual and perceived risks of the security at parking areas. Opinions on the issue of parking area security are to a large extent indeed influenced by communication networks in the industry and not by direct facts. Measures simply to provide facilities for the drivers (toilets, shops) may for instance reduce the perception of danger. Others may have a positive impact both on the actual security levels as well as on the perception of securitybyo the users.

   Examples are:

   - Improving the information on the *actual* level of crime at parking areas;
   - Improving visibility at the parking area (cutting shrubs and bushes, good lighting, reducing the number of "dark corners" etc.);
   - Regular police presence/ surveillance;
   - Limited access of the general public to the parking areas;
   - Presence of a camera surveillance system.

3. One can distinguish physical properties in the subcategories: restricting access to/from the parking are (e.g. fences, entry/exit barriers combined with registration- and identification systems), restriction of interaction with other types of vehicles/traffic, and the use of control systems and lighting of parking areas. The category of organisational measures can be further subdivided in: security management (e.g. security plans, managers, staff training) and security services (e.g. surveillance of staff, advance parking are reservation possibilities). Improving communication can refer to the communication with the police/authorities or communication with users/user organisations.

4. It is important when implementing measures, that possible improvements are derived from a consistent, security improvement strategy or plan, having different stages corresponding with different levels of security in parking areas. Such a staged approach will be necessary in order to take into account the distinct security needs of different market segments in road freight transport. Notice that it is undesirable that all parking areas will meet the highest security level, since this will mean that a large part of the industry will probably have to pay too much for parking and will have to cope with unnecessary procedures.

5. With regard to restricting the access to parking areas one should remark that for vehicle theft the relevant checks are on identity of the driver and vehicle at entry and exits. So, at the exit a comparison must be made with the entry data.

This could be an automatic check: a number plate recognition system may be used for vehicles (this could be an automatic interface to electronic toll systems in some countries e.g. toll systems relying on number plate recognition). For identification of drivers one could use specific driver cards or (also the driver card of the digital tachograph could be used) or else other common identification documents such as driver licences or passes. Weighing of vehicles is again only relevant when comparing exit/entry data. Of course this can also be realised automatically. Furthermore, in addition to entry barriers one could also use ditches around parking areas or anti-ram hills as protection against illegal access.

6. Separated or dedicated truck parking are recommended. One should not only separate truck parking from private cars but also from mobile homes and coaches. Furthermore, it is recommended always to use separate areas for trucks with hazardous goods.

7. Surveillance cameras should cover parking areas but also cover/be able to make images of the entry/exit points of the parking area. The lighting of parking places should of course be sufficient to allow the CCTV-systems to make clear images. Images of cameras should be stored for a period of 48 hours/week.

8. There should always be a security manager at the parking area who organises and supervises all security matters and who is also responsible for reporting security related incidents to police and users of the parking areas. These managers should at least be able to communicate in English and should have had personal training. For incident registration preferably a common format should be used: time/date/location/parties involved and type of incident should be registered. The security plan/protocol of the parking area (if present) ought to be written down formally and subjected to audits. There should be regular internal checks on installation, equipment and procedures.

9. On distance reservation/checking of parking space capacity should be available in principle for every operator (e.g. reservation via the Internet). However, sender verification should be applied.

10. There should be regular police presence and direct communication lines to the police should be available. It is strongly recommended to improve the international co-operation between police forces of the Member States in general and the squads specialising in combatting crime in road freight transport in particular.

11. Changes in the security levels/measures implemented at a particular parking area should be communicated to the industry. Parking area security managers should periodically publish a summary of the number, type and time of security related incidents and make these data available from each parking area to the industry (e.g. via Internet).

12. Depots of operators and/or shippers parking areas generally have a much higher level of security than the average public truck parking area (generally they are fenced, often with guarded gates and nowadays often security experts work at the companies). In many cases such parking areas have spare capacity. Its is recommended to explore the possibilities making use of this spare capacity by (temporally) converting such spare capacity into public parking areas. One could think of parking area "exchange" systems, just as there are currently freight or truck capacity exchange systems.

Measures to improve the information on freight crimes and truck parking areas

1. It is recommended to improve the registration of freight crimes at parking areas. The registered data on criminal incidents at parking areas should be centralised per Member State and constitute an important building block of a central register on crime statistics. The statistics of the Member States should be harmonised as much as possible. This is a precondition for an effective sustainable policymaking in this field. The setting-up of such central registers in the Member States is also a measure advocated by the Ministers of Justice and Home Affairs of the Member States and candidate countries[20].

2. Improved registration of freight crime would require that all drivers and parking operators report directly and immediately security sensitive incidents to a well identified authority. There will have to be a common form of registration of all criminal acts committed against drivers, vehicles and cargo for every parking area. This type of data should be published periodically and made available from each parking area to the industry (e.g. via Internet). Only this direct registration of criminal incident data combined with the data on intensity of traffic and the type of region where the parking area is situated will allow for a balanced appreciation of the needed security level.

