



**COUNCIL OF
THE EUROPEAN UNION**

Brussels, 14 May 2009

**Interinstitutional File:
2009/0063 (COD)**

**9864/09
ADD1**

**AVIATION 74
CODEC 722**

COVER NOTE

from: Secretary-General of the European Commission,
signed by Mr Jordi AYET PUIGARNAU, Director

date of receipt: 12 May 2009

to: Mr Javier SOLANA, Secretary-General/High Representative

Subject: Commission staff working document accompanying document to the Proposal
for a Directive of the European Parliament and the Council on aviation security
charges
- Impact assessment

Delegations will find attached Commission document SEC(2009) 615.

Encl.: SEC(2009) 615



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 11.05.2009
SEC(2009)615

COMMISSION STAFF WORKING DOCUMENT

Accompanying document to the

**Proposal for a Directive of the European Parliament and the Council on aviation
security charges**

IMPACT ASSESSMENT

**{COM(2009)217 final}
{SEC(2009)616}**

COMMISSION STAFF WORKING DOCUMENT

Accompanying document to the

Proposal for a Directive of the European Parliament and the Council on aviation security charges

IMPACT ASSESSMENT

{COM(2009)217 final}

{SEC(2009)616}

Lead DG: TREN

Other involved services:

Agenda planning or WP reference: 2009/TREN/020

Executive summary

The terrorist attacks of 11 September 2001 in the United States had a profound impact on the global aviation sector as well as on the European aviation sector. Strong measures were essential to address the threats posed by international terrorism and to restore public confidence in the aviation sector.

Consequently, the cost of aviation security has increased over the last years. A study for the Commission estimated that in 2002 more than 90% of these costs are recovered through security charges (or taxes) levied on air passengers, airlines and cargo shippers. In 2007 these security charges yielded estimated revenue of €1.6 billion in the EU, which constitute approximately 1 percent of the average air fare.

Problem

The rise in aviation security costs has drawn the industry's attention to such costs. Each airline therefore tries to minimise its security costs by attempting to influence the structure for security charges. Usually the largest airline at the airport has a considerably stronger position compared to the other airlines and may use this to ensure that the level of security charges are lower for markets where the airline has a proportionally larger share of the traffic than the other airlines. In addition, focus is also increasing on security charges because other airport fees are regulated by the recently adopted Directive on airport charges. However, this report has not managed to establish that these risks are translated into differentiated security charges in all Member States.

EU action justified

Current structures that differentiate security charges mainly benefit the main national airlines when operating from airports in the same Member State. Airlines from other Member States benefit less from the differentiated security charges.

Objectives

As aviation security is a core state responsibility, security charges shall therefore not be subject to commercial decisions between an airport and an airline. The main objective is, firstly, to ensure that security charges do not unduly differentiate between airlines, air passengers or cargo shippers in the EU. Secondly, security charges shall not generate profit or be used to cross-subsidise between airlines. Revenues from security charges shall therefore only be used to cover the costs to which the security services give rise.

Options

This impact assessment evaluates four different options that are based on existing international principles on security charges or responses received during the consultations process from March to September 2008.

Option 1 examines the consequences of no EU action. If no EU action is taken, security charges are more likely to discriminate among airlines and passengers. In particular, as the Directive on airport charges prohibits other charges to discriminate.

Option 2 examines whether self-regulation by the industry can ensure consumers' interest and promote more efficient aviation security services. Such self-regulation could be based on certain international principles that already are endorsed by ICAO. These principles are: non-discrimination, consultation with the airlines, transparency of security cost and revenues from security charges shall only be used to cover security costs. The objective of consultation is to allow for the airlines to have the possibility to make suggestions on how to increase the effectiveness and efficiency of security services. Consequently, this option will encourage a dialogue between airlines and airports to look for more efficient ways to comply with security requirements. However, these principles were published already in 1981 and are still not respected. Self-regulation by the industry is therefore not likely to effectively address the problems identified. The effects of option 2 are the same as if the Commission were to issue non-binding recommendations on how to solve the identified risks because such recommendations would be the same as the already existing ICAO-principles.

Option 3 is similar to the second option, but makes the principles legally binding through an EU Directive. In addition, the third option allows for airlines to appeal decisions by airports if the security charges are discriminatory or cover other costs than security costs. This will increase the effectiveness of the transparency obligation and is estimated to reduce overall costs for aviation security by 10 percent. This option is also supported by other Commission policies and in line with Member States policies.

Option 4 suggests that Member States should fully finance airport security. This will remove any security charges and their discriminatory aspects. This is the preferred option by all industry representatives and it also most effectively removes any discriminatory aspects of security charges. However, this option discourages a more efficient aviation security services because there are no incentives for the security providers to control the costs. In addition, it is unlikely to be accepted by the Council as it is vehemently opposed by Member States.

This impact assessment concludes that consumers' interest and more efficient provision of airport security services are best addressed by option 3. The administrative burden for

Member States and the increased cost of business of option 3 are negligible as that option builds upon already existing structures established by the Directive on airport charges¹.

Monitoring and evaluation

The Commission will continuously monitor the developments in the aviation security sector and especially evaluate on a regular basis the number of airports publishing their security charges.

SECTION 1: PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

1.1 Organisation and timing

This impact assessment has been prepared by DG Energy and Transport (TREN) with the contribution of an Inter-services Steering Group in which the following Directorates General participated: DG JRC, DG ECFIN, DG ENTR and DG COMP. The Steering Group met 2 times.

Work on this impact assessment started in 2008. This proposal is part of the Commission's 2009 work programme and has the agenda planning number 2009/TREN/020.

1.2 Consultation and expertise

1.2.1 Consultation with Member States and stakeholders

On 17 March 2008 DG TREN submitted a questionnaire to Member States asking for information on existing national legislation and the most recent estimates of national security costs. DG TREN wished to have their comments before 15 April 2008. On 2 April 2008 a similar questionnaire was sent to organisations representing industry and consumers. The recommended deadline for stakeholders to submit their comments was 30 April 2008. This questionnaire asked for estimates of security costs, the impact of security measures on the industry and whether existing national legislation allowed the industry to recover security costs. The consulted parties were asked to reply before the end of May. Consequently, the Commission's minimum standards for consultation have been met.

5 Member States replied that existing airport charges consultations provide airlines with sufficient information on security costs as well. Similarly for cost-relatedness of security charges, 11 Member States replied that the same consultations ensure that security charges are used to exclusively to meet security costs. However, these consultations do not require the approval of the operators to modify security charges and do therefore not ensure transparency and cost-relatedness. Actually, only the Netherlands have specific legislation in force requiring security charges to be both transparent and cost-related. The Italian legislation, which is the other national legislation targeting security charges, only ensures transparency. The replies also confirmed that aviation security is mainly financed through security charges on airlines, air passengers and cargo shippers. This is usually referred to the "user-pays" principle. 11 Member States rely almost entirely on such charges. 6 Member States sometimes make significant contributions to the security costs. 4 Member States did not reply

¹ Proposal for a Directive of the European Parliament and of the Council on airport charges COM(2006)820 final of 24.1.2007

or did not reply in sufficient detail for the Commission to draw any conclusions on their replies.

Organisations representing airlines, airports and consumers were asked to provide information on the cost and impact of aviation security. 9 organisations, mainly airport and airline organisations, replied and they all argued that States should cover for security costs because the threats are targeted against States and not against the industry. Unfortunately, only one consumer organisation replied to the questionnaire. Several replies argued that aviation is at a disadvantage in comparison with financing security in other transport modes and that this negatively impacts the competitiveness of the European aviation sector. All stakeholder replies endorsed increased cooperation within the International Civil Aviation Organization (ICAO) as the best solution to harmonise international aviation security measures and address differences in the level of state-funding between the EU and its main trade partners.

In addition to the questionnaire, a consultation meeting was also held on 17 July 2008 to which Member States, some members of the transport committee of the European Parliament and the following organisations were invited: PostEurop, European Regions Airline Association (ERA), International Air Transport Association (IATA), International Airline Association (IACA), European Transport Workers' Federation (ETF), Freight Forward International (FFI), European Travel Retail Council (ETRC), European Shippers Council (ESC), European Cockpit Association (ECA), European Aviation Safety Organisation (EASA), European Consumer Centre Network (ECC-Net), Bureau Européen des Unions des Consommateurs (BEUC), Forum of European Regional Airports (FARE), European Business Aviation Association (EBAA), Airports Council International (ACI), European Low Fares Association (ELFAA), Association of European Airlines (AEA), European Express Association (EEA), EUROCONTROL, and European Association for Forwarding, Transport, Logistic and Customs Services (CLECAT).

In advance of the consultation meeting, DG TREN submitted a paper to the invited organisations which outlined four different options to address the issue of financing aviation security: transparency of security costs, Commission approval of more stringent measures, mandatory "one-stop" security and regulatory convergence through increased international cooperation. The organisations were also invited to comment on the consultation paper and the discussions in the consultation meeting in writing before 1 September 2008. Late submitted comments have also been examined. Annex II gives an extensive overview of the replies submitted by the stakeholders.

In the consultation meeting, all industry organisations emphasised that aviation security is a state responsibility and the costs should therefore be borne by the states. IATA compared with the situation in the US where the government covers a substantial share of the total security costs. ELFAA made a comparison between the railway sector and short-haul flights. Differences in security financing between the different modes of transport may also cause distortions of competition. AEA stressed that different levels of security control at different airports strongly affect competition between airlines.

Members of the European Parliament were also invited to the meeting on 17 July 2008. One Member of the European Parliament argued that increased transparency of security measures and charges are the most important elements. This will also allow for a clearer distinction between measures that are imposed through the security regulation and more stringent measures imposed by Member States. The same Member of the European Parliament also emphasised that the views of the citizens and the passengers are essential and therefore

regretted that the invited representatives from consumer organisations did have the possibility not attend this hearing.

No Member State has supported an obligation on them to cover security costs. One Member State representative stated that security costs should be seen as a cost of business for the aviation sector and therefore paid by the industry. Other industries have to cover similar costs, such as improved safety of cars in the road sector. Another Member State representative believed that financing security is a national matter that should be decided by the national parliament. Several Member States were cautiously in favour of more transparency coupled with a prohibition of profit-making. It was also preferred that the Commission should issue guidelines rather than a binding Directive.

1.2.2 Expertise

No external expertise was used for this impact assessment. However, DG JRC estimated the impact of some of the measures. The note of DG JRC is attached in Annex XII. This impact assessment used statistics that are publicly available, mainly from Eurostat, and also relied on statistics provided by stakeholders and Member States in their replies to the questionnaire. Some Member States made it clear that this information is sensitive and asked the Commission to handle it accordingly.

The preparation of this proposal has been preceded by a report from the Commission to the Council and the European Parliament on Financing Aviation Security COM(2009)30 of 2.2.2009. The report analysed four issues: whether security charges are exclusively used to meet security costs, the transparency of security charges, the impact of aviation security and its financing on competition between airports and between airlines, and consumer protection as regards the distribution of the costs of security measures between taxpayers and users. The main conclusion of the report is that transparency is necessary to ensure that security charges do not impact the internal aviation market.

1.2.3 Opinion of the Impact Assessment Board

This report was discussed with the Impact Assessment Board on 14 January 2009. The Impact Assessment Board published its opinions on 20 January 2009 and on 24 February 2009.

The opinions of the Board listed the following recommendations for improvements:

- To establish more precisely and substantiate the distortions of competition and strengthen the case for EU action. Better demonstrate the benefits and disadvantages of the preferred option.
- Develop the content of the options and expand the available range of alternatives.

Following these recommendations, the impact assessment has been revised along these lines.

- The economic reasoning has been reinforced across the report. Complaints on discriminatory or excessive security have been assessed. The case for EU action with regard to "one-stop" security could not be substantiated due to unavailability of necessary data. The report does therefore not anymore suggest any EU action with regard to "one-stop" security.

- The options are described in more detail and explicitly mention, where appropriate, the preferred legal instrument. The option on mandatory transparency without the possibility to appeal security charges has been replaced by an option on increased transparency through self-regulation by the industry. This new option also covers the case if the Commission were to issue non-binding guidelines to address to problems identified.

SECTION 2: PROBLEM DEFINITION

2.1 What is the issue or problem that may require action?

2.1.1 *Discriminatory and excessive security charges*

Background

Following the implementation of new European rules in 2002,² the overall cost of aviation security increased. Significant new investments were necessary, such as the refurbishment of some airport terminals and the acquisition of additional screening equipment and recruitment of additional staff to comply with the increased requirements on security controls of passengers and cargo.

The three main cost components of aviation security are: airport security costs, airline costs and costs for Member States. The main cost concerns the security controls of passengers and cargo at airports. This usually has two main cost elements: staff costs and costs for infrastructure and equipment. The national authorities are responsible for the provision of these services as they are a core state responsibility. The security services are usually provided by the national authorities themselves or delegated to the airport or to a private contractor.

The Commission published a report on financing of transport security in 2006.³ To prepare for this report, external consultants analysed the actual situation and published their conclusions in 2004 on the Commission website.⁴ The conclusions of the study describing the actual situation in 2002 can be summarised as follows:

- The security costs for airports and States in 2002 for the then 15 Member States and Norway, Iceland and Switzerland were estimated at €2 billion. Including the costs to the air carriers to comply with new European rules, total security costs were estimated to €2.6 to €3.5 billion, which at that time corresponded to between 1 and 2 percent of an average air fare.
- These costs to Member States and industry are mainly recovered charges and taxes levied on the users of the European air transport system. This is usually referred to as the "user-pays" principle. Airlines, air passengers and cargo shippers cover more than 90% of the aviation security costs. Member States only cover 6-7% of the costs through the general budget.

² Regulation (EC) No 2320/2002 of the European Parliament and of the Council of 16 December 2002 establishing common rules in the field of civil aviation security (OJ L 355, 30.12.2002)

³ COM(2006) 431 final of 1.8.2006.

⁴ http://ec.europa.eu/transport/air_portal/security/studies/index_en.htm

Since 2002 the overall cost for aviation security has decreased as the need for investments has reduced. AEA estimated that the average cost for security per passenger was €2.60 in 2007. This gives a total cost of aviation security in 2007 of approximately €1.6 billion for the 27 EU Member States.⁵

The industry also pointed out during the consultation that the main trading partners of the EU cover significant parts of the overall security costs. In the USA, for example, estimates for 2006 suggest that 56% of the overall expenditure (US\$5 billion) has been funded through appropriations whereas 38% has been funded through user fees paid by travellers. The situation in Japan is similar to the situation in the US.

Discriminatory security charges

Air passengers are subject to the same security control and the level of aviation security does normally not alter with the destination for intra-EU travel. Consequently, the cost of security control is usually the same for a passenger travelling to a domestic destination as for other destinations within the EU.

The increased cost of security has given the airlines stronger incentives to minimise these costs. An airline may therefore use its bargaining power, where possible, over an airport to modify the structure of security charges. This is most commonly accomplished by setting lower level security charges for the traffic segments where the largest airline has a proportionally higher share of the traffic than other airlines operating from the same airport. Lower charges for one segment mean that other segments have to compensate this through higher charges. The consequence of this is that some segments subsidise other segments through a charges structure that discriminate between categories.

The national airline usually has the strongest position at an airport. Sometimes this position is sufficiently strong to ensure that the airline benefit from the charges structure, usually through lower charges for domestic destinations. The national airline has almost always a higher proportion of the domestic traffic.

Table 1. Security charge per passenger for intra-EU and domestic travel

	Intra-EU	Domestic
Romania – Bucharest airport	€7.50	€3.81
Spain – all airports	€1.39	€1.18
Cyprus	€0.39	0
Lithuania – Vilnius	LTL 8 per tonne of Maximum Take-Off Weight of the aircraft.	LTL 4 per tonne of Maximum Take-Off Weight of the aircraft.

Source: IATA

⁵ According to Eurostat, 631.572.637 passengers were departing from an EU airport in 2007. Security taxes/fees/charges only are levied on departing passengers.

For example, table 1 presents a non-exhaustive overview of airports where security charges differentiate between passengers departing to domestic and other destinations within the EU. Such structures are discriminatory unless it can be shown that they are based on actual differences in the cost of security control between domestic and other intra-EU destination. However, passengers travelling to domestic or other EU destinations are normally subject to the same security control under circumstances. It is therefore not possible to argue that these different passenger categories generate different costs and that the level of the charge therefore should be differentiated.