3. It is recommended to promote the setting-up by the industry of a parking area security labelling system for EU parking areas which distinguishes three levels of security (high, medium, low) that are partly physical and partly of an organisational nature. The low security level will correspond to the minimum security level, required for all parking areas.

[20]See also "The joint declaration by the Ministers of Justice and Home Affairs of the Member States of the European Union and the candidate countries in association with the European Commission on the protection of commercial drivers engaged in export trade from becoming victims of organised crime" (Official Journal C 024, 31/01/2003)

4. The criteria corresponding to these three different security levels will have to be verifiable in an external certification procedure. The following parties may be good candidates to organise the auditing:

   - The police;
   - User organisations;
   - Professional verification institutes;
   - Insurance companies.

5. The periodic certification results could be made public in the form of a "blue flag" or labelling system. The certification results (the flag) should be made known to truck drivers both directly by road signs in the vicinity of the parking area, but also by generally available information systems (books, internet websites).

6. However, it is again stressed that it is not necessary to aim at the highest security level for all parking areas. It would even be undesirable since this would mean that a large part of the industry will probably have to pay too much for parking and will have to cope with unnecessary procedures. What is required is simply a sufficient number of parking areas in order to accommodate each type of transport and each type of corresponding security needs.

ANNEX 1

CORE COMPONENTS FOR ADEQUATE FACILITIES IRU/ETF

1. Overview: Obligatory facilities to be found in all rest areas

- Sufficient number of parking spaces
- Adequate size of spaces
- Common style/common pictograms
- Emergency contact points/telephone services (fire, medical, police)
- Sanitary facilities – Toilets
- Lighting
- Single Exit/Entrance – exclusive to commercial drivers (*Obligatory only for specialized rest facilities for dangerous goods traffic)*

2. Categorization of Components and Additional Facilities

* = obligatory
□ = highly recommended
♦ = optional

Generic

- Sufficient number of parking spaces at facilities, based on traffic density *
- Adequate size of spaces *
- Common style/common pictograms *
- Motorway-sign posting available capacity + facilities indicating the size of the space, right number of spaces □
- Fuel ♦
- ATM cash dispenser ♦
- Supermarket including sale of non-prescription drugs (where national law permits) ♦

Safety

- Emergency contact point/telephone services (fire, medical, police) *
- Sanitary facilities, in particular toilets * → healthier, therefore safer, showers may be optional ♦
- Eating facilities ♦
- Emergency equipment/Provisions ♦

Security

Infrastructure

- Lighting *
- Common security layout

- Exit/Entrance – single – exclusive to commercial drivers and obligatory for dangerous goods (electronic key (electronic drivers card) – barrier to private users)
- Fence ♦

Communication

- Single-police contact point/Phone → incident alarm system *

Surveillance

- Routine police patrol ♦
- Camera system ♦
- Watchman/security personnel ♦

3. Strategic Points/Hubs

These are:

- *Frontier points*
- *Port/Airport terminals*

Where high volumes of traffic are in transit.

These facilities must include the following:

- Sufficient number of parking spaces
- Adequate size of spaces
- Common style/common pictograms
- Emergency contact points/telephone services (fire, medical, police)
- Sanitary facilities – Toilets and showers
- Lighting
- Single Exit/Entrance – single – exclusive to commercial drivers – barrier to private users
- At least one form of security surveillance i.e.:
    1. Routine police patrol *or*
    2. Camera system *or*
    3. watchman/security personnel

It is highly recommended that these facilities should also include

- ATM cash dispenser
- Supermarket including sale of non-prescriptive drugs (where national law permits)

Other Facilities and Services at Strategic Points/Hub facilities

Some drivers may wish to make use of additional facilities at such points. However, it would be fully up to the public authority or rest facility operator to decide how and where these facilities are provided.

Where considered appropriate these might include:

- Internet
- Supermarket + outlet for non-prescription drugs/vehicle provisions
- Laundry
- Vehicle wash
- Fitness centre

ANNEX 2
TAPA REQUIREMENTS

TAPA

FSR 2005
FREIGHT SUPPLIERS MINIMUM SECURITY REQUIREMENTS

Contents

Section 2 – Specifications

I. Supplier Facility/Truck Freight Security Requirements

Section 3 – Forms

FORM 3.1 – REQUEST FOR WAIVER

Section 1 - Requirements

1. Scope

(a) Forward

Technology Asset Protection Association (TAPA) is an association of security professionals and related business partners from high technology and high value companies who have organized for the purpose of addressing the emerging security threats that are common to the high value industry supply chain. A fundamental TAPA objective is to affect positive change in the security practices of the freight transportation and insurance communities as a whole. Major freight service providers are moving toward TAPA-recognized security standards for the care and handling of freight, and are recognizing the inherent value of doing so.