The situation described above mainly refers to the situation at large airports which one airline uses as a hub airport. The picture is somewhat different for smaller and regional airports to which mostly low-cost airlines operate. At those airports, airport and security charges are increasingly set in long-term individual contracts with each airline. These charges are usually fixed even if the level of security cost varies over the duration of the contract. Airlines operating from the same airport will therefore face different security costs depending on their bargaining power and when the contracts were finalised.

In conclusion, the objective of security charges is to recover the cost of protecting citizens from terrorist attacks and these charges shall therefore not discriminate between air passengers, airlines or cargo shippers. However, airlines use their bargaining powers to minimise their security costs which risks resulting in discriminatory security charges. In addition, discriminatory security charges may impact competition between airlines operating from the same airport. The airlines that are discriminated against are disadvantaged over the competitor airlines with lower security costs per passenger. The same market

Excessive security charges

Aviation security is a core State responsibility and not a commercial activity that shall generate profit. Revenues from security charges shall therefore only be used to meet security costs. For the purposes of this impact assessment, security charges that recover more than the security costs are considered as excessive.

As table 1 above shows, some airports differentiate security charges between categories of passengers. Cross-subsidisation of revenues between these categories is often necessary to attain for this differentiation. In a situation where there are few or no contributions from the State, a cross-subsidisation means that one passenger category has to be overcharged to cover for the losses generated by other categories. Discriminatory charges therefore require that excessive security charges are levied on some passenger categories. The Commission has also found that discriminatory and excessive security charges can have implications for state-aid.⁶

Article 5 of the framework Regulation 300/08 on aviation security already requires security charges to be cost-related.⁷ However, this provision is too vague to ensure its applicability because only applies as far as may be practicable and is therefore not effective.

⁶ State aid — Germany — State aid C 29/08 (ex NN 54/07) — Germany — Flughafen Frankfurt Hahn and Ryanair — Invitation to submit comments pursuant to Article 88(2) of the EC Treaty, (OJ C 12 of 17.1.2009)

⁷ Regulation (EC) No 300/2008 of the European Parliament and of the Council of 11 March 2008 on common rules in the field of civil aviation security and repealing Regulation (EC) No 2320/2002, (OJ L 97, 9.4.2008, p. 72)

Security charges

The authority responsible for aviation security charges a security tax, fee or, most often, a security charge on airlines, passengers and cargo shippers, to recover the cost of airport security. Security charges are almost always levied on a per passenger basis. The level of this levy is often based on forecast passengers at the airport and estimated airport security costs. Any under- or over-recovery of costs from previous years are also taken into account.

Airports sometimes consult with airlines and airline organisations on airport and security costs. Security charges are distinct from airport charges; security charges shall cover security costs while airport charges shall cover mainly terminal and runway costs. The consultations often take place on a regular basis, usually once every year to adjust the level of security and airport charges to changes in traffic and costs.

Frequently the relevant authority delegates the responsibility to implement aviation security requirements to the airports, which then are responsible for the levying of security charges.

Annexes I and VI give an overview of security costs and corresponding charges levied at the main airport in each Member State. Security charge per passenger can vary between Member States. Firstly, the passenger security charge is often lower at airports with high traffic due to economies of scales which allow the airport to allocate the cost over more passengers. Secondly, security charges are lower in Member States that finance a large share of airport security through the public budget.

In addition to airport security costs, airlines and Member States also have other security costs. These costs usually are not covered by security charges levied on air passengers.

2.2 Drivers of these problems

2.2.1 Lack of transparent security costs

Security charges have historically been part of airport charges which airports levy on airlines to recover terminal and runway costs. Recently, all charges are increasingly differentiated to adjust to the needs of the individual airline. This has sometimes raised questions with regard to the State aid rules as most airports still have significant proportion of public ownership and differentiated charges may unjustly benefit one airline over other airlines. Differentiated airport charges are not necessarily discriminatory provided that such differentiation is based on objective grounds, such as providing incentives for starting-up new routes from an airport.

The Commission has intervened and developed guidelines over time to clarify how to apply the State aid rules on airports.⁸ The Commission also clarified in its 2006 report on financing of transport security that, measures to protect European citizens against terrorist attacks are not primarily an economic activity as they are essentially a state responsibility.⁹ Public

⁸ Community guidelines on financing of airports and start-up aid to airlines departing from regional airports, (OJ C 312 of 9.12.2005)

⁹ COM(2006) 431 final of 1.8.2006

financing of such measures does therefore not fall within the scope of the rules on State aid.¹⁰ However, if security charges recover more than the security costs such charges are then excessive. The additional revenues from excessive security charges have to be investigated under State aid rules. The Commission has recently opened an investigation under the State aid rules that an airport set the level of security charges above the level needed to recover security cost¹¹.

Discriminatory or excessive security charges are not possible to detect without having detailed information costs and revenues. Charges for aviation security are seldom levied in a transparent manner. Both the replies from Member States and industry organisations made this evident.

The bodies levying security charges – be it either national authorities or airports - have no incentives to provide airlines with financial information on security costs because this will allow the airlines to criticise the ways the security activities are performed. Airlines and airports have discussed the relevant rate of return on security activities. Airlines argue that security activities should not generate any return. Airports claim that a reasonable return is necessary. Disclosing financial information would inevitable lead to a discussion on reasonable rate of return. Member States' views are often close to the airports' because most airports are still publicly owned.

In addition, an airline benefiting from differentiated security charges does not require that financial information is made public to all airlines. Furthermore, the body levying security charges may have other incentives no to fully disclose all financial information on security costs. As the Commission investigation mentioned above found, the revenues from overcompensation from security activities may be used to fund activities by the airport are in competition with other activities. This overcompensation therefore risks distorting the market for airport services at an airport because the activities being subsidised by security charges have an advantage over other activities.

As pointed out by Peel Airports Group, airport charges and security charges are increasingly set in multi-annual contracts between airports and airlines. The level of these charges will consequently depend on the circumstances when the parties entered the contract and such on economic and traffic forecasts made at the time. Such long-term contracts will increase the risk of discriminatory charges. In addition, the traffic volumes at an airport may change so that the security levy is too low to recover the security costs for an airline. The airport may then recover these losses by overcharging other airlines, air passengers or cargo shippers for their security costs. Security charges will therefore become more and more discriminatory and excessive over time as the industry becomes less aware of certain fundamental principles with regard to recovering security costs.

The replies to the questionnaire confirmed that only very few Member States have legislation in force explicitly prohibiting windfall profits in conjunction with the imposition of security charges/taxes/fees. Other Member States refer to legislation obliging security charges to be based on the actual cost of providing the service, which would imply that the level of security

¹⁰ Community guidelines on financing of airports and start-up aid to airlines departing from regional airports, (OJ C 312 of 9.12.2005)

¹¹ State aid — Germany — State aid C 29/08 (ex NN 54/07) — Germany — Flughafen Frankfurt Hahn and Ryanair — Invitation to submit comments pursuant to Article 88(2) of the EC Treaty, (OJ C 12 of 17.1.2009)

charges cannot exceed the cost of security measures. In some Member States modified security charges have to be approved by the authorities before the entry into force. An overview of the replies from Member States to the questionnaire is given in Annex I.

2.2.2 Security charges are the only airport fees not regulated

Community law already covers other major fees levied on airlines at an airport. The Directive on groundhandling opened up the market for passenger and cargo handling at EU airports. The Directive also establishes certain principles for levying the fees the groundhandler has to pay to the airport for using airport infrastructure. The aim is that the airport shall not be able to use its dominance to levy fees that are abusive. These fees shall therefore be non-discriminatory and cost-related.¹²

The Directive on airport charges has recently entered into force.¹³ It establishes new European rules for levying airport charges and addresses financing airport infrastructure in general.¹⁴ The Directive is based on internationally accepted principles already endorsed by the International Civil Aviation Organization (ICAO)¹⁵: transparency, consultation and non-discrimination.¹⁶ An overview of the main elements of the Directive can be found in annex VIII.

The air transport industry has been increasingly deregulated during the last 20 years with the privatisation of more and more state-owned airlines and airports. At the same time, previously military airfields are being converted into airports open for commercial traffic. This increased competition between airport and between airlines has led to more consumer choice and lower air fares.

More competition has increased the pressure on each airport to attract traffic by lowering the level of airport charges, in particular at smaller and regional airports where airport charges often are set in individual contracts with each airline. Airport charges are therefore increasingly differentiated according to the individual airline's bargaining power. At the same time, very few airports actually recover all their costs through airport charges. Airports therefore recover more of their costs from airlines with a weaker bargaining position than from other airlines. Airlines in a strong position vis-à-vis the airport have therefore managed to have a significant competitive advantage over other airlines operating from the same airport through differentiated airport charges.

In the same way as for airport charges, the increasingly competitive internal aviation market has also drawn airlines' attention to security charges. While the recently adopted Directive on airport charges will provide for procedures ensuring that airport charges are set in a non-

¹² Council Directive 96/67/EC of 15 October 1996 on access to the groundhandling market at Community airports, (OJ L 302 of 26.11.1996, p. 28)

¹³ Directive 2009/12/EC of the European Parliament and of the Council of 11 March 2009 on airport charges (OJ L 70, 14.3.2009, p. 11)

¹⁴ COM(2006) 820 final of 24.1.2007

¹⁵ ICAO's Policies on Charges for Airports and Air Navigation Services (Doc 9082/7), 2004, point 15.

¹⁶ In general, a charge, unlike a tax, is levied in return of a service provided to the user. The level of the charge should therefore correspond to the cost of providing this service. This is usually referred to cost-related charges. There is some confusion on the terms used; a charge is often called a tax. If the revenues from the tax are used to cover the cost of providing a service rendered to a user, it is still a charge. This impact assessment does therefore not make a distinction between taxes/fees/charges and uses "levy" to cover for all three terms.

discriminatory way following a dialogue between airlines and airports, security charges are not covered by the Directive.

2.3 Who is affected, in what ways, and to what extent?

Three stakeholder groups can be identified as the most affected: airlines, airports and consumers.

Airlines pay security charges to the body responsible for airport security – be it either an airport or the national authorities. These charges constitute approximately 1 percent of the average air fare. Airport security also often impacts the daily airline operation with delays through longer passenger check-ins and increased costs to implement requirements specific for airlines. Discriminatory security charges impact the level playing field between airlines. Airlines operating to smaller and regional airports are expected to be more affected as security charges tend to be more differentiated among airlines at those airports.

Airports provide the facilities and infrastructure to the security service providers. As airport security is an increasingly large share of an airport's daily operation, other airport operations are also affected. Aviation security also increases the overall cost for airports as the airports not always can recover the full cost of airport security. ACI stated in its reply that security costs account for on average 35 percent of the airports' operating cost. The corresponding figure before the EU aviation security measures entered into force was 5 to 8 percent. Similarly, on average 41 percent of the staff employed by an airport is now security related. Security costs affect smaller and regional airports more than larger airports with high traffic volumes because the cost per passenger decreases with increases in the passenger volume.

Consumers – be they either air passengers or cargo shippers – pay the charges levied by the airline or the airport. They pay the major share of security costs. AEA estimated that the average cost for security per passenger was €2.60 in 2007.

Airport security providers carry out the actual work of screening passengers, cargo and baggage. This is sometimes done by the airports themselves or contracted to a private company. However, any option studied in this report is not likely to have any significant impact on the security service providers.

2.4 How would the problem evolve, all things being equal? Should the EU act?

Without any EU action, the problems identified in paragraph 2.1 will continue to exist and probably become more accentuated.

Firstly, there is an increased risk that security charges will become more discriminatory. Individual contracts concerning airport charges between airports and airlines are increasingly common. During the negotiations of those contracts, each airline will try to exercise its market power. An airport may lower the level of charges to attract a new airline. Consequently, it is unlikely that an airport will levy the same level of charges on all airlines.

In addition, regional and smaller airports increasingly regulate airport and security charges through long-term individual contracts with their airline customers. These charges are usually fixed even if the level of security cost varies over the duration of the contract. Such individual long-term contracts will therefore cause further distortions as there is an increased likelihood of different security charges for the same security control. Airlines operating from the same

airport will therefore face different security costs depending on their bargaining power and when the contracts were finalised.

Secondly, excessive security charges will not be identified without increased transparency of security costs. An airport can therefore use the monopoly it has to provide aviation security services at the airport to generate excessive profits. Consequently, the air passengers, airlines and cargo shippers will have higher security costs than necessary. Such excessive profits can also be used to subsidise other activities of the airport that are in competition with other providers. For example the groundhandling sector, where the airport often is providing groundhandling services in competition with other groundhandlers at the airport.

Thirdly, aviation security is likely to be provided less efficiently over time. The security provider is guaranteed to have his costs recovered through the security charges and has therefore no incentives to increase the efficiency and control the costs.

Fourthly, an increase in the number of complaints to national authorities and the Commission is expected because security charges are the only airport fees not regulated. The complaint will refer to three issues: discriminatory or excessive security charges or inefficient provision of aviation security at EU airports.

2.5 Treaty base

Any new proposal would be based on Article 80(2) of the Treaty establishing the European Community.

The subsidiarity principle applies insofar as a proposal does not fall under the exclusive competence of the Community.

Diverging security charging systems continue to exist in the Member States. This situation hinders the existence of a true level playing field for airports and airlines alike.

Community action will better achieve the objectives of the proposal for the following reasons:

- The application throughout the EU of a common set of basic rules with regard to security charges will ensure fair play between the aviation partners when defining the parameters for levying security charges.
- Member States implement the general framework regulation on aviation security differently. This causes unnecessary fragmentation of the internal aviation market if such measures are not required. A proposal will also seek to improve the functioning of the internal air transport market by addressing aviation security measures that in fragment the market.
- Diverging security charging systems exist in the Member States. Not all systems include fundamental principles which are uniformly applied when security charges are being determined and the underlying method for their calculation is devised. A proposal will aim at achieving such application.
- Any proposed action should be limited to the definition of a minimum of rules to be respected when Member States and/or airport operators determine the levels of security charges and should not impose a particular security charging system. The discretion to define such a system remains with the Member States.

SECTION 3: OBJECTIVES

The main objectives are to protect consumers' interest and to avoid excessive security charges. These charges shall therefore neither discriminate nor recover more than the cost incurred. Consequently, the first objective is to protect consumers' interest through non-discriminatory security charges. The second objective is to avoid excessive security charges - security charges recover more than cost. This should also encourage a more efficient provision of security services.

The State shall therefore not use aviation security to discriminate between categories of users - be they airlines, air passengers or cargo shippers. This is one of the actions already requested by the mid-term review of the Commission's 2001 White Paper: 'Keep Europe moving; Sustainable mobility for our continent'.¹⁷ The review asked for a level playing field to be stimulated where the cost of security measures is likely to distort competition and to examine the functioning and costs of current security rules in air transport.

Furthermore, consumers should have certainty that revenues from security charges only cover security costs. For example, if an airport charges a security charge, the airport shall only be compensated for the costs. The 2001 White Paper: 'European transport policy for 2010: time to decide' already drew the attention to this right of the users of the transport system to have information on what they are being charged for.¹⁸

General objectives	Specific objectives
Protect consumers' interest	– Ensure that security charges do not discriminate among airlines, air passengers or cargo shippers
Avoid excessive security charges	– Ensure that security charges exclusively are used to meet security costs – Encourage efficient provision of security services

Increased efficiency in providing aviation security services will favour the competitiveness of the European aviation sector. A Commission proposal contributes to the objectives of the Lisbon strategy to strengthen the competitiveness of the European economy as well as the drive towards "better regulation" by avoiding discriminatory and excessive security charges and encouraging an efficient provision of security services.

SECTION 4: POLICY OPTIONS

The previous analysis has shown that the increased importance of aviation security is affecting the internal aviation market and is having increasingly undesired economic effects.

Option 2 analyses whether the problems identified can be addressed through self-regulation by the industry. Option 3 is as option 2 based on mandatory transparency, they will be

¹⁷ COM(2006) 314 final of 22.6.2006

¹⁸ COM(2001) 370 final of 12.9.2001

analysed separately as the increased administrative costs in option 2 may merit the increased efficiency. Option 4 removes the impact of discriminatory charges by obliging Member States to pay them. The status quo will be considered as "option 1" or the base case against which the other options will be measured:

- (0) No regulatory action.
- (1) Transparent security costs through self-regulation by the industry.
- (2) Obligatory transparency of security costs coupled with a requirement that revenues from security charges shall be used to exclusively to meet security costs. Airlines should also have the possibility to appeal security charges to a national supervisory authority.
- (3) An obligation on Member States to finance all airport security measures.

4.1 Option 1: No EU action

This option assumes no new EU action. However, this option will have to assess the impact of the future Directive of airport charges.

4.2 Option 2: Self-regulation

This option suggests that airports and airlines would cooperate to increase transparency of security costs. The aim of this would be to avoid discriminatory and excessive security charges. The industry parties do not have to develop any guidelines as ICAO recommendations on security charges already exist. As these principles already exist, there is no need for the Commission to issue any non-binding recommendations. These principles are:

- Transparency of security costs. The aviation security provider should present information on the cost elements and show how the level of security charge is arrived at. Usually, all the costs of passenger security are divided by the expected number of passengers.
- Regular consultations between aviation security providers, airports and airlines. The costs mentioned above should be presented by the security providers to the airports and the airlines on a regular, often yearly, basis and at least before the level of security charge is changed.
- Non-discrimination between airport users. Security charges shall not discriminate between airlines, air passengers or cargo shippers. Consequently, the level of security charge shall reflect the cost to which each category of user give raise.
- Security charges shall not recover more than the security costs. The level of security charge shall not be set than what is necessary to recover the aviation security costs. If security charges recover more than the costs during a year, possibly because of an unforeseen increase in traffic, this over-recovery shall be carried over to the next year and thereby reducing the cost base for that year. And vice-versa if security charges recover less than the costs. However, a reasonable rate of return on invested capital is allowed.

4.3 Option 3: EU Directive on non-discrimination, transparency, cost-relatedness and possibility to appeal

Similarly as in option 2, this option would be based on ICAO recommendations for levying security charges. However, this option would make these four principles legally binding.

On transparency, the bodies levying the security charges, which may either be the airport or the relevant national authority, will be obliged to make all elements of security charges transparent to the airlines: staff costs, number of employees, investments, traffic forecasts forming the basis for calculating the charges and any under- or over-recovery from previous years. Any change in the level of security charges shall also be justified by the body levying the security charges.

Regular consultation will become obligatory. The body levying security charges shall present this information to the airlines once a year. This is sufficient because the level of security charge does not change more than once a year. Similarly, airlines that wish to participate in these consultation meetings shall provide information their envisaged traffic. This will facilitate and increase the quality of the forecasts that form the basis for the establishing the security charge. However, no airline is obliged to participate in these consultations and has therefore no obligation to submit the information required to participate in the consultations. This option would still allow the airports and the security service provider to develop the charging system in detail and the exact fare structure for different categories of airlines, passenger and cargo shippers.

In addition to the principles outlined in option 2, option 3 would include the possibility for air passengers and cargo shippers and airlines to appeal decision on security charges to an independent supervisory authority. The supervisory authority shall correct security charges that are discriminatory or excessive and can be the same as the authority set up the Directive on airport charges. The supervisory authority also needs to be independent from any airport, airline or airport security provider and shall have sufficient resources to carry out its work. A high level of expertise is also necessary for the authority to promptly assess any complaint within and take a decision within a given deadline.

The Directive on airport charges makes the principles of transparency, consultation and non-discrimination legally binding for airport charges levied at airports with an annual traffic of more than five million passengers. Consequently, this option would mainly widen the scope of Directive on airport charges to also include security charges. However, this option would apply to security charges levied at all EU airports.

A Directive would be the preferred legal instrument for this option. This would allow for Member States to align the principles of this option with existing national principles for financing aviation security.

4.4 Option 4: Full state funding of airport security

In this option, all Member States would cover all costs for providing aviation security services at EU airports. The providers of airport security would consequently have their costs covered by the Member States. No security charges would be levied on passengers.

The preferred option of all industry representatives is that Member States cover all costs for providing aviation security services, not only airport security costs. At the same time, almost every Member State that commented on this option so far made it clear that they are strongly

opposing this option and do not want any restrictions on the application of the "user-pays" principle.

This option could therefore have been discarded at this stage because it interferes with the "user-pays" principle for airport security costs and is therefore not likely to be adopted by the Council. However, this option will be assessed in the next section because of the strong and unambiguous argumentation of all industry stakeholders that Member States should cover, at least in part, the cost for states' core activities such as preventing terrorist attacks on citizens.

A Regulation amending Regulation (EC) 300/08 would be the preferred legal instrument for this option; expanding upon existing Article 5 on Security Costs.

SECTION 5: ANALYSIS OF IMPACTS

The Commission has previously used the estimates for average price elasticities in aviation for the whole market typically range between -0.6 and -1.1.¹⁹ That document uses a price elasticity of -0.8 as an average for intra-EU flights. This analysis also assumes that low-cost airlines would be more affected than traditional airlines, because of a higher price elasticity of demand. The analyses carried out by DG JRC for this impact assessment produce similar elasticities: for trips TRANSTOOLS shows an elasticity of -0.98, while for passenger kilometres all three models used give elasticities in the range of -0.6 to -0.7.

The 2004 study estimated that security charges are approximately between 1 and 2 percent of the air fare. The analysis will use the figure provided by AEA that the average security levy per departing passenger is €2.60. This is assumed to be 1 percent of the average air fare, as the airport security related cost has declined since then. This seems to be reasonable in view of the 2007 data published by IATA for air fares for air travel in the EU, even though average air fares are notoriously difficult to assess as they constantly change and relate to commercially sensitive information for the airlines.²⁰

Arriving and departing passengers are the most used statistic to provide an estimate of the size of an airport, which is also used in the annexes. However, to assess the impact of the different option this report uses departing passengers because security charges are almost exclusively levied on departing passengers.

5.1 Option 1: No EU action

Economic impacts

- This option is identical to the impact identified in the first two scenarios described in section 2.4. The two impacts are believed to be accentuated because the Directive on airport charges addresses major charges other than security charges.

¹⁹ SEC(2005)467 of 5.4.2005. Cf. notably Gillen, Morrison, Stewart (2003), Élasticités de la demande de transport aérien de passagers: Concepts, problèmes et mesures; DETR (2000), Valuing the external cost of aviation, 2000, and DETR, Air traffic forecasts for the United Kingdom; Resource Analysis et al. (2000), Aviation Emissions and Evaluation of Reduction Options (AERO); ICAO (1995), Outlook for air transport to the year 2003. Elasticities differ between different types of flights, being higher for short-haul and for leisure flights than for long-haul and for business flights.

²⁰ IATA Fare Tracker, IATA, 2007.

- Security charges could become more discriminatory.
 - Security charges could recover more than the cost of security. In addition, there will be no incentive for the security providers to improve the efficiency of their activities.
- If security charges discriminate between airlines, an airline could decide to move its operation to another airport. However, an airline has often invested in the airport with infrastructure designed for its operations. To move to another airport would also mean that the airline would have start-up new routes from that airport, with significant marketing costs and a loss of customers. Consequently, these costs will unquestionably offset any possible discrimination in security charges.
 - Security costs are also likely to increase over time because there are no incentives for the security providers to improve the efficiency of their activities. This will generate complaints from the airlines.

Social impacts

- No social impacts are expected.

Environmental impacts

- No environmental impacts are expected.

5.2 Option 2: Self-regulation

Economic impacts

- The impact of 2 is similar to option 1 because it is unlikely that self-regulation by the industry will effectively protect consumers' interest and promote a more efficient provision of aviation security services. The ICAO recommendations on which this option is based were adopted by contracting States to ICAO, including all EU Member States, already in 1981. Consequently, the industry has had several years already to implement these recommendations.
- As this option is not expected to have any identifiable impact, neither will it increase the burden on business or Member States. The industry does not need to develop the guidelines as ICAO recommendations already provide sufficient level of detail.

Social impacts

- No social impacts are expected.

Environmental impacts

- No environmental impacts are expected.

5.3 Option 3: EU Directive on non-discrimination, transparency, cost-relatedness and possibility to appeal

Economic impacts

- Transparency will allow for airlines to scrutinise the cost components serving as a basis for determining the level of security charges levied at the airport. Airlines can then give their views on how the revenues from airport charges are used. By discussing the security measures and associated costs, better and more cost-efficient solutions may be found. Transparency will also allow the airlines to discover whether other costs than for aviation security are included in the cost base for security charges. The discussions will also allow incorporating the airlines' traffic forecasts. The design of the security measures depends largely on the number of passengers and their destinations. The input of the airlines and their traffic forecasts are therefore valuable with a positive impact on the efficiency of the provision of security services. Furthermore, this information also allows for airlines, air passengers and cargo shippers to verify whether security charges discriminate among users.
- Mandatory transparency allows identifying discriminatory or excessive security charges. However, it may still lead to a lengthy discussion between airlines and airports on how to correct such charges. This option obliges bodies levying security charges to consult, and not to negotiate, with the airlines. A consultation means informing and listening airlines, while a negotiation would require the actual consent of the airlines before introducing new charges. AEA identified the following effects at the airports of Hannover, Hamburg, Stuttgart and Bremen after mandatory consultation and transparency were introduced:
 - More efficient provision of airport security services. For example through more efficient screening procedures or changes in the setup of security infrastructure by combining screening points to increase utilisation.
 - Improved passenger forecast that form the basis for calculating the security charges
 - Removal of non-security related costs
 - Improved benchmarking with other airports
- At the four airports mentioned in the point above, these measures caused the average security charge per passenger to fall significantly from 2004 to 2008. Hannover (-10%), Hamburg (-15%), Stuttgart (16%) and Bremen (-9%). These experiences show that security charges have on average been reduced by more than 10 percent.
- A 10% reduction of security cost should then translate into a reduction in the final air fare to the air passengers because of competition between airlines. As security costs constitute 1% of the air fare, the competitive pressure in the market would pass on the reduction to the passengers. The air fare is therefore expected to be reduced by 10% of 1% which results in a total reduction of 0.1%.
- A quantitative analysis was made by DG JRC to test the hypothesis of a 0.1 percent reduction in total costs, which corresponds to a €0.26 reduction in the average air fare for a passenger. Three models were used to quantify the impact (see box below for their description). As expected the different models estimate a negligible increase in air passenger traffic (see Annex XII for detailed results).
 - The TRANSTOOLS results confirm the number used in the evaluation, the expected increase in total passenger traffic would be 0.098 percent while

passenger kilometres would be reduced by 0.069 percent. Rail will be affected negatively, but to a very limited extent. Rail loses half a million trips a year while air gains 3.2 million trips. Consequently, TRANSTOOLS estimates that number of air passengers departing from EU airports will increase by 618,941 to 632,191,578 passengers per year.

- The POLES results also agree. Intra-EU air trips are expected to increase by 0.074 percent in terms of passenger kilometres compared to the baseline. The impact on flights between the EU and the rest of the world would be more limited (as expected), the main combinations affected being EU27-Middle East and EU27-Russia and ex-Soviet Union.
- REMOVE estimates that intra-EU air trips are expected to increase by 0.063 percent in terms of passenger kilometres compared to the baseline.
- The estimations presented in Annex XII show that the distribution of effects is expected to be quite uniform among EU-27 member states. However, the increase in demand would affect mainly shorter distances (500-1000 km) and non-business trips. Among airports, regional and smaller airports serve shorter routes and are therefore more likely to benefit from this increase in demand than larger airports. Among airlines, low-cost and regional airlines are also able to profit more than larger airlines.²¹
- The administrative burden on the body levying security charges is negligible. There will be some increased costs to produce the necessary material for the consultations with the airlines. This material is however easily accessible and its collection will therefore only give rise to insignificant costs.
 - Data on the costs of security staff is accessible because security staff only perform security tasks and therefore easily identifiable. In addition, the tasks of the security staff are often sub-contracted.
 - The cost of additional material, such as screening machines, is easily identifiable as such material only can be used to for security activities and therefore not possible to allocate to other activities.
- Option 3 contains the possibility for airlines to appeal decisions on setting security charges. These appeals shall be examined by an independent supervisory authority that will have the necessary competence to quickly examine any complaint. This will speed up the handling of complaints compared with lodging a complaint to the Commission. This possibility to appeal could encourage airlines to submit complaint to delay the introduction of new security charges. However, a competent independent supervisory authority will quickly assess whether the complaints are well-founded or not. This option therefore foresees the possibility for the authority to take an interim decision on the entry into force of the new security charges.
- Option 3 will increase the administrative burden on Member States because this option suggests the establishment of a national supervisory authority to examine the complaints. The Directive on airport charges will however already oblige Member States to establish such authorities. Consequently, these authorities will have to assess complaints on security

²¹ See section 4 "Conclusions" of Annex XII.

charges in addition to complaints on airport charges. This additional task is expected to be insignificant and in any case not more than the cost of one full time staff per Member State.

- However, at airports to which the Directive on airport charges does not apply, this means at airports with an annual traffic of less 5 million passengers, these consultations would have to be established. However, the cost of one yearly meeting between airports, airlines and the security service providers is very low and not possible to establish. If the smaller airports were exempt from this option these airports would not benefit from the expected cost reductions. In particular, when these reductions are expected to be proportionally higher at smaller and regional airport than at larger airports. Neither would the low-cost and regional airlines operating to smaller airports benefit.
- The administrative burden on the Commission to investigate complaints into discriminatory or excessive security charges will also be reduced. This reduction will not be significant.

Social impacts

- No social impacts are expected.

Environmental impacts

- The environmental impact is expected to be very small, because the increase in air traffic is estimated to minimal. The modelling exercise estimates that the external cost of the environmental impacts would be negligible, totalling less than €1 million per year.²²

5.4 Option 4: Full state funding of airport security

Economic impacts

- No security charges will be levied on airports, airlines and consumers, this option would therefore remove any discriminatory aspects of security charges.
- It is, however, not evident that this will benefit air passengers through lower air fares, at least not in the short run. Airlines may either choose to lower the air fares or to increase their profits. The airlines' response will depend on a number of factors including: passengers' demand price elasticity, mix of business and leisure passengers, airlines' cost structure and response of competitors to the lower security costs.
- If one were to assume that there is perfect competition in the air transport market, the airlines would reduce the air fare with their lower costs for security. Assuming that aviation security is 1 percent of the air fare and a price elasticity of -0.8 would result in an increase in traffic of 0.8 percent. Departing passengers at EU airports would then increase

²² Please see Annex XII, section 3.3. Environmental Impacts. After estimating the increase in transport demand as a result of the change in air fare, the corresponding increase in emissions and other externalities were estimated. The emission factors from TREMOVE were multiplied by the change in passenger kilometres. This was translated into monetary terms using the values from the Handbook for the internalisation of external costs where available and for the remaining ones we used TREMOVE figures for external costs per passenger kilometre.

by 5 052 581 to 636 652 218 using 2007 figures. Similarly, the effects quantified in fourth bullet point in section 5.3 are expected to be ten times higher.

- As discussed in section 2.1.1, the impact on competition between airports is expected to be negligible. Competition between airlines is expected to be affected in the same way as in option 3 through the removal of discriminatory security charges.
- The costs for Member States would increase by the same amount as security charges yield revenue: this means approximately €1.6 billion per year.
- There will be little incentives for the providers of aviation security to increase the efficiency of their operations, because Member States are required to cover all costs. Actually, the security service providers may even reduce their efficiency as this comes at no cost for them.
- As in option 3, low-cost and regional airlines that serve regional and smaller airports are therefore more likely to benefit from this increase in demand than larger and airlines airports.²³
- An obligation on Member State to cover aviation security costs would also remove possible current distortions to competition from the existing differences between Member States in the level of public funding. However, the Commission concluded in the "Report on financing aviation security" competition between airports and between airlines is not likely to be significantly impacted by differences in the security levies between Member States, provided that such differences do not discriminate between airlines, air passengers or cargo shippers. Transparency of security costs is necessary to verify that security levies are non-discriminatory and therefore also important to ensure the security levies do not distort competition between airlines.
- The impact on competition between airports and competition between airlines is negligible. Airlines operating from the same airport will benefit equally from any public funding. One airline will therefore not have an advantage over the other airline due to the level of public funding. An airport located in a Member State with high levels of public funding could have an advantage over an airport located in a different Member State with low levels of public funding. For this to have any impact on competition, these airports need to serve the same markets. However, it is unlikely that airports located in different Member States serve identical markets. In addition, the Commission is not aware that an airline has moved its operation from one airport to another airport that serves the same market due to differences in the security costs between the two airports.
- Option 4 is not expected to have a positive impact on competition between airports or between airlines.