(b) Freight Security Requirements

Freight Security Requirements (FSR) have been established to ensure the safe and secure in-transit storage and warehousing of any TAPA members (Buyers) assets throughout the world. The FSR specifies the minimum acceptable standards for security throughout the supply chain and the methods to be used in maintaining those standards. The FSR outlines the process and specification for Suppliers to attain TAPA certification for their facilities and transit operations. It is the intention of TAPA members to select Suppliers that meet or exceed TAPA certification requirements. The successful implementation of the FSR is dependent upon Suppliers, TAPA Certified Auditors and Buyer working in concert. However, the safe and secure in-transit storage and warehousing of the Buyers assets is the complete responsibility of the Supplier, its agents and sub-contractors, throughout the collection, transit and delivery to the recipient, as specified in a Release. The FSR will be referenced in any contract between the Supplier and Buyer, and into the Supplier's own security program. Unless prior arrangements or agreements have been negotiated and documented between the Supplier and Buyer, failure to implement any part of the FSR shall be construed as a material breach of contract.

(c) Other Documents Referenced to FSR

Title	Description	Revision date
TAPA Freight Assessment Users Guide	To provide detailed definition and assessment criteria for Buyer & TAPA certified independent assessors. (Not available to Supplier)	Jan 1, 2005
TAPA Pre-Certification Review Planning	Details the process to plan and conduct the pre-certification meeting. This meeting will assist in determining if Supplier facilities & transportation methods meet the minimum-security requirements. For use by Buyer & TAPA certified independent assessors. (Not available to Supplier)	Jan 1, 2005

(d) FSR Applicable Areas

The FSR shall apply to all geographical areas, and all such services provided. In geographical areas where English is not the first language, where necessary and applicable it is the joint responsibility of the Buyer and Supplier to ensure that the translation accurately reflects the intentions of the Buyer and to ensure that every relevant employee has been trained to implement the FSR.

(e) Resources to Implement the FSR

The resources to meet the requirements of the FSR shall be the responsibility of the Supplier and at Supplier's own expense, unless as negotiated by or otherwise agreed to by Buyer and Supplier.

(f) Definitions

TERM	DEFINITION
Buyer	TAPA Member or authorized agent, example being the TAPA certified audit body
CCTV	Closed Circuit Television
DVR / DVMR	Digital Video Recorder
FSR	Freight Security Requirements
Local crime	Criminal incidents occurring within a 5 mile radius of Supplier's facilities or transportation routes.
RSP	Retail Sales Price
SCAR	Supplier Corrective Action Requirement

TERM	DEFINITION
TAPA CA	Technology Asset Protection Association Certified Auditor
VCR	Video Cassette Recorder

2. Contract Acceptance

(a) Suppliers Responsibilities at Acceptance of the Contract

At acceptance of the contract, the Supplier shall submit to the regional representatives of the Buyer's Logistics organization and the Buyer's Security Management, a copy of the Supplier's security policy and procedures or plan for ensuring safe and secure transportation, in-transit storage and warehousing of Buyer's assets. Copies of Supplier's security procedures that are relevant to the security of Buyer's assets shall be submitted to the Buyer for review. Supplier's security procedures must not conflict with the agreed to FSR. Any and all documentation shall be handled as confidential information. In cases where the Supplier's security procedures do not meet the FSR, the Supplier shall take the following actions:

I. The Supplier shall present a detailed written action plan, which outlines the non-compliant FSR area and the corrective action to be taken, with implementation dates not to exceed 60 days from date of acceptance of contract.

II. Supplier will attain TAPA Certification within 60 days for all facilities that will handle Buyers assets.

III. For areas that are not FSR compliant, a negotiated contingency plan between Supplier & Buyer shall be agreed and in place at commencement of contract. The contingency plan is designed for use where Supplier needs time to upgrade security on new routes and shall not exceed 60 days in duration.

IV. Any exception to the 60 day duration referenced herein shall have prior written approval from the Buyer requiring FSR certification.

V. Supplier will note and respond to Buyers concerns regarding security concerns not covered by the FSR.

VI. The Supplier will only negotiate with the approved TAPA Certification body for waivers for non-applicable TAPA FSR security measures or where alternative actions are taken to control security risks. The regional TAPA governing body will approve/decline all waivers submitted by the supplier through the independent audit firm.

VII. Suppliers who submit to FSR certification independent of a Buyer's requirement are not exempt from any portion of the FSR.