Social impacts

- No social impacts are expected.

Environmental impacts

²³ See section 4 "Conclusions" of Annex XII.

- This option would generate the highest increase in traffic, and therefore the largest impact on the environment of the options assessed. The environmental impact of option 4 is expected to 10 times the environmental impact of option 3, because the reduction in the air fare is 10 times. The environmental impact of option 4 could therefore be estimated to less than €10 million.

The modelling approach by DG JRC

Three different models, that capture different aspects, were used:

TRANSTOOLS: being a network model it can capture the impact on modal split. This model estimates the impact of a reduction in the air fare on number of passenger trips and on the total number of kilometres travelled by passengers.

POLES: allows the analysis of the impacts at global level. It estimates changes in air traffic within and between different regions. The model takes the fleet composition of the different regions into account when estimating the environmental impact of a change in the air fare.

TREMOVE: detailed externalities and welfare module. The model consists of separate country models. Each country model describes transport flows and emissions in three model regions: one metropolitan area, an aggregate of all other urban areas and an aggregate of all non-urban areas. The model explicitly takes into account that, depending on the area taken into consideration, the relevant modes and network types differ.

All three models assume that the demand curves are linear for changes in the airline cost of 0.005 to 0.1 percent and the resulting impacts are therefore directly proportional to the level of change assumed.

SECTION 6: COMPARING THE OPTIONS

Each and every option has its advantages and disadvantages to address the distortions caused by the aviation security to the functioning of the internal aviation market.

The exception may be the non-regulatory option as this option does not meet the increased focus on security charges that is anticipated with the increasingly harder competition between airlines. This option does not require any implementation and is, in addition, supported by Member States.

The non-regulatory option does however not impact on the security measures that distort the market for air transport services. Furthermore, the recently adopted Directive on airport charges does not apply to security charges. There is therefore no applicable Community law that prohibit security charges to discriminate among airlines or passengers. Neither does this option ensure that revenues from security charges exclusively are used to meet security costs and thereby protect passenger rights.

The following table summarises the quantitative impacts per year of the options studied.

Options	1	2	3	4
	No EU action	Self-regulation	Mandatory transparency, cost-relatedness and possibility to appeal	Full state funding

Options	1 No EU action	2 Self-regulation	3 Mandatory transparency, cost-relatedness and possibility to appeal	4 Full state funding
Impact on traffic	0	0	Increase in passenger traffic by 0.6 million passengers per year (TRANSTOOLS estimate)	Increase in passenger traffic by 6 million passengers per year (TRANSTOOLS estimate)
External costs	0	0	€1 million	€10 million
Financial impact on Member States	0	0	0	Increased costs by €1.6 billion
Administrative burden on Member States	0	0	Negligible negative impact	Negligible negative impact
Financial impact on industry and air passengers	0	0	Air passengers are expected to save €80 million and airline income is expected to increase by €60 million ²⁴	Decreased costs by €1.6 billion
Increased burden of business on industry	0	Negligible negative impact on airports with an annual traffic of less than five million passengers	Negligible negative impact on airports with an annual traffic of less than five million passengers	0

The following table summarises the qualitative economic, environmental and social impacts of the options studied.

²⁴ See section 4 "Conclusions" of Annex XII.

Impact table synthesis

Options	1 No EU action	2 Self-regulation	3 Mandatory transparency, cost-relatedness and possibility to appeal	4 Full state funding
Economic Impact				
Competitiveness of EU companies	= No impact expected	= No impact expected	+ Improves international competitiveness of EU companies	++ Improves international competitiveness of EU companies
Competition in the internal market	= No impact expected	= No impact expected	+ Reinforces competition between airlines and between airports	= No impact expected
Operating costs and conduct of business	= No impact expected	= No impact expected	+ Reduces cost of aviation security through increased efficiency	++ Significant reductions in cost of aviation security

Options	1 No EU action	2 Self-regulation	3 Mandatory transparency, cost-relatedness and possibility to appeal	4 Full state funding
Administrative cost on business	= No impact expected	= No impact expected	<p>+ Increased information on security costs will make it easier for airlines to comply with existing Community law</p> <p>-/= Negligible negative impact on airports with an annual traffic of less than five million passengers because these airports are not obliged today to establish regular consultation procedures</p>	= No impact expected
Innovation and research	= No impact expected	= No impact expected	+ Increased transparency and benchmarking between airports will stimulate more efficient airport security	=/- No impact expected. A State guarantee to always cover security costs may actually create disincentives to find more efficient ways to provide aviation security

Options	1 No EU action	2 Self-regulation	3 Mandatory transparency, cost-relatedness and possibility to appeal	4 Full state funding
SMEs: airlines, airports and security providers	= No impact expected	= No impact expected	+ Reduced security costs for smaller and regional airports, as well as for low-cost and regional airlines	++ Reduced security costs for smaller and regional airports, as well as for low-cost and regional airlines
Consumer and households	= No impact expected	= No impact expected	+ Non-discrimination + No overcharging for security costs + Reduced security costs should reflect in air fares	+ Reduced security costs should reflect in air fares
Social Impact				
Employment	= No impact expected	= No impact expected	= No impact expected	= No impact expected
Environmental Impact				
Air Quality	= No impact expected	= No impact expected	=/- Negligible impact	=/- Negligible impact
Climate	= No impact expected	= No impact expected	=/- Negligible impact	=/- Negligible impact
Mobility and use of energy	= No impact expected	= No impact expected	= No impact expected	= No impact expected

The impact of the various options on the specific is summarised in the following table:

Specific objectives	1 No EU action	2 Self-regulation	3 Mandatory transparency, cost-relatedness and possibility to appeal	4 Full state funding
Security charges do not discriminate among airlines, air passengers or cargo shippers	= No impact expected	+/= This option is unlikely to increase the transparency of security costs which makes discriminatory security charges visible.	++ This option explicitly prohibits discrimination among airlines, passengers or cargo shippers.	++ Discriminatory security charges will not exist in this option because it abolishes all security charges.
– Security charges exclusively are used to meet security costs	= No impact expected	+/= This option does makes excessive security charges visible but does not provide any remedies	++ A legal obligation makes this obligatory	++ This option abolishes taxes/fee/charges which can therefore not be used for other costs
Encourage efficient provision of security services	-/= If Member States cover all security costs, the providers of aviation security have no incentives to increase their efficiency or reduce their costs.	+/= No expected impact	+ Airlines will have access to information on the organisation of aviation security and its costs. Airlines can therefore suggest improvements.	- If Member States cover all security costs, the providers of aviation security have no incentives to increase their efficiency or reduce their costs.

Option 4 most effectively addresses the concerns of discriminatory and excessive security charges. However, this option discourages a more efficient aviation security services because there are no incentives for the security providers to control the costs.

From the above analysis, it can be concluded that, considering the market condition today and in the coming years, option 3 presents the most favourable combined outcome of the options considered. The increased administrative burden of option 3 is negligible and clearly outweighs its effectiveness in reaching the objectives. Indeed, its economic impact is more positive than the other options while the social and environmental effects are comparable or even positive.

Option 3 most effectively reaches the objectives set for a proposal on security charges:

- Option 3 fully meets consumers' interest by explicitly prohibiting discriminatory or excessive security charges.
- Option 3 promotes more efficient provision of security services and therefore lower overall costs for aviation security.

Option 3 will increase the administrative burden on Member States, compared to option 2. However, this increase in administrative burden will be negligible because the independent authority on airport charges established by the Directive on airport charges may be used. Opting for the form of a Directive, and not a regulation, would have the advantage of allowing Member States to transpose such principles in line with the implications of diverse legal and administrative systems and thereby keeping the administrative burden to a minimum. The estimations presented in Annex XII show that the increase in demand would affect mainly shorter distances (500-1000 km) and non-business trips. The distribution of effects is expected to be quite uniform among EU-27 member states.

Option 3 is broadly supported by stakeholders and Member States. No stakeholder opposed option 3, even if option 4 is the preferred option by all stakeholders. Member States have already in ICAO endorsed the principles on which option 3 is based. This option would support Member States' commitment in ICAO to levy more transparent security charges and taxes. Option 3 is based on internationally accepted principles endorsed by ICAO.²⁵ Consequently, option 3 supports and strengthens already existing frameworks at national level for levying security charges.

Option 3 also provides the information necessary for airlines that wish to present security charges on the air ticket. Article 23 of the recently revised third package of air transport obliges airlines that present security charges on the air ticket to quote the correct amount.²⁶

Consequently, option 3 offers the most efficient overall solution.

SECTION 7: MONITORING AND EVALUATION

The Commission will continuously monitor the developments in the aviation security sector and evaluate on a regular basis the impact of the proposed legislation. More specifically, the Commission will observe market developments with regard to the following issues:

- The impact on consumers and the aviation industry.

²⁵ ICAO's Policies on Charges for Airports and Air Navigation Services (Doc 9082/7), 2004, point 29.

²⁶ Regulation (EC) No 1008/2008 of the European Parliament and of the Council of 24 September 2008 on common rules for the operation of air services in the Community (Recast), (OJ L 293, 31.10.2008, p. 3)

- The level of transparency of security costs.
- The overall cost of aviation security in Europe.

The core indicators for progress towards meeting the objectives set for this policy initiative are the following:

- (1) The number of airports publishing their security charges.
- (2) Whether there is a reduction in the level of security charges in Europe.

The conclusions of the impact assessment are based on today's market situation.

ANNEX I

Overview of national legislation

<i>Member State</i>	<i>Transparency and cost-relatedness</i>	<i>The main source for funding</i>	<i>Total airport security cost</i>
Belgium	N.A.	N.A.	
Bulgaria	No particular mechanism that ensures transparency or cost-relatedness	Users/state	€ 9 million (equals €2.89 per departing passenger)
Czech Republic	No particular mechanism that ensures transparency. Cost-relatedness can be verified when the levying body consults airlines on security charges.	Users	450 CZK million (approx. €17 million which equals €2.60 per departing passenger)
Denmark	No particular mechanism that ensures transparency. The government ensures that security charges are cost-related.	Users	
Germany	The government ensures that security charges are transparent and cost-related.	Users	
Estonia	No particular mechanism that ensures transparency or cost-relatedness	Users	€ 6 million (equals €6.86 per departing passenger)
Greece	No particular mechanism that ensures transparency or cost-relatedness	Users/state	
Spain	Transparency of security charges is ensured through legislation.	Users/state	€ 316 million (equals €3.04 per departing

<i>Member State</i>	<i>Transparency and cost-relatedness</i>	<i>The main source for funding</i>	<i>Total airport security cost</i>
			passenger)
France	The government ensures that security charges are transparent and cost-related.	Users	
Ireland	No particular mechanism that ensures transparency. The government ensures that security charges are cost-related.	Users	
Italy	Legislation imposes transparency of security charges. The government ensures that security charges are cost-related.	Users	€ 58 million (equals €0.86 per departing passenger)
Cyprus	Consultation with airlines ensures that security charges are transparent and cost-related.	Users	€ 12 million (equals €3.43 per departing passenger)
Latvia	No particular mechanism that ensures transparency or cost-relatedness	Users/state	
Lithuania	No particular mechanism that ensures transparency or cost-relatedness	Users/state	€ 5 million (equals €4.54 per departing passenger)
Luxemburg	N.A.	N.A.	
Hungary	No particular mechanism that ensures transparency. The government ensures that security charges are cost-related.	Users	€ 25 million (equals €5.69 per departing passenger)
Malta	N.A.	N.A.	
The Netherlands	Special legislation ensures that security charges are transparent and cost-related.	Users	€ 253 million

<i>Member State</i>	<i>Transparency and cost-relatedness</i>	<i>The main source for funding</i>	<i>Total airport security cost</i>
			(equals €9.99 per departing passenger)
Austria	No particular mechanism that ensures transparency or cost-relatedness	Users	
Poland	No particular mechanism that ensures transparency. The government ensures that security charges are cost-related.	Users	€ 29 million (equals €3.21 per departing passenger)
Portugal	No particular mechanism that ensures transparency or cost-relatedness	Users	
Romania	No particular mechanism that ensures transparency. The government ensures that security charges are cost-related.	Users/state	€ 62 million (equals €17.04 per departing passenger)
Slovenia	N.A.	N.A.	
Slovakia	No particular mechanism that ensures transparency. The government ensures that security charges are cost-related.	Users	56 SKK million (approx. €1.85 million which equals € per departing passenger)
Finland	Consultation with airlines ensures that security charges are transparent and cost-related.	Users	€ 40 million (equals €4.60 per departing passenger)
Sweden	Mandatory consultation with airlines	Users	

<i>Member State</i>	<i>Transparency and cost-relatedness</i>	<i>The main source for funding</i>	<i>Total airport security cost</i>
	ensures that security charges are transparent and cost-related.		
United Kingdom	No particular mechanism that ensures transparency or cost-relatedness	Users	
Iceland	No particular mechanism that ensures transparency. The government ensures that security charges are cost-related.		800 IKR million (approx. €2.76 million)
Norway	Consultation with airlines ensures that security charges are transparent and cost-related.		1 000 NOK million (approx. €110 million which equals €5.39 per departing passenger)
Switzerland	No particular mechanism that ensures transparency or cost-relatedness	Users	€ 96 million (equals €5.46 per departing passenger)

Source: Replies to the Commission questionnaire (Exchange rates from December 2009), Eurostat

ANNEX II

Summary of stakeholders' replies to the public consultation

Below is the summary of the replies to the questionnaire submitted in April and of the additional comments in writing submitted after stakeholder meeting on 17 July 2008. This summary does not disclose information from replies indicated as confidential.

ACI argued that financing aviation security is a State responsibility. Furthermore, mandatory application of "one-stop" security is the best avenue for ensuring a common security regime at EU level which would eliminate redundant and unjustified costs. The EU should also be more involved when Member States impose more stringent measures which should be financed by Member States.

ACI also supports more transparency and clear principles for levying security charges. However, ACI is of the opinion that security charges will be covered by the Directive on airport charges. This opinion is neither shared by any other stakeholder nor by the Commission.

IATA emphasised that the international air transport industry is confronted by a financial crisis and that in many states outside the EU aviation security is mainly financed by the government. Member States should therefore finance aviation security, in particular more stringent security measures due to their potentially distorting effect on competition. IATA also argued for EU rules obliging Member States to make an impact assessment when proposing national rules for aviation security.

IATA also pointed out that ICAO States have agreed to certain basic principles for levying security charges: transparency, non-discrimination, regular consultation and cost-relatedness. Increased international cooperation between regulatory authorities is therefore a sensible way of gradually reaching more consistency between different jurisdictions. However, this would not efficiently address distortions of competition from heavily-financed States like the US or Japan.

AEA argued that Member States should finance an increased share of security costs. AEA strongly supported obligatory transparency of security costs. This would provide the necessary tools to measure the efficiency and the performance of the security services charges by airports to airlines.

AEA also estimates that 30% to 50% of the security costs are induced by EU legislation. In 2007, the average estimated cost per passenger for security measures carried directly by airlines was around 2.50€, while at airports not applying "one-stop" security the average security costs is approximately 8.50€. Mandatory "one-stop" security would decrease security costs and eliminate redundant security measures. 20% of transfer passengers in some Member States are today re-screened when arriving from another Member State.

However, there is no transparency in Member States about which measures are imposed by EU requirements and which are imposed by more stringent measures. AEA also pointed out there is no clear and common definition of what constitutes a more stringent measure. AEA supported argued that Member States should not impose additional stringent measures and should finance existing more stringent measures. AEA also suggested that Member States communicate to the Commission measures that are applied in addition to EU requirements.

In addition, the Commission should provide a thorough impact and costs analysis before proposing new security measures.

ELFAA highlighted the way aviation security is financed in the EU puts aviation at a disadvantage compared to other transport modes. Security is the responsibility of the State and should therefore not be financed by the industry according to the "user pays" principle. The consequence is that Member States have little incentive to remove any redundant security measures because they have no responsibility for meeting the costs. ELFAA also argues that aviation security causes considerably inconvenience for the travelling public.

FARE argued as well that financing aviation security is a State responsibility. The cost of aviation security per passenger is also higher at smaller airports than at larger airports. Furthermore, Member States should demonstrate that more stringent measures are justified and proportionate. The "user-pays" principle puts European airports in an increasingly disadvantaged position compared to airports in the US with the entering into force of the EU-US Open Skies agreement.