3. Security Organization

(a) Supplier Security Representative

By the effective date of the contract, the Supplier will designate a representative to liaise with the Buyer's representatives. The Supplier's Security Representative shall:

I. Have the Supplier's designated security authority responsible for managing the compliance with the FSR.

II. Have an adequate level of security competence and background.

III. Assign at least one individual, security responsibilities for each of the geographical areas in which the contract is effective

(b) Supplier Loss Investigator

By the effective date of the contract, the Supplier will designate one or more Loss Investigators for leading and coordinating investigation and resolution of losses of Buyer's assets while under the responsibility of the Supplier. The Supplier shall ensure adequate and timely resources are available to investigate losses of Buyers assets in the location the loss is suspected to have occurred. Loss Investigators may be the same person as the Suppliers Security Representative, as long as both responsibilities are covered in full.

4. Risk Assessment and Audits

(a) Buyers and Suppliers Responsibilities for Risk Assessments and Audits

I. At acceptance of a contract between the Buyer and the Supplier, the Supplier agrees to Buyer's right to conduct risk assessments or audits of all transit, storage and warehousing locations that will be used for Buyer's assets. Buyer can nominate an agent to perform audits on behalf of the Buyer. Normally the Buyer or its agent shall notify the Supplier at least five working days in advance of any audit, detailing its nature.

II. Supplier shall ensure the TAPA certified audit body is engaged to ensure FSR audits and certification process is completed. Costs for TAPA certification shall be the responsibility of the Supplier.

III. The requirement for TAPA certification is also extended to Supplier's sub-contractor's facilities and in-transit locations, where used to transit Buyer's assets.

IV. The Buyer reserves the right to conduct unscheduled audits. The Buyer shall give a minimum of 24 hours notice to the Supplier

V. TAPA certified auditors shall inform the Supplier of assessment/audit results within ten working days from the completion of the audit. A summary of the probable findings/results should be given informally to the Supplier on the day of the audit/assessment at the closing conference.

VI. Supplier shall have deemed to pass the audit and certified if a TAPA FSR audit score of 60% or more is achieved and all mandatory items are scored at least 1. Supplier shall still be responsible for completing audit action items in the agreed time scale, even when certification is achieved. Clearance of the non-mandatory SCAR is at the option of the Supplier but must be disclosed to Buyer.

VII. When the TAPA certified auditor submits a SCAR (Supplier Corrective Action Requirement) to the Supplier associated with the audit findings, the Supplier shall respond to the auditor within ten working days, documenting the action to be taken, the date the action will be completed. SCAR completion dates may be negotiated between the auditor and the Supplier. However, unless the TAPA certification body approves a waiver from process, corrective action implementation shall not exceed sixty days from notification to the Supplier

VIII. The Supplier is required to complete self-audits of their facilities and their subcontractor's facilities as detailed in section IV paragraph (d).

(b) Monitoring Supplier Corrective Action Requirements

The Supplier shall submit to the TAPA auditor progress updates on all outstanding SCAR's at monthly intervals. Any SCAR's not completed on or before the due date are to be escalated by the Supplier's Security Representative to the Supplier's Management and reasons for non-compliance are to documented and communicated to the TAPA auditor. Supplier failure to address SCAR's may result in the TAPA certification being withdrawn or suspended. The Supplier has the right to appeal to TAPA directly if certification is withdrawn. TAPA will agree to a process for adjudication between the Supplier and the TAPA auditor and has the right to impose a resolution on both parties.

(c) Storage/Warehousing Building Classification Assessment

The Building Classification Assessment is designed to categorize the facility into one of three categories, "A" being the highest security requirement and "C" the lowest. For facilities not previously classified, the Supplier must complete a classification assessment before the effective date of the contract and give results to the Buyer. Separate TAPA audit forms for A, B, & C facilities exist. The Supplier, in cooperation with the TAPA auditor, shall complete the final classification assessment within 30 days of acceptance of contract. The TAPA Certification body shall periodically complete their own classification assessments and ultimately make the decision on the final classification to be assigned to each of Supplier facilities handling or storing of Buyer's assets. The Supplier or Buyer can request the facility to be re-assessed if either party considers the assessment category to have changed.

1. The Building Classification Assessment methodology is set forth below.

- Pre-Contract & where TAPA Certification has not been previously granted.
  - Using TAPA audit forms Supplier classifies facilities that will be used in the transpiration of Buyers assets by being rated at least 1 in each of the mandatory audit areas and obtain a score 60% or greater on the audit score.
  - Final classification is attained (within 30 days), when the Supplier facility complies with or has agreements in place with the TAPA auditor, that will

meet all the requirements of a category and is assessed by an independent TAPA auditor.

(d) Supplier/Buyer Facility Security Audit Schedule

For the duration of the contract the Supplier will conduct security audits of their or their subcontractor's facility in line with the audit schedule published below. The format of the audit is to be agreed with the Buyer. It is suggested the Supplier use the same audit format as the Buyer will use in Section 3. Results of Supplier self-audits shall be forwarded to the certifying body within 2 weeks of the self-assessment. A self-assessment is to be conducted annually within the anniversary month of the independent audit.

Supplier will allow Buyer to conduct audits when pre-arranged. Supplier will as a minimum audit the Supplier's facilities in line with the audit requirements published below. The Buyer or the TAPA Certified Auditor reserves the right to increase or decrease the frequency of the audits by giving prior notification to the Supplier. The format of the TAPA audits will be to use the standard audit format contained in Section 3.

CLASSIFICATION	SUPPLIERS/SUBCONTRACTORS SECURITY AUDIT REQUIREMENTS
"A"	• Independent auditor: Certification audit conducted 1st year, validation audit conducted the following year (Note: Certification audits are conducted every other year) • Supplier Self Assessment: Annually and submitted to TAPA CA body within two weeks of original certification anniversary.
"B"	• Independent auditor: Certification audit conducted 1st year, validation audit conducted the following year (Note: Certification audits are conducted every other year) • Supplier Self Assessment: Annually and submitted to TAPA CA body within two weeks of original certification anniversary.
"C"	• No audits by Buyer or independent auditor • Supplier audits, when requested by Buyer

5. *Security/Loss Investigations*

(a) Supplier Investigation Responsibilities

I. The Supplier, its agents and sub-contractors shall actively cooperate with law enforcement authorities, and the Buyer or their appointed agents in the conduct of an investigation into product, material or equipment that is lost, stolen, damaged or tampered with while under the responsibility of the Supplier or when the Supplier can provide assistance to any such investigation. All information, including regular

updates, gathered by the Supplier, its sub-contractors or agents during the investigation shall be shared with the Buyer.

II. A reporting procedure shall be included in the Suppliers own security procedures, see Section 2

III. The Buyer shall have the right to oversee or participate in such investigations

6. Waivers

(a) Waivers

In exceptional circumstances, the TAPA CA may be confronted with a waiver request for a specific security requirement in part or whole on behalf of the supplier. TAPA has a sub team that reviews and approves/denies all waiver request. It is the TAPA CA's responsibility to decide whether the request is valid and that substantial mitigating reason(s) exist that led to the waiver application. Request for waivers are more likely to be approved by TAPA if alternative security controls are introduced to mitigate the security exposure.
Waivers are valid for up to a maximum of 1 year. The original requirement must be completed on the expiration date of the waiver or requested and approved again.

Waiver Process

I. Supplier considers a specific requirement in the FSR is not required from a security standpoint.

II. Supplier completes and submits Request For Waiver form to TAPA CA (See Section 3). One form should be completed for each FSR waiver request

III. TAPA CA reviews waiver request(s) and determines if request is valid. Each TAPA region currently administers waiver requests independently and the regional Board of Directors should be contacted for appropriate waiver process.

IV. If approved: -

- Waiver specifics are documented and signed by the TAPA Certified Auditor
- TAPA Certified Auditor assigns date for how long waiver will be approved, sends copy to Supplier
- Supplier will meet all requirements of waiver in agreed time scales. Failure to do so will result in waiver approval being removed.
- TAPA Certified Auditor informs Buyer of waiver.

V. If not approved:

- Supplier required to implement full requirement of FSR

7. Supplier Facility and Truck Security

(a) Procedures

Section 2 lists the detailed requirements for the Supplier's security procedures.

(b) Supplier Facility Security Requirements (Summary)

The Supplier's facility security is to be based on good physical barriers, the efficient operation of intruder alarm and CCTV surveillance and strict adherence to agreed operational procedures. The facility should not be located in an area that has a high incidence of crime or is adjacent to derelict land or a run-down area. Requirements for the Supplier's facility physical security are detailed in Section 2.

For purposes of audit, Preventive Measures are specific tactics to achieve acceptable levels of security for a given Area of Concern as identified in the TAPA audit form. These specific tactics have been identified through the knowledge and experience of industry security and logistics professionals, and represent best known methods and proven operational processes. However, in evaluating specific Preventive Measures of an individual Supplier, where such Supplier employs alternative methods that result in meeting or exceeding security requirements of the FSR, such methods shall be accepted, and rationale for acceptance noted in the audit "Comments" section. Additionally, specific tactics in the audit form which are in direct violation of Supplier documented policies and procedures shall be considered for removal from audit scoring on a case-by-case basis.

(c) Handling Operations

The various points at which the Buyer's assets will be transferred from one operation to another (i.e. truck to warehouse, warehouse to truck, truck to airline handler, airline handler to aircraft are all viewed as areas of risk. The Supplier shall ensure all procedures for these operations are detailed and communicated to the Buyer. The Supplier shall notify the Buyer of any known deviation from these procedures.