IACA argued that States should finance aviation security because terrorism targets governments and not airlines. European airlines are disadvantage compared to its global competitors because of the application of the "user-pays" principle in Europe. IACA supports mandatory "one-stop" security and increased transparency of security costs. IACA also questions why airlines should collect the revenues from the security charges from passengers.

ERA stated that States have the responsibility for the protection of citizens in the air and on the ground and should therefore finance aviation security.

EEA argued as well that financing aviation security is a State responsibility. More stringent measures should therefore be financed by Member States. Differences in financing aviation security globally affect negatively the EU.

CLECAT requested increased level of state financing and a more harmonised approach to aviation security to decrease the burden on the industry. CLECAT argued that transparency of security costs is necessary to avoid overcharging and discrimination. The only effect way to address this effectively is through EU action. A Directive on transparency would not address the disadvantages EU operators face in comparison with operators based in states with a high level of public financing.

ESC explained that the costs for security screening of cargo have increased significantly over the last years. ESC therefore in its reply focused on the lack of transparency of security costs and charges paid by the cargo shippers. However, transparency should extend to cargo shippers and not only to airlines. Cargo shippers can today not verify whether the security fee levied on cargo shippers by airlines corresponds to the actual costs.

ESC argued that administrative burden and costs for companies need to be addressed when new security regulations are being introduced. The costs for measures protecting the state should be at the very least shared with the state. ESC also supported more harmonisation of principles for financing aviation security within ICAO. However, ESC emphasised that the EU institutions are more efficient in ensuring adherence to the principles of transparency, consultation and cost-relatedness.

Peel Airports Group highlighted that aviation security represent a significant part of the airport costs and that these cost are expected to continue to grow. More stringent measures put

financial pressure on smaller regional airports. The cost for security per passenger is already high at smaller airports compared to larger airports. Peel Airports Group also claimed that competition between regional airports is distorted through differences in the level of public funding in the EU. Peel Airports Group pointed out that long-term contracts between airlines and airports have become increasingly common with the advent of low-cost airlines. These contracts also set security fees at a fixed and often low level while security costs may change over time; particularly if more stringent measures are introduced.

ANNEX III

EU airlines (first half 2007)

	Number of airlines	Number of employed persons
Belgium	13	4005
Bulgaria	14	1493
Czech Republic	7	5487
Denmark	10	3242
Germany	48	57761
Estonia	6	576
Greece	8	7038
Spain	20	8281
France	45	34864
Ireland	34	78375
Italy	37	16531
Cyprus	6	2021
Latvia	6	1144
Lithuania	7	834
Luxemburg	4	3690
Hungary	8	3124
Malta	4	1883
The Netherlands	12	41124
Austria	20	11081
Poland	10	4540
Portugal	14	8251
Romania	5	3438
Slovenia	3	592

Slovakia	5	278
Finland	7	10345
Sweden	30	2637
United Kingdom	83	83160
TOTAL	466	420276

Source: Airclaims

ANNEX IV

EU airports open for commercial traffic (2007)

	Number of airports	Departing passengers
Belgium	5	10,429,410
Bulgaria	4	3,117,117
Czech Republic	4	6,548,515
Denmark	10	12,912,990
Germany	38	93,976,756
Estonia	1	874,841
Greece	39	15,305,163
Spain	39	20,784,541
France	65	103,808,025
Ireland	9	73,518,196
Italy	43	67,388,733
Cyprus	2	3,494,389
Latvia	2	1,581,409
Lithuania	3	1,100,561
Luxemburg	1	822,328
Hungary	3	4,390,748
Malta	1	1,485,616
The Netherlands	5	25,315,234
Austria	6	11,802,865
Poland	10	9,025,858
Portugal	10	13,430,040
Romania	9	3,615,634
Slovenia	1	752,292

Slovakia	6	1,205,653
Finland	26	8,701,088
Sweden	30	16,608,182
United Kingdom	59	119,576,453
TOTAL	431	631,572,637

Source: Eurostat

ANNEX V

Glossary

Government

International Civil Aviation Organization (ICAO)

European Aviation Safety Organisation (EASA)

EUROCONTROL

Stakeholders

PostEurop

European Regions Airline Association (ERA)

International Air Transport Association (IATA)

International Airline Association (IACA)

European Transport Workers' Federation (ETF)

Freight Forward International (FFI)

European Travel Retail Council (ETRC)

European Shippers Council (ESC)

European Cockpit Association (ECA)

European Consumer Centre Network (ECC-Net)

Bureau Européen des Unions des Consommateurs (BEUC)

Forum of European Regional Airports (FARE)

European Business Aviation Association (EBAA)

Airports Council International - Europe (ACI-Europe)

European Low Fares Association (ELFAA)

Association of European Airlines (AEA)

European Express Association (EEA)

European Association for Forwarding, Transport, Logistic and Customs Services (CLECAT)

ANNEX VI

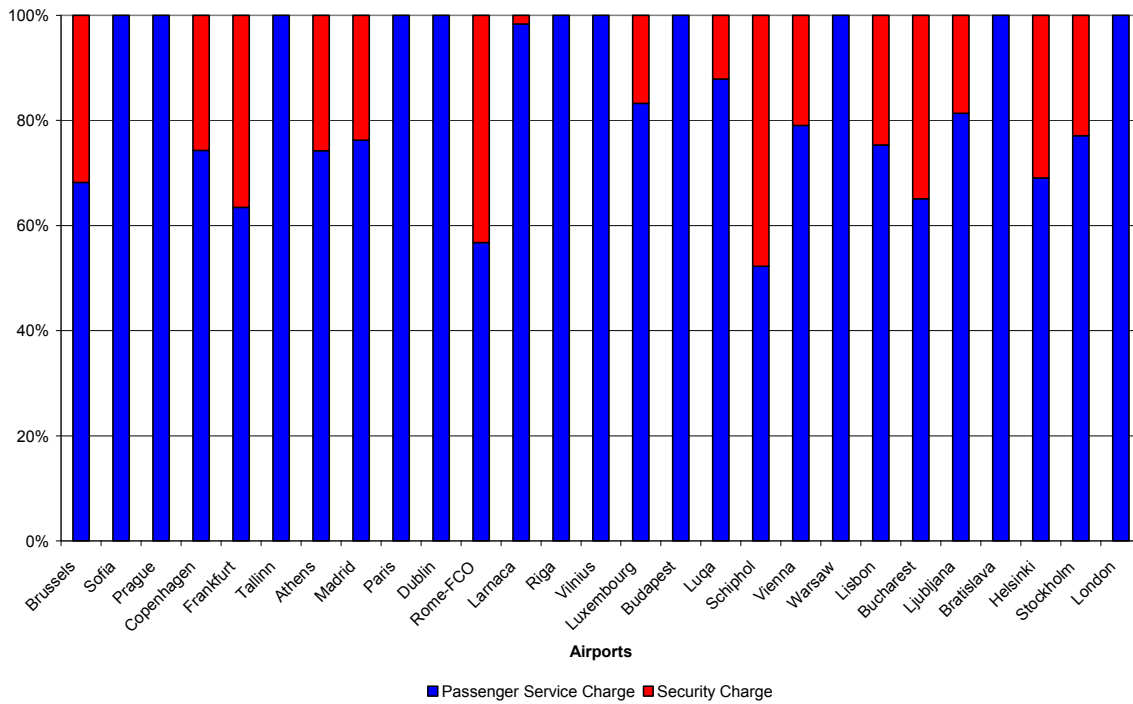
Passenger Security and Service Charge

Member State	Airport	Security Charge	Passenger Service Charge	Currency
Belgium	Brussels	7.62	16.36	EUR
Bulgaria	Sofia		12.00	EUR
Czech Republic	Prague		525.00	CZK
Denmark	Copenhagen	29.05	83.95	DKK
Germany	Frankfurt	8.76	15.20	EUR
Estonia	Tallinn		155.00	EEK
Greece	Athens	4.11	11.86	EUR
Spain	Madrid	1.39	4.45	EUR
France	Paris		7.56	EUR
Ireland	Dublin		7.70	EUR
Italy	Rome-FCO	3.86	5.06	EUR
Cyprus	Larnaca	0.39	23.67	EUR
Latvia	Riga		12.18	EUR
Lithuania	Vilnius		45.00	LKL
Luxemburg	Luxembourg	0.50	2.48	EUR
Hungary	Budapest		17.40	EUR
Malta	Luqa	2.19	15.84	EUR
Netherlands	Schiphol	10.84	11.87	EUR
Austria	Vienna	8.00	30.26	EUR
Poland	Warsaw		60.00	PLN
Portugal	Lisbon	2.39	7.30	EUR
Romania	Bucharest	7.50	14.00	EUR
Slovenia	Ljubljana	3.90	17.00	EUR
Slovakia	Bratislava		490.00	SKK
Finland	Helsinki	4.51	10.07	EUR
Sweden	Stockholm	30.00	101.00	SEK
United Kingdom	London		17.53	EUR

Source: IATA

ANNEX VII

Comparison of Passenger Service and Security Charge



Source: IATA

ANNEX VIII

Main provisions of the 2009/12 Directive on airport charges

Scope:

- The Directive applies to all airports with more than five million passengers (departing and arriving) per year.
- It also applies to the largest airport in every Member State
- The Directive covers charges levied by airports to cover the cost for landing, take-off, processing of passengers and cargo.

Consultation:

- Regular consultations between airlines and airports

Non-discrimination:

- Airport charges shall not discriminate among airlines

Transparency:

- Airports shall provide airlines with information on the cost for providing the services for which airport charges are levied.

Appeal:

- Each Member State shall establish an independent supervisory authority
- This authority will assess complaints from airlines concerning airport charges.

ANNEX IX

Main provisions of the Regulation (EC) No 300/2008 on Civil Aviation Security

Airport Security

- Staff Access Control (100 percent control of critical areas)

Aircraft Security

- Searching and checking of aircraft
- Protection of parked aircraft

Passengers and Cabin Baggage

- 100 percent screening of all departing passengers and their cabin baggage
- Separation of arriving and departing passengers
- Facilitation for passengers already screened intra-EU

Hold Baggage

- 100 percent screening of hold baggage
- Protection of already screened hold baggage
- Reconciliation of hold baggage

Cargo / Mail

- Various control requirements
- Rules for regulated agents /known shippers

Security Equipment

- Technical performance parameters

List of Prohibited Items

- Metallic items
- Liquids

ANNEX X

The largest EU airport groups

Rank 2007 (EU)	Rank 2007 (World)	Rank 2006 (World)	Airport	Member State	Main Airport(s)	Revenue (\$million)	2007 Net result (\$million)	2006 Net result (\$ million)
1	1	4	Ferrovial	Spain	Heathrow, Gatwick, Stansted	5309,7406	698,976	117,3273
2	2	1	Aena	Spain	Madrid, Barcelona, Mallorca	4103,0439	0	-33,3613
3	3	2	Fraport	Germany	Frankfurt	3337,7478	287,158	289,2813
4	4	3	Aéroports de Paris	France	Charles de Gaulle, Orly	3154,1978	442,7765	192,1595
5	7	7	Schiphol Group	The Netherlands	Amsterdam	1576,8237	434,7961	664,8549
6	13	13	Flughafen München	Germany	Munich	999,6	49,749	61,5
7	15	15	Luftfartsverket	Sweden	Arlanda, Gothenburg, Malmö	932,5408	-81,0194	60,9752
8	16	17	Dublin Airport Authority	Ireland	Dublin	858,5021	478,1739	209,2426
9	20	18	Manchester Airports Group	UK	Manchester, Nottingham, Bournemouth	795,7408	162,4864	128,746

Rank 2007 (EU)	Rank 2007 (World)	Rank 2006 (World)	Airport	Member State	Main Airport(s)	Revenue (\$million)	2007 Net result (\$million)	2006 Net result (\$ million)
10	21	19	Aeroporti di Roma	Italy	Fiumicino, Ciampino	765,8685	24,6169	75,6951
11	23	27	Flughafen Wien	Austria	Vienna	717,4465	120,3312	97,8371
12	24	25	SEA Aeroporti di Milano	Italy	Malpensa, Linate	709,2955	41,8285	44,6601
13	31	32	Flughafen Düsseldorf	Germany	Düsseldorf	552,8515	56,1382	25,3578
14	32	35	Athens International	Greece	Athens	549,6868	172,9553	121,4906
15	33	30	Copenhagen Airports	Denmark	Copenhagen	540,0799	205,4431	123,2179
16	36	36	Brussels Airport Company	Belgium	Brussels	505,1064		
17	42	45	Aeroportos de Portugal	Portugal	Lisbon, Faro	413,703	66,6187	54,6405
18	43	44	Abertis	Spain	Luton, Cardiff, Belfast	412,7811		27,775
19	45	48	Finavia	Finland	Helsinki	399,2969	43,2044	28,7641
20	48	49	Flughafen Köln-Bonn	Germany	Cologne	378,1419	7,5781	6,333
21	54	56	Flughafen Hamburg	Germany	Hamburg	322,2513	66,3202	48,1585

Rank 2007 (EU)	Rank 2007 (World)	Rank 2006 (World)	Airport	Member State	Main Airport(s)	Revenue (\$million)	2007 Net result (\$million)	2006 Net result (\$ million)
22	55	57	Flughafen Berlin-Schönefeld	Germany	Schönefeld, Tegel, Tempelhof	321,0321	22,9933	5,6696
23	60	59	Flughafen Stuttgart	Germany	Stuttgart	297,2024		53,177
24	63	68	Czech Airports Authority	Czech Republic	Prague	267,4151	55,1581	43,4245
25	68	50	Polish Airports State Enterprise	Poland	Warsaw	247,4722	51,3325	67,4746
26	72	69	Budapest-Ferihegy Airport	Hungary	Budapest	229,5063		
27	76	73	Birmingham Airport Holdings	UK	Birmingham	221,1081	46,0452	22,9537
28	79	83	Aéroports de la Côte d'Azur	France	Nice	188,13		
29	80	78	Hannover-Langenhagen	Germany	Hannover	188,1291	10,5591	
30	86	86	Lyon-Saint Exupéry	France	Lyon	165,1124	0,688	0
31	87	88	SAVE Aeroporto Marco Polo	Italy	Venice	151,3531	40,1774	31,0653
32	92	98	Toulouse-	France	Toulouse	119,7065		

Rank 2007 (EU)	Rank 2007 (World)	Rank 2006 (World)	Airport	Member State	Main Airport(s)	Revenue (\$million)	2007 Net result (\$million)	2006 Net result (\$ million)
			Blagnac International					
33	99	101	Peel Airports	UK	Liverpool, Doncaster, Durham, Sheffield	105,4794	3,0868	-3,3774

Source: Airline Business

ANNEX XI

Main references

- *Study on Civil Aviation Security Financing*, September 2004, Irish Aviation Authority and aviasolutions; see http://ec.europa.eu/transport/air_portal/security/studies/index_en.htm
- *Consultation Paper - The Financing of Aviation Security: An Issue for Community Legislation?*
- *White Paper - European transport policy for 2010: time to decide*, September 2001, European Commission
- *KeepEurope Moving – Sustainable mobility for our continent*, Mid-term review of the European Commission's 2001 transport White Paper, June 2006, European Commission
- *ICAO's Policies on Charges for Airports and Air Navigation Services*, Doc 9082, seventh edition, 2004, International Civil Aviation Organization
- *Airport Economics Manual*, Doc 9562, second edition, 2006, International Civil Aviation Organization
- *Airport and Air Navigation Manual*, April 2008, International Air Transport Association
- *JRC Technical Note – modelling the impact of modifying airport security financing*, December 2008, DG JRC
- *First Look at Delays in October 2008*, November 2008, Eurocontrol
- *Air Passenger transport in Europe in 2007*, August 2008, Eurostat
- *IATA Fare Tracker*, IATA, 2007.

ANNEX XII

JRC TECHNICAL NOTE

MODELLING THE IMPACT OF MODIFYING AIRPORT SECURITY FINANCING



EUROPEAN COMMISSION
DIRECTORATE-GENERAL JRC
JOINT RESEARCH CENTRE

Seville, 9 December 2008

JRC TECHNICAL NOTE

MODELLING THE IMPACT OF MODIFYING AIRPORT SECURITY FINANCING

Final draft²⁷

This note summarises the results of the simulations carried out by JRC/IPTS with the TRANSTOOLS, POLES and REMOVE models in the context of the Impact Assessment of the proposal on airport security financing (COM/2008/xxx). The results of all three models suggest that the increase in transparency and the accompanying decrease in user costs will have a positive economic while the environmental impact will be negligible.