(d) High Value Shipments by truck (Summary)

Shipments of Buyer's assets by truck between the Suppliers facilities and delivery to the final destination shall are subject to minimum-security requirements. The table in Section 2 also specifies the truck security requirements. The level of Security required is dependant on independent agreement between Buyer and Supplier.

Section 2 – Specifications

Contents:

I. Supplier Facility/Truck Freight Security Requirements

Supplier Facility/Truck Freight Security Requirements	Applicable to Final Classification		
✓ = Requirement	A	B	C
✓**M** = Requirement & mandatory to pass audit			
1. Perimeter Security			
1.2. CCTV Systems			
1.2.1 CCTV external coverage of shipping and receiving yard, including entry / exit point, to cover movement of vehicles and people	✓**M**		
1.2.2 CCTV coverage of all external dock area. *(Refer to "Clarification Document")*	✓**M**	✓**M**	✓**M**
1.2.3 CCTV system able to view all sides of the facility.	✓**M**		
1.3. Lighting			
1.3.1 Flood lighting of enclosed loading/unloading areas	✓	✓	
1.3.2 Dock doors illuminated externally at night	✓	✓	✓
1.3.3 External and internal lighting levels that support high quality CCTV images and recording	✓	✓	
1.4 Perimeter alarm detection			
1.4.1 All facility external doors alarmed and linked to main alarm system.	✓**M**	✓**M**	✓**M**
1.5 Perimeter windows, doors & other openings			

Supplier Facility/Truck Freight Security Requirements	Applicable to Final Classification		
✓ = Requirement	A	B	C
✓**M** = Requirement & mandatory to pass audit			
1.5.1 Any windows or other openings in warehouse walls/roof must be secured by steel bars/mesh (or any other material that would harden opening to burglary).	✓	✓	
1.5.2 Ground floor warehouse windows protected by anti-ram posts or other physical barrier. (If no windows, not applicable, mark "X" on audit form)	✓		
1.5.3 Dock doors of sufficient strength or design to prevent or delay forced entry by use of portable hand tools or ramming by vehicle.	✓		
1.5.4 Reinforced exit doors from warehouse (steel doors and frames or suitable alternative).	✓	✓	
1.5.5 Exterior walls to be designed to resist penetration by removing building fabric, cutting or ramming by vehicle	✓	✓	
2. Access Control – Office Areas			
2.1 Office Entrances			
2.1.1 *Visitor* office access points controlled.	✓		
2.1.2. *All* office access points controlled.	✓**M**	✓**M**	
2.1.3. Access control processes both during and outside normal operating hours to ensure access is granted only for authorized Supplier employees and visitors.	✓	✓	✓**M**
3. Facility Dock/Warehouse			
3.1. Access control between office and dock/warehouse			
3.1.1 Security controlled access points (e.g., Guard, card access or CCTV with intercom).	✓**M**	✓	
3.2. Limited access to dock areas			
3.2.1.Only suppliers authorized employees and escorted visitors permitted access to dock/warehouse	✓	✓	✓
3.3. High value storage area			

Supplier Facility/Truck Freight Security Requirements	Applicable to Final Classification		
✓ = Requirement	A	B	C
✓**M** = Requirement & mandatory to pass audit			
3.3.1 Restricted-access, caged/vault area for assets on site more than 2 hours: High-grade security mesh, chain-link, or hard-wall, including top/roof; alarmed, CCTV, Card Access.	✓**M**		
3.3.2 Restricted-access, caged/vault area for assets on site more than 6 hours: High-grade security mesh, chain-link, or hard-wall, including top/roof; CCTV, pad-locked.		✓**M**	✓
3.4 All external dock/warehouse doors secured			
3.4.1 All external dock/warehouse doors secured unless required to be opened for normal transit operations	✓	✓	✓
3.5 CCTV coverage			
3.5.1. Internal docks covered by CCTV	✓**M**	✓**M**	✓**M**
3.5.2. Buyer designated assets under 100% CCTV surveillance while in Supplier facility (this does not require 100% of floor coverage, rather 100% coverage of buyer's assets i.e., CCTV from dock, to pallet breakdown/buildup area, to HVP cage)	✓**M**	✓**M**	
3.6 Motion detection alarms			
3.6.1 Motion detection alarms inside warehouse and activated when entire facility is vacated (N/A if facility is ***true*** 24x7x366 operation).	✓**M**	✓**M**	
4. Security Systems			
4.1. Monitoring of security systems			
4.1.1 Manned security monitoring post 24x7x366; monitoring post secure from attack.	✓		
4.1.2 All security system alarms dealt with in real-time 24x7x366	✓	✓	✓
4.2 Intruder alarm system			
4.2.1 Minimum of 60 day records on system alarms.	✓	✓	