1. Background

Airport security costs have increased significantly since 2001 as a result of tighter control and new regulations. Although raising the standards for security controls is arguably necessary for the prevention of further terrorist attacks, the increase in costs for airports, airlines and travellers may result in an obstacle for economic activity and competition.

In addition, the application of security regulations is not harmonized across the EU, while there is limited or no transparency as regards the repercussion of the additional costs on stakeholders and users. This may lead to situations of discrimination among users and can distort competition between airports and/or airlines.

The proposal of the European Commission aims to remove the distortions on the aviation market caused by aviation security measures. This is one of the actions requested by the mid-term review of the Commission's 2001 White Paper: 'Keep Europe moving; Sustainable mobility for our continent'.²⁸ The review asked for a level playing field to be stimulated where the cost of security measures is likely to distort competition and to examine the functioning and costs of current security rules in air transport. The Commission should, consequently, propose adjustments where needed to avoid distortion of competition. Furthermore, consumers should have certainty that revenues from security charges only cover security costs. For example, if an airport charges a security charge, the airport shall only be

²⁷ Contact persons at JRC: P. Christidis, E. Navajas Cawood

²⁸ COM(2006) 314 final of 22.6.2006

compensated for the costs. The 2001 White Paper: 'European transport policy for 2010: time to decide' already drew the attention to this right of the users of the transport system to have information on what they are being charged for.²⁹

The proposal considers four policy options:

0. No regulatory action
1. Obligatory transparency of security costs. This option also removes any re-screening of passengers arriving from another EU Member States.
2. Obligatory transparency of security costs coupled with a requirement that revenues from security charges shall be used to exclusively to meet security costs. Airlines should also have the possibility to appeal security charges to a national supervisory authority. This option also removes any re-screening of passengers arriving from another EU Member States.
3. An obligation on Member States to finance all aviation security measures. This option also removes any re-screening of passengers arriving from another EU Member States.

2. Modelling approach followed

Given the nature of the policy options, the aim of the simulation with the three models was to estimate the expected impacts on transport, economic activity and the environment under the assumption that the measures included in the proposal will lead to a decrease in costs for the final user, the traveller. The qualitative analysis of the impact assessment, based on research and input from the stakeholders, identified a reference value of cost reductions equal to 0.1% of the average ticket, or the equivalent of 0.26 € per trip.

Sensitivity tests were performed with all three models used. Their demand curves are apparently linear for changes in the user costs between 0.05% and 1% and it can be thus considered that the resulting impacts are directly proportional to the level of change assumed. For example, if the real change in user costs is half of what is assumed in the simulations, the level of the impact forecasted by the models would be half of what corresponds to the change of 0.1%.

Since each model uses a different modelling approach, providing useful details in different aspects, it was considered appropriate to apply all three models in this simulation. The main strength of each model can be summarised as follows:

TRANSTOOLS: being a network model it can capture the impact on modal split. In addition, passenger transport demand has been calibrated and is modelled at NUTS 3 level.

POLES: allows the analysis of the impacts at global, international level.

TREMOVE: detailed externalities and welfare module

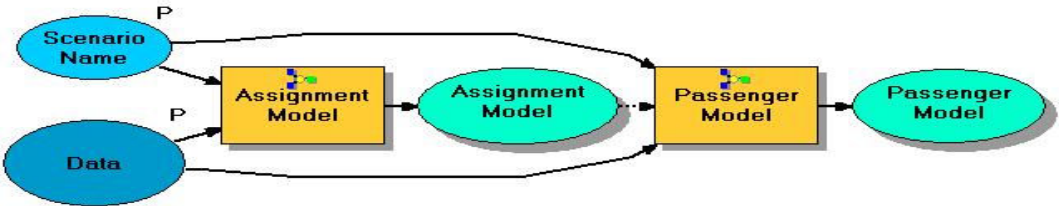
The reaction of all three models to the policy "shock" was quite similar and their results were comparable.

TRANSTOOLS

²⁹ COM(2001) 370 final of 12.9.2001

TRANSTOOLS version 1.7.4 was used for this Impact Assessment, the latest validated version available. Since only passenger transport is expected to be affected directly by the measures, and because any secondary effects would be negligible given the limited first-order effects, a simplified setup of the model was applied, using only the assignment and passenger modules.

Figure 1: Setup of TRANSTOOLS model



The policy measure was simulated by introducing two changes into the model's input database:

```

Network.mdb>AirLink table-> decrease of CostB, CostP and CostH by 0.26 euros
Passenger_inputs.mdb>ChangeOfTransportationCosts table -> mode 3, all countries, change = -0.01
  
```

Running the assignment module first allows the model to update the Origin-Destination costs matrices. The passenger model re-estimates demand based on the updated O-D matrices. The resulting matrices after both assignment and passenger demand can be compared to the ones from the "do nothing" case, their difference being the expected impact of the policy measure.

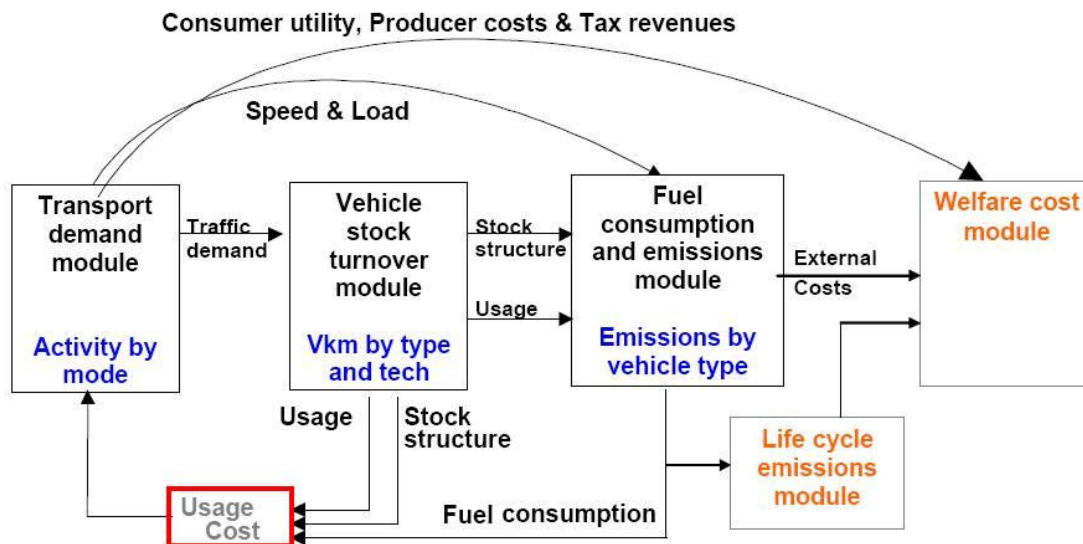
The time horizon for the simulation was year 2012.

POLES

In POLES it was assumed that the policy measure would lead to a reduction of ticket prices by 0.1% by decreasing the part of the price that does not depend on operating expenses. As seen in figure 2, this change would affect the modelled demand directly and would lead to a new market equilibrium.

POLES was run for the period 2010-2020.

Figure 2: POLES-aviation model structure



TREMOVE does not represent explicitly vehicle-km by planes. Vehicle stock module is not thus affected by air transport - neither plane fleet is recalculated or estimated. Furthermore, the TREMOVE plane volumes refer to the amount of flights starting in the considered country (so flights with departure outside Europe are ignored).

Occupancy rates are fixed (0.7, derived from TRENDS), used to convert seat-km into pmk as well as emission factors per pmk per distance class (all derived from the TRENDS AVIOPOLL database)

3. Results

The results of all three models coincide in the positive impact for air transport demand, the benefits for users and airlines and the limited environmental impact.

3.1 Transport demand and activity

The measure simulated (equivalent to a decrease of 0.1% or €0.26 per ticket) is expected to lead to an increase in the demand for air trips by the same proportion (0.1%) according to TRANSTOOLS (the only model of the three that estimates trips). Transport activity, measured in passenger*kms, is expected to grow by a lower rate, since the majority of the increase in demand would consist of shorter distance trips. One third of the increase in demand is expected to come from modal shift from (fast) rail, while the remaining two thirds would be a net increase in demand for air transport.

The results of TRANSTOOLS also imply that the increase in air transport demand would mainly come from non-business trips of distances lower than the average for air transport. The decrease in costs as a result of the policy measure simulated is a very small share of ticket price and total generalised costs and as a result would affect only the parts of the transport market most sensitive to ticket prices. Modal shift from rail to air would be probable in member states where rail has a significant share of long distance transport demand.

The transport impacts are distributed quite evenly among the EU-27 member states, with Finland, France, Germany, Sweden and Romania showing an expected increase in air trips higher than the average, while Cyprus and Malta are expected to have a very limited reaction.

POLES and TREMOVE results until 2030 suggest that the relative impact of the measure on air transport activity would remain constant and in the order of 0.06-0.07% for intra-EU trips.

Table 1: Summary of results on transport impact

Policy test= reduction of average air ticket cost by 0.1%, EU27, year 2012

	baseline	policy test	difference	change%
air trips, intra-EU27 (million)	332.2	332.5	0.3	0.10%
air volume, intra EU-27 (billion pass*km)	289.3	289.5	0.2	0.07%
air volume, to/from rest of the world (billion pass*km)	382.6	382.7	0.1	0.03%
rail trips, intra-EU27 (million)	1212.3	1212.3	-0.1	0.00%
rail volume, intra-EU27 (billion pass*km)	239.9	239.9	-0.1	-0.02%

source: TRANSTOOLS for EU-27, POLES for rest of the world

Table 2: Comparison of model results, air transport activity (pass*kms), intra-EU27, year 2012

Model	Expected change due to policy measure
TRANSTOOLS	0.069%
POLES	0.074%
TREMOVE	0.063%

Table 3: Transport impact at country level, year 2012, TRANSTOOLS results

	Trips	Activity (pass*kms)
Austria	0.074%	0.058%
Belgium	0.087%	0.073%
Bulgaria	0.096%	0.198%
Cyprus	0.028%	-0.043%
Czech Republic	0.048%	0.029%
Denmark	0.098%	0.118%
Estonia	0.097%	-0.033%
Finland	0.155%	0.150%
France	0.155%	0.140%
Germany	0.131%	0.101%
Greece	0.071%	0.021%
Hungary	0.080%	0.077%
Ireland	0.062%	0.038%
Italy	0.097%	0.075%
Latvia	0.082%	0.084%
Lithuania	0.059%	0.036%
Luxembourg	0.056%	0.015%
Malta	0.002%	-0.008%
Netherlands	0.074%	0.052%

Poland	0.091%	0.084%
Portugal	0.073%	0.044%
Romania	0.102%	-0.020%
Slovakia	0.080%	0.041%
Slovenia	0.064%	0.083%
Spain	0.067%	0.036%
Sweden	0.112%	0.116%
United Kingdom	0.086%	0.045%

Table 4: Impact on air transport activity, international trips, POLES results, change in pass*kms

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Intra-EU27	0.0738%	0.0576%	0.0645%	0.0636%	0.0648%	0.0648%	0.0652%	0.0661%	0.0664%
To/from Middle East	0.0465%	0.0498%	0.0497%	0.0506%	0.0506%	0.0505%	0.0506%	0.0510%	0.0509%
To/from Russia and former USSR	0.0398%	0.0462%	0.0450%	0.0466%	0.0463%	0.0472%	0.0477%	0.0467%	0.0460%
To/from Africa	0.0319%	0.0381%	0.0372%	0.0378%	0.0378%	0.0376%	0.0376%	0.0336%	0.0347%
To/from North America	0.0307%	0.0296%	0.0304%	0.0304%	0.0305%	0.0305%	0.0306%	0.0308%	0.0308%
To/from South America	0.0271%	0.0337%	0.0285%	0.0305%	0.0299%	0.0300%	0.0300%	0.0303%	0.0302%
To/from South-East Asia	0.0224%	0.0304%	0.0289%	0.0300%	0.0296%	0.0295%	0.0293%	0.0295%	0.0294%
To/from Central America	0.0220%	0.0318%	0.0301%	0.0273%	0.0251%	0.0256%	0.0253%	0.0259%	0.0258%
To/from South-West Asia	0.0216%	0.0297%	0.0279%	0.0293%	0.0294%	0.0293%	0.0293%	0.0297%	0.0296%
To/from North-East Asia	0.0206%	0.0289%	0.0270%	0.0280%	0.0280%	0.0280%	0.0280%	0.0283%	0.0283%
To/from Oceania	0.0195%	0.0302%	0.0287%	0.0297%	0.0297%	0.0295%	0.0296%	0.0300%	0.0268%
To/from China	0.0193%	0.0322%	0.0268%	0.0297%	0.0285%	0.0285%	0.0281%	0.0289%	0.0286%

Table 5: Long term impact on transport activity, TREMOVE results, EU-27

	2012	2015	2020	2025	2030

Impact on air transport activity (change in pass*kms)	0.063%	0.063%	0.064%	0.064%	0.064%
---	--------	--------	--------	--------	--------

3.2 Economic impacts

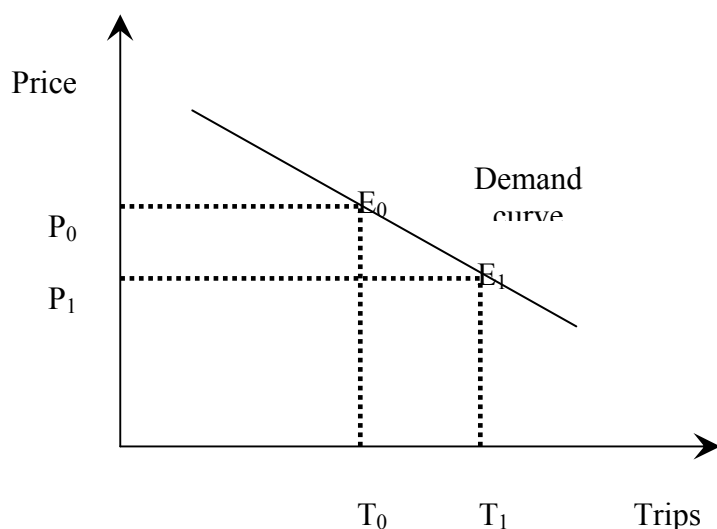
The results of TRANSTOOLS and TREMOVE coincide in that they expect visible economic impacts from the reduction of security costs.

Table 6: Economic impacts, TRANSTOOLS and TREMOVE, reference year 2012

economic impact	Difference (€ million/year)
Increase in consumer surplus (travellers), TRANSTOOLS	86.4
Increase in airline income, TRANSTOOLS	61.6
Increase in labour welfare, TREMOVE	83.7
Increase in utility of households, TREMOVE	55.4
Decrease in production costs, TREMOVE	35.8
Decrease in cost of public funds, TREMOVE	3.5

Using the results of TRANSTOOLS on the impacts on transport demand allows the estimation of welfare gains based on figure 4. The demand curve for air transport can be considered as linear for the part affected by the change introduced by the policy measure (and in fact is considered as linear by all models). Consumer surplus would correspond to the area of the trapezoid $P_0E_0E_1P_1$ and would in practice represent a transfer of welfare from security providers to travellers plus an increase in the welfare of travellers due to increased mobility. Airlines would benefit from the increased transport demand and increase their income by the equivalent to the area of rectangle formed by T_0 , T_1 and E_1 .