Supplier Facility/Truck Freight Security Requirements	Applicable to Final Classification		
✓ = Requirement	A	B	C
✓**M** = Requirement & mandatory to pass audit			
4.2.2 Restricted access to alarm system	✓	✓	✓
4.2.3 Monitoring of alarms by police or security contractor	✓	✓	✓
4.3 CCTV system			
4.3.1 All CCTV images are recorded in real time (VCR or digital-recording system). No more than 16 cameras to 1 tape/disk. If VCR, no more than 12 hours of images on one tape.	✓	✓	
4.3.2 Restricted access to CCTV system functions	✓	✓	✓
4.3.3 Minimum 30-day retention of all CCTV recordings; recordings are held in secure storage area	✓**M**	✓**M**	✓**M**
4.3.4 Preventative maintenance plan in place for CCTV systems (can be contracted or in-house).	✓	✓	✓
4.4 Card access system			
4.4.1 Minimum 60 days records on system transactions	✓	✓	
4.4.2 Restricted access to system functions	✓	✓	
4.4.3 Quarterly review of card access reports	✓	✓	✓
4.5 Security system maintenance			
4.5.1 Preventative maintenance plan in place to routinely test and service access control and alarm systems	✓	✓	✓
5. Security Procedures			
5.1 Adequate documented security procedures			
5.1.1 Local documented procedures for handling Buyer's assets and escalation procedures for communicating security incidents to Buyer	✓	✓	✓
5.1.2 Process for timely reporting of incidents of lost or missing Buyer's assets. Incidents to be reported by the Supplier to the Buyer within 12 hours for missing assets	✓	✓	✓

Supplier Facility/Truck Freight Security Requirements	Applicable to Final Classification		
✓ = Requirement	A	B	C
✓**M** = Requirement & mandatory to pass audit and 24 hours for lost assets.			
5.1.3 Emergency customer and local management contacts for security incidents listed and available	✓	✓	✓
5.1.4 Supplier Security Policy Statement available and communicated to all employees	✓	✓	✓
5.1.5 Security awareness training (including robbery response training) for all dock, warehouse, Security and reception employees.	✓	✓	✓
5.1.6 Employee and contractor ID picture badges required to be issued and worn	✓	✓	
5.1.7 Procedures in place to restrict Supplier's employees, visitors and contractors access to Buyer's assets	✓	✓	✓
5.1.8 Badge policy for visitors/contractors in place	✓	✓	✓
5.1.9 Adequate control of paperwork. Restricting knowledge of transit of buyer's assets to "need to know" only (Information Security).	✓	✓	✓
5.1.10 At inbound checkpoint for drivers and crews, identity and authorization are validated	✓	✓	
5.1.11 Keys controlled in areas where Buyers assets are transited / stored	✓	✓	✓
5.1.12 Random trash inspection procedures in place for trash removal from dock/warehouse	✓	✓	
5.1.13 Security incident reporting system and method of tracking local security incidents	✓	✓	
5.1.14 Pre-loading or post-delivery storage of buyer's assets in trailers	✓	✓	✓
5.1.15 Personal containers (defined as lunch box, backpacks, coolers, purses, etc.) are controlled in the warehouse	✓	✓	
5.1.16 Exit Searches performed on exit from secure areas used for Buyer assets	✓	✓	

Supplier Facility/Truck Freight Security Requirements	Applicable to Final Classification		
✓ = Requirement	A	B	C
✓**M** = Requirement & mandatory to pass audit			
5.1.17 Personal vehicles access to shipping and receiving yard controlled.	✓	✓	
5.2. Background checks (vetting) within constraints of Local Country laws			
5.2.1 Criminal history checks in place encompassing 5-year criminal history and employment check (vetting within constraints of local county laws).	✓**M**	✓**M**	✓**M**
5.3. Terminated employees & contractors procedure			
5.3.1 Termination procedures in place for employees and contractors, ensuring return of ID's, access cards, keys and other sensitive information	✓	✓	✓
5.3.2 Procedures in place preventing systems access to Buyer's data by terminated employees	✓	✓	✓
5.3.3. Records kept preventing Supplier re-hiring terminated employee/contractor without considering previous background	✓	✓	✓
6. Standard Truck Security Requirements			
6.1 Adequate cargo truck security devices installed			
6.1.1 Solid-top, hard-sided, locked cargo doors or reinforced soft-sided trailer	✓	✓	✓
6.1.2. Security tamper evident seals for trucks carrying Buyer only shipments	✓	✓	✓
6.1.3. Vehicle immobilization devices in place	✓	✓	
6.1.4 Two way voice communications system between vehicle cab, Supplier's base (and escorts, if applicable) and procedures for reporting	✓	✓	✓
6.1.5 Written contingency plans in place for reporting unscheduled events (i.e. stops, delays, route deviation)	✓	✓	✓
6.1.6 Truck cabin and ignition keys secured from unauthorized use at all times.	✓	✓	✓

Supplier Facility/Truck Freight Security Requirements	Applicable to Final Classification		
✓ = Requirement	A	B	C
✓**M** = Requirement & mandatory to pass audit			
6.2. Scheduled routing			
6.2.1 Routes, schedules and planned stops assessed for risk and reviewed	✓	✓	
6.3. Loading/unloading			
6.3.1. Proof of shipping and receiving records (time, date, driver, shipping/receiving personnel, shipment details and quantity)	✓	✓	✓
6.3.2 When consignee allows, drive present at loading and unloading.	✓	✓	✓
7. Pre-Alerts			
7.1 System of Pre-Alerts in place (Supplier to Supplier)			
7.1.1 Pre-alert capability in place	✓	✓	
7.1.2 Destination to notify origin within 4 hours of receipt of shipment, reconciling pre-alert shipment details	✓		
8. Enhanced Security Requirements			
8.1 Driver training			
8.1.1 Supplier to provide robbery response training, detailing safe and secure actions to be taken during the event driver is threatened. Details of training are to be available to Buyer	✓	✓	
8.1.2 Security Awareness training provided to drivers on mitigating risk. Details of training are to be available to buyer.	✓		
8.2 Truck escorts (armed where local law permits) Cost shall be borne by Buyer			
8.2.1 Capability to provide overt and covert escorts with real time communications to base and local police; written documentation in place	✓		

Supplier Facility/Truck Freight Security Requirements	Applicable to Final Classification		
✓ = Requirement	A	B	C
✓**M** = Requirement & mandatory to pass audit			
8.2.2 Documented response procedures and training for escort personnel	✓		
8.3 Vehicle tracking – subject to availability and negotiated between Buyer and Supplier			
8.3.1 GPS or similar technology installed on all vehicles transporting Buyer's assets.	✓		

ANNEX 3

LITERATURE

Literature

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ANNEX 4

LIST OF ORGANISATIONS CONTACTED

List of organisations contacted

Authorities

In the Member States:

1. Austria	Federal Ministry for Transport, Innovation and Technology
2. Belgium	Service public fédéral Mobilité et Transports Direction générale Transport terrestre
3. Bulgaria	Ministry of Transport & Communications
4. Cyprus	Transport attaché EU
5. Czech Republic	Police Presidium, Dept. of Criminal Police & Investigation, Ministry of Transport
6. Denmark	Danish Road Directorate
7. Estonia	Central Criminal Police, Ministry of Economic Affairs & Communication
8. Finland	Ministry of Transport and Communications
9. France	Ministere de L'interieur et de l'Amenagement du Territoire, Ministere des Transports
10. Germany	Bundeskriminalamt, Federal Ministry of Transport, Building and Urban Affairs
11. Greece	Ministry of Transport and Communications Road Freight Transport Division
12. Hungary	National Police HQ, Ministry of Transport
13. Ireland	Department of Transport Road Haulage Division
14. Italy	"Comitato Centrale dell'Albo dell'Autotrasporto", internal Office of the Italian Ministry of Infrastructure and Transport
15. Latvia	Int. Cooperation Dept, Central Criminal Police Ministry of Transport
16. Lithuania	Lithuanian Criminal Police Bureau Road Transport Dept, Ministry of Transport
17. Luxembourg	Ministère des Transports Direction de la Circulation et de la Sécurité routières
18. Malta	Ministry for Urban Development and Roads
19. The Netherlands	Ministry of Transport, Public Works and Water Management
20. Poland	Director of Prevention & Traffic Bureau, Police Headquarters, Ministry of Transport
21. Portugal	Dep. For Transport
22. Romania	Ministry of Transport
23. Slovenia	Ministry of the interior,

	General Police Directorate, Ministry of Transport
24. Slovak Republic	Road Transport Dept. Ministry of Transport
25. Spain	Ministerio de Fomento
26. Sweden	Swedish National Road Administration
27. United Kingdom	Department For Transport

Other organisations contacted

International organisations:

- European Transport Workers' Federation (ETF)
- European Conference of Ministers of Transport (ECMT)
- Freight Forward International (FFI)
- International Road Transport Union (IRU)
- Technology Asset Protection Association (TAPA) (several members seperately: ABX, Emons Cargo, Nike, TNT, Vos Logistics)

National organisations:

- Ashford Truckstop
- Stichting Aanpak Voertuig Criminaliteit (AVC)
- Dansk Transport og Logistik (DTL)
- Verladers en Eigen Vervoers Organisatie (EVO)
- Koninklijke Federatie van Belgische transporteurs en logistieke dienstverleners (FEBETRA)
- International Transport Danmark (ITD)
- Transport en Logistiek Nederland (TLN) LN
- Koninklijk Nederlands Vervoer (KNV)
- Maat Group
- Transport Verzekerings Maatschappij (TVM verzekeringen)