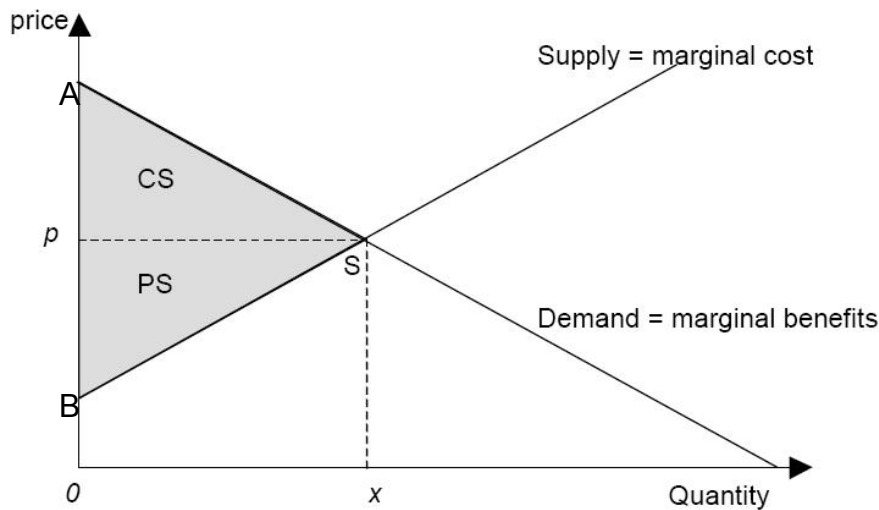
Figure 4: Estimation of welfare gains in TRANSTOOLS



TREMOVE is based on the same principles for the calculation of welfare gains (figure 5).

The total utility or willingness to pay given the equilibrium is given by the area under the demand curve limited by $0xSA$. The total cost to society is given by the area under the supply curve. This is the area limited by $0xSB$. The shaded area BSA indicates the gain in social welfare. The gain in social welfare can be attributed to consumers, the consumer surplus and the producer surplus. The price is determined as the crossing between the supply and demand curves. A majority of consumers is nevertheless willing to pay more than the actual price on the market as can be seen on the demand curve. Thanks to this phenomenon, consumers (and society) get a utility, they have not to pay for, the producer surplus (PS). The story is similar for the producers. A majority of suppliers supply goods at a cost lower than the price. This procures suppliers (and society) an extra profit, the producer surplus (PS). The sum of producer and consumer surplus is the social welfare for this simple case.

Figure 5: Estimation of welfare gains in TREMOVE



3.3. Environmental impacts

The direct impact of the measure simulated is an expected increase in air transport activity. As a result, the level of emissions from air transport is expected to increase proportionally, without however reaching important volumes in either absolute or relative terms.

The expected increase in air transport activity as simulated by TRANSTOOLS was combined with the emission factors of TREMOVE. Table 7 summarises the expected increase per emission type and fuel consumption. The external cost of these environmental impacts would be negligible though, totalling less than 1 million euro per year.

Table 7: Environmental impacts

	Difference
CH4 emissions (tons)	16.3
CO emissions (tons)	7.2
CO2 emissions (tons)	4005.0
Fuel consumption (toe)	793.4
NMVOC emissions (tons)	11.0
NOx emissions (tons)	18.1
PM emissions (tons)	2.8
SO2 emissions (tons)	39.0
VOC emissions (tons)	27.3
TOFP ³⁰ emissions (tons)	34.1

³⁰ Tropospheric Ozone Formation Potential

4. Conclusions

The simulation of the measures to increase the transparency of airport security financing assumed a very limited decrease in ticket prices equivalent to 0.1% of the average price. The three models used in this assessment estimate that for that order of magnitude of change in prices, an increase in air transport demand of a similar magnitude can be expected.

Under the hypothesis that such small changes in costs do affect user behaviour as theory suggest, the results imply that air transport demand would marginally increase as a result of the measure, by 0.1% in terms of trips and 0.07% in terms of transport activity. The increase in demand would affect mainly shorter distances (500-1000 km) and non-business trips. The distribution of effects is expected to be quite uniform among EU-27 member states.

For such a level of increase in demand, airline income is expected to increase by €60 million per year. Regardless of the level of change in air transport activity, the reduction of airport security costs would lead to savings by travellers in the order of €80 million per year. As a result, household utility would increase and production costs would decrease.

The environmental impacts of the expected limited increase in air transport activity can be considered negligible in terms of both external impact and external cost.

As a whole, the policy measure simulated is expected to have a positive impact on the EU economy as a whole, mainly by removing distortions that may affect competition between modes, airports and airlines.

Annex 1: TRANSTOOLS model short description

The Trans-Tools Model is a network-based transport model of Europe started from the ideas consolidated in the modelling experience of the consortium partners. This means that some of the features of the currently available EU models are added, considering that the selection of the features of the model address the essential policy needs by the Commission services. While ASTRA and VACLAV transport models are used as basis for the development of the passenger demand model, freight modelling is based on the NEAC model for trade and mode choice and SLAM for logistics.

All model components are integrated into ArcGIS which allow the user to edit, operate and illustrate results from the same common GIS-based platform. The innovations obtained from the Trans-Tools Model are,

New set up of a demand/supply model that is IPR free for the Commission.

Intermodality for passenger/freight as this is part of the national and European transport policy to promote intermodality through different measures.

Full coverage of Central and Eastern Europe (accession countries and the countries at the borders of the enlarged Union).

Integration of New Member States at a similar level as the EU15.

Feedback infrastructure development-economy.

Logistics/freight chain explicitly included.

Coupling with local traffic in order to address the effect of road congestion.

A software approach which results in a modelling tool on network level and GIS based interfacing.

Model structure

The Trans-Tools Model is similar to a traditional four step model including freight and passenger modelling. The main sub-models are:

Freight demand model

Passenger demand model

Assignment model

In addition to these main elements of the model system, the Trans-Tools Model also includes an economic model based on CGEurope and impact models. The different models are linked applying a number of conversion routines. The principle of the model in overview is illustrated in Figure 1. The model framework allows feedbacks between the sub-models to achieve equilibrium between supply and demand.

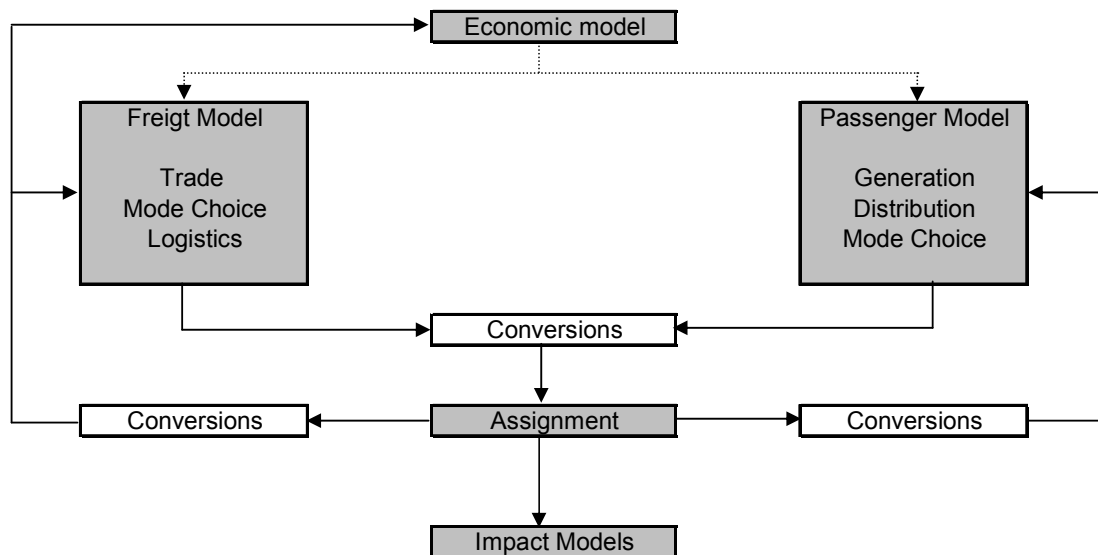


Figure 1: The principles of the Trans-Tools Model in overview

Freight demand models

A generation and attraction pattern of the trade flows in the chosen basis year is a starting point for building a trade model in general. Specifically for the Trans-Tools trade model, the ETIS O/D freight transport matrix will be used as an analog substituting the trade relations matrix. The ETIS matrix describes the generation and attraction of physical flows of goods between the trading countries and geo-clusters given the economical and institutional determinants of the year 2000. For the relations with the trading partner from beyond the established European area the economical mass of the partner is the decisive factor. The output of the Trans-Tools trade model is a forecast O/D matrix for freight including origin region, between transshipments and destination region as well as transport mode at origin, between transshipments, and at destination, commodity group and tonnes.

The Trans-Tools modal split model for freight transport is based on the modal split model in NEAC. In Trans-Tools the modal split model adjusts the stable modal split resulting from the trade model. Output of the Trans-Tools modal split model is a freight matrix, which consists of a forecast O/D matrix including forecast modal split. In the modal split model the market shares of the different modes of transport are estimated for every O/D relation and commodity group. Within the model there are four modes of transport available (road, rail, inland waterway, sea). Choice probabilities of the available modes per commodity group for every O/D relation are determined by using a multinomial logit model.

The Trans-Tools logistic module is based on SLAM, which is a module appended to the SCENES model. This module makes it possible to evaluate the impacts of changes in the logistic and transport systems within Europe on the spatial patterns of freight transport flows, through changes in the number and location of warehouses for the distribution of goods. The logistic module produces output that is to be used in the assignment model as well as in the economic model. For the assignment model the logistic module produces unimodal transport matrices (Origin, destination, mode, tonnes, vehicles). The economic model needs generalized and monetary costs per origin, destination and commodity type. These costs can be computed

from the assigning process. The monetary costs (payment to the public budget e.g. toll, fuel taxes) can be separated out if input on these costs is available.

Passenger demand model

The passenger demand model tackles passenger transport modelling at European level, with main focus on the (transport) models SCENES, VACLAV and ASTRA. The passenger model covers the first three steps of the classic four-step-approach, which are trip generation, trip distribution and modal split. The trip distribution process in ASTRA depends on results of the modal split stage. Hence a feedback mechanism from VACLAV to the trip distribution module is prepared to transfer average generalised times to the trip distribution logit function. Trip generation as the first stage of the classical four-step transport modeling approach is implemented in ASTRA. After the generation of trips emanating from European NUTS3 zones these trips are distributed among destinations. The spatial trip distribution is represented by the second stage of the IWW transport modeling approach. In this process the vector containing generated trips is transferred into an O/D matrix. In the third step the mode for the travel is chosen. Hence impedance data from the Trans-Tools assignment model as well as O/D matrices per trip purpose from the ETIS database are applied. Travel costs, travel time and information about the trip itself like frequencies and number of transfers are used to split the trips between the modes. Subsequently, for each origin-destination pair the modal split model calculates the probability of selecting a modal alternative out of a set of available modes. A non-linear logit function is used in order to calculate the choice probability. The explanatory variables represent the transport service level between two zones e.g. in the dimensions travel costs and travel time. Output of Trans-Tools passenger demand model to assignment model are unimodal passenger O/D transport matrices at NUTS3 level in number of passengers per mode (rail, road, air) and trip purpose as well as unimodal passenger O/D transport matrices at NUTS3 level in number of vehicles for road relations per trip purpose. The level of service-matrix with generalised costs per O/D relation represents the output from Trans-Tools passenger demand model to the economic model.

Assignment models

The network assignment module produces the direct output from the Trans-Tools Model. However, the models also generate level-of-service data (LOS) as input to passenger, freight, and logistic models in a feed back loop (see Figure 2). Input from the passenger model are unimodal passenger O/D matrices at NUTS 3 level in number of passengers and vehicles by mode and trip purpose. Input from the freight and logistic models are unimodal transport matrices at NUTS 2 level by mode, commodity, tonnes, and vehicles. In the Trans-Tools Model, transport networks are defined at unimodal level. Following assignment models are developed within the Trans-Tools Model:

Road network (passenger and freight)

Rail network (passenger and freight)

Inland waterway (freight)

Air network (passenger).

Passengers by rail and air and freight by rail and inland waterways are assigned based on an average day, since congestion is not considered and information on service data differentiated

by time and day is not available. LOS in the road assignment is calculated by time period. In Trans-Tools, a stochastic assignment procedure is applied being founded on probit-based models. Before assignment trip matrices are converted into the NUTS 3 based zonal system of 1,269 zones within Europe used in Trans-Tools Model.

Economic model

The future developments by NSTR related sector of the economy of each region of the EU are the outcome of the Trans-Tools economic model CGEurope. Sectoral developments, thus the effects of each policy scenario, are predicted by the model in monetary terms. The computed relative changes of economy by sector with respect to the baseline scenario are passed on to the NEAC model. Policy evaluation measures, in particular real GDP impacts and equivalent variation, by region, year and scenario are further outputs of the Trans-Tools economic model.

Impact models

The impacts models are used to calculate energy consumption, emissions, external costs and safety based on output from the assignment model as illustrated below.

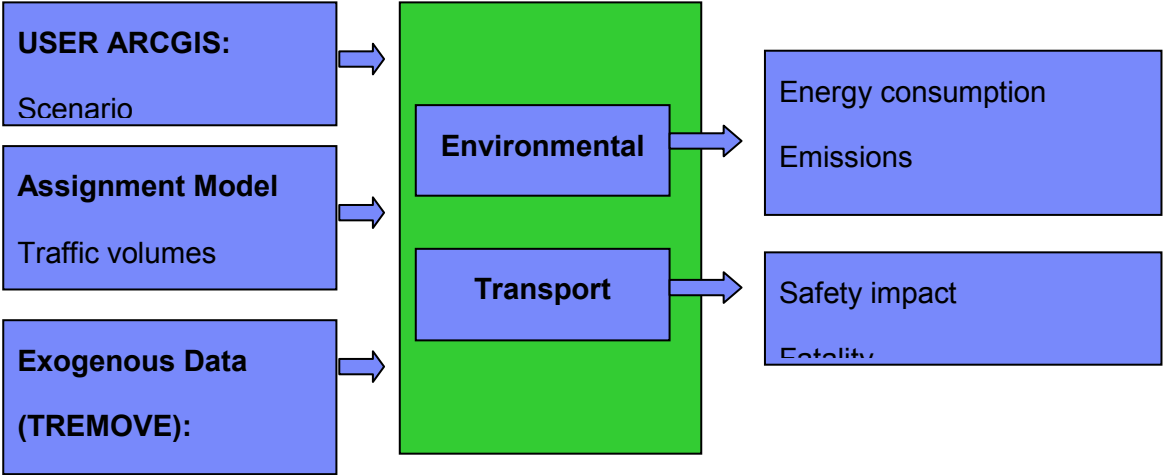


Figure 2: Impact Model within Trans-Tools Model

Additional information on TRANSTOOLS can be found at:

<http://energy.jrc.ec.europa.eu/transtools/>

Annex 2: POLES model short description

Model overview

The IPTS Air Transport Model is an extension of the POLES model covering the aviation sector. Its aim is to project the global energy use and the corresponding emissions from the civil air transport sector during the period 2000-2050.

The model is fed with an extensive database built mainly from IATA's statistics, and complemented with other data from NASA, EUROCONTROL, Airbus and Boeing. The information has been structured in a way fully compatible with POLES. To this purpose, the world is divided into 47 regions, according to the geographical breakdown used in POLES. These regions are grouped into twelve macro-regions. The model considers 78 regional markets defined as pairs of macro-regions.

The model is made up of four interconnected modules, as it is shown in Figure 1. Each of these parts deals with a specific problem, namely:

Capacity planning

Cost calculation

Market clearing

Energy use and emissions

Taking into account the different propulsion systems, sizes, and uses, the current aircraft models have been classified into ten groups of airplanes. In the capacity planning module, current fleet volumes and expected changes in transport supply are used to determine the requirements of new aircrafts for each region in the following simulation period. Expected supplies are obtained by linear regression from the past transport supplies. By means of a vintage model, which considers the past additions to the fleet and the survival rate of each aircraft group, the model establishes the amount of aircrafts still in service from each vintage. The current fleet by region is then calculated from the balance between added, retired and remaining aircrafts.

The cost calculation module takes fuel prices and fleet use in each of the regions, with the technical characteristics of the aircrafts, in order to determine the operating costs of each aircraft class. Fleet use is obtained as a function of fleet volume, transport supply and average load factor.

The market match module computes the amount of air transport supplied by each country in each market. Transport supply curves by country and aircraft in each market are defined as a function of aircraft operating costs and transport capacity constraints within the market. Air transport capacity constraints are determined as a certain combination of aircraft fleet, use, range, and carrying capacity. Transport supply curves are added in order to estimate the aggregated transport supply curve of each market. The intersection between transport demand and aggregated supply produces the market equilibrium price. Transport supplies are given by the intersection between the market equilibrium price and the corresponding transport supply curves by country and aircraft. Transport demand has been represented using the so-called gravity modelling approach. Transport demand in each market depends on GDP and transport price.

Finally, the module devoted to energy use and emissions takes fleet use and aircraft technical features in order to estimate the energy consumption in each of the regions. Based on energy demand and through the use of emission indexes for six gases, this module is also able to calculate the corresponding pollutant emissions.

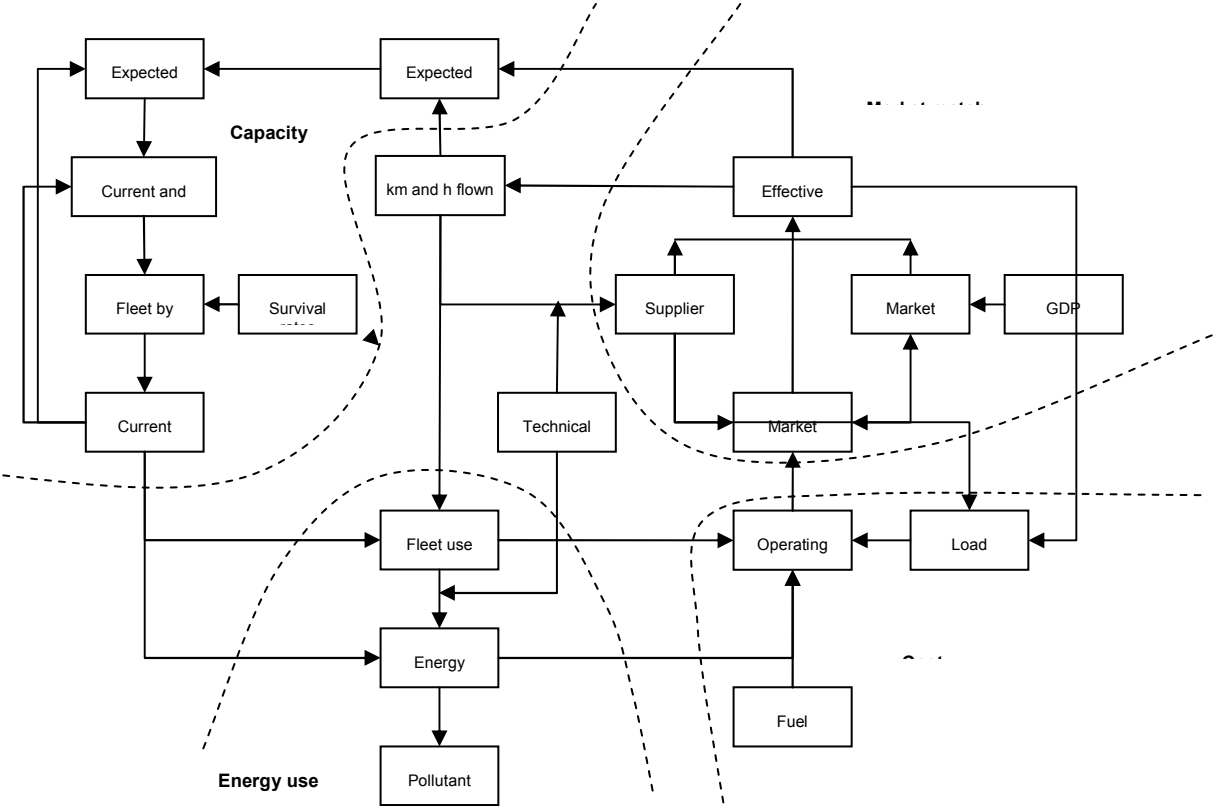


Figure 1: model diagram

Model database

Most of the information required by the model has been obtained from IATA (2004). IATA currently represents over 270 airlines in 144 countries, comprising 95% of international scheduled air traffic, and 86.6% of the total world revenue passenger-kilometres flown in 2002.

This information has been reorganised in order to be able to distinguish between passenger and freight traffic. All-cargo flights have been subtracted from scheduled services figures, and the remaining scheduled services have been aggregated to charter services. Finally, airline figures have been aggregated depending on their flag and according to the geographical coverage used by POLES.

IATA provides detailed fleet and utilization data for each member airline. Disregarding the model variants, there are 135 different aircraft models currently in use. These models have been classified into ten groups of airplanes according to purpose, propulsion and size criteria.

According to their use, airplanes can be split into passenger (able to carry passengers and cargo) or freighters aircrafts (only suitable for cargo). With respect to propulsion, aircrafts can be equipped with engine jets (either supersonic or subsonic) or turbo propellers.

Regarding size or carrying capacity, aircrafts can be grouped into jumbo jets (with more than

400 seats), wide-body jets (two aisle, between 240 and 400 seats), narrow-body jets (single aisle, between 90 and 240 seats), regional jets (below 90 seats), supersonic jets (narrow-body like), regional turboprops (between 20 and 90 seats), and small propellers (up to 20 seats).

Passenger jets are split into five size categories (supersonic, jumbo, wide body, narrow body, and regional jets), while turboprops are divided into two classes (regional and small). Freighter jets are divided into three size categories (jumbo, wide body and narrow body jets).

IATA members' fleet by the end of 2002 was made up of 11338 aircraft, of which 10455 were jets. Airbus (2003) reported a global fleet consisting of 10789 aircraft with at least 100 seats by the end of 2002. According to Boeing (2003a), world fleet was comprised of 15600 airplanes (i.e. 30% higher than IATA) of which 11800 were jets.

When possible, most aircraft technical specifications have been obtained directly from manufacturers. Energy use and emission indexes have been obtained from publicly available sources (Kalidova et al. (1997), and Sutkus et al. (2001), and (2003)). In some cases, for Russian aircrafts and old aircraft models, specifications are taken from similar aircrafts.

Model equations

The world has been split into a number of regions with the aim of describing appropriately the most significant traffic flows between and within those regions. To this purpose, the regional markets used in the model are defined as all the possible pairs of macro-regions listed in the following table, disregarding the direction of the traffic³¹. Thus, the model considers 78 regional markets (combinations of two macro-regions such as NOANOA or NOAEUR), of which 12 are intraregional.

Table 1: Macro-regions

Macro-region	POLES Countries
North America (NOA)	CAN, USA
Central America (CEA)	MEX, RCAM
South America (SOA)	BRA, RSAM
Europe (EUR)	Europe (first column in Error! Reference source not found.)
Commonwealth of Independent States (CIS)	RUS, UKR, and RFSU
Africa (AFR)	NOAN, NOAP, SSAF
Middle East (MEA)	EGY, MEME, GOLF
China (CHI)	CHN
North East Asia (NEA)	COR, JPN
South East Asia (SEA)	RSEA
Oceania (OCE)	RJAN
South West Asia (SWA)	NDE, RSAS,

The functional form assumed to represent air transport demand is based on the gravity modelling approach explained by Verleger (1972). Under this hypothesis, transport demand in year t , D_t , is expressed as the product of a series of factors that may influence the demand (α , $\beta...$), modified by a set of elasticities (a , $b...$), and a constant K representing other unaccounted factors:

³¹ I.e. the market North-America/Europe includes all the traffic from North-America to Europe and vice versa.

$$(1) \quad D_i = K \cdot \alpha_i^a \cdot \beta_i^b \cdot K \cdot \omega_i^z$$

In this model air transport demand is assumed to be driven by the market price and the GDP. The corresponding elasticities have been taken from Eurocontrol (2005), historical demand time series from Boeing (2003b), and Schafer et al. (2000), and GDP and population figures from the POLES database.

An important variable used in the following sections is the share of a given country in each of the passenger transport markets. This is defined from the country's share in total global demand, which is defined as the ratio of the total national transport supplies to each market, to the market size.

The initial values of country's share in total global demand have been obtained combining the information provided by IATA (2004) and Schafer et al. (2000). The demand of a given country in each market is obtained by multiplying the market size by the national share in the market. These national demands are used later to compute the average fuel costs within each market. The equivalent variables for freight traffic are obtained in a similar way.

Total transport capacities available in each country are given by the combination of the carrying capacity (the number of seats per aircraft and the number of tons that can be carried in the holds), the average aircraft range (expressed in km per flight or departure) and the use, represented by the number of departures carried out in one year.

The number of departures gives a notion of the airport and air traffic management capacity. It is assumed that departures in a given country grow as the demand in the markets where this country operates, using the national shares in each market demand, and therefore traffic congestion is not considered in the model.

Air transport capacities are allocated to the markets according to the national shares in each market demand.

Transport supply

National transport supply curves in each of the markets, by aircraft type, are assumed to be shaped as the integral of normal distributions. According to this specification, individual supply curves indicate the "willingness to offer" of an economic agent operating in a given market. The average of each normal (i.e. the inflection point of the supply curve) corresponds to the average operating expenses (which include the remuneration of all production factors), while the standard deviations have been calibrated to fit the market price data. Each supply curve is rescaled by the transport capacity in the market (the asymptote of the curve). It is assumed that only the countries belonging to a given market can supply to it (thus NOANOA market is supplied only by USA and CAN).

The transport supply curve in a given market is calculated by the aggregation of individual supply curves by country and aircraft. The intersection of the market supply curve and the market demand determines the market price. Transport supplies in the equilibrium are calculated by the intersection of the market price with the individual supply curves.

National transport supplies are obtained by the aggregation of the supplies by country and aircraft in each market. National supplies are used later to calculate the expected supply,

required for capacity planning. An analogue calculation is used to compute freight transport demand.

The procedure explained above guarantees that the demand is satisfied at the minimum possible cost and fulfils the restrictions on capacity. In order to carry out the procedure explained above, the model uses a set of functions contained in an external library specifically programmed to this purpose. Supply curves are determined by using the approximation of the cumulative normal distribution defined by Abramowitz et al. (1970). Market prices are calculated following the standard *regula falsi* method.

Figure 1 illustrates the calculation procedure explained above in the case of a market made up of four suppliers. The market demand in each period is prescribed by the demand function. The individual supply curves grow from zero up to an asymptotic value that represents the maximum capacity that can be provided by the supplier from a given price upwards. The cheaper the supplier, the faster the supplier capacity is saturated. Thus, if there is unsatisfied demand after using up all the capacity of the cheapest supplier (yellow curve), the other suppliers (the cheaper first) use up their capacity until the market demand is met. The most expensive suppliers only meet a small share of the demand. The aggregated market supply is obtained by addition of the individual supply curves. The market price (represented by the vertical red line) is obtained by the intersection between the market demand and the market supply curve. The intersection of this line with each supply curve determines the supplies provided in the equilibrium.

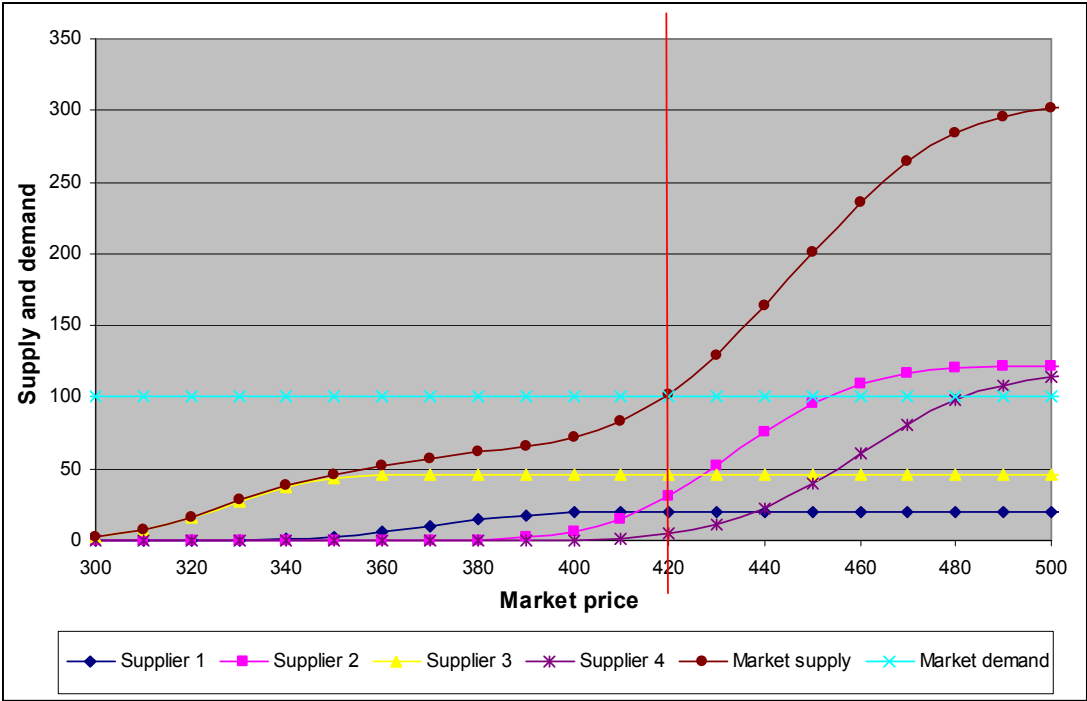


Figure 1: transport supply

Transport costs

Operating expenses are estimate dbased on IATA data. Fuel accounts for around 30% of direct operating expenses (16% of total operating expenses).

It is assumed that all aircraft types use a homogenous jet fuel. Basic jet fuel price may be incremented by a surcharge depending on the carbon content of the jet fuel when a CO₂ emission tax or an emission allowance market is implemented. Since aircrafts from a given country can refuel anywhere, it is necessary to calculate the average jet fuel price in each market. To this purpose, the average jet fuel price in a market is calculated by multiplying the price in each country within the market by the national demand in that market, and the result is added by country and divided into the market demand.

In order to represent properly the technical characteristics of the fleet at any time, as well as the fleet ageing and renewal processes, it has been adopted a vintage model. The average specific fuel consumption per km of each type of aircraft is calculated as the weighted sum of the fuel consumption of the different aircraft vintages.

The energy-related utilisation costs of each aircraft class are obtained from the specific fuel consumption, the national shares and the average jet fuel price in each market, the carrying capacity, and the load factors. The total operating expenses are estimated by adding the non energy-related variable costs, calibrated to fit the market price data.

Energy use and emissions

The pollutants considered in the model are CO₂, H₂O, SO₂, NO_x, CO and HC. Pollutant emissions of CO₂, H₂O and SO₂ are proportional to fuel consumption, while emissions of NO_x, CO and HC also depend on flight altitude and other operation conditions. For these substances two different emission indexes are considered, according to the available sources (Sutkus et al. (2001), and (2003)), each one corresponding to a specific altitude band (climb and descent phases, which takes place between ground level and 9 km during 10% of the flight time, and cruise phase, between 9 km and 13 km of altitude). The corresponding emissions of each pollutant are obtained by multiplying the emission indexes by the jet fuel consumption. Jet fuel consumption is the aggregation of the products of each vintage fleet by its corresponding fuel consumption and the average use.

Annex 3: REMOVE model short description

REMOVE is a transport and emissions simulation model developed for the European Commission. The model has been developed by the Catholic University of Leuven and Transport & Mobility Leuven. JRC/IPTS is the Commission service responsible for the in-house application of the model.

The model estimates the transport demand, the modal split, the vehicle stock turnover, the emissions of air pollutants and the welfare level under different policy scenarios. REMOVE models both passenger and freight transport in 31 countries, and covers the period 1995-2030.

REMOVE model structure

REMOVE is a policy assessment model to study the effects of different transport and environment policies on the emissions of the transport sector. It is an integrated simulation model developed for the strategic analysis of the costs and effects of a wide range of policy instruments and measures applicable to local, regional and European transport markets.

The REMOVE model consists of separate country models. While the numeric values of the model differ from country to country, the model code is identical across countries. Each country model describes transport flows and emissions in three model regions: one metropolitan area, an aggregate of all other urban areas and an aggregate of all non-urban areas. Trips in the non-urban areas are further separated in short (-500 km) and long (+ 500 km) distance trips. The model explicitly takes into account that, depending on the area taken into consideration, the relevant modes and network types differ.

The transport demand module represents, for a given year and transport mode, the number of passenger-kilometres or ton-kilometres that will be performed in each “model region” of the country considered.

Three freight categories are distinguished (bulk, unitized and general cargo) as well as three passenger trip purposes (non-work, commuting and business). Also, transport flows are allocated to peak and off-peak periods. With this demand module, the impact of policy measures on the transport quantity of all transport modes is calculated.

Transport modes for passenger trips include slow modes, mopeds, motorcycles, cars, vans, bus, metro/tram, train and plane. Freight modes are inland waterways, freight trains, light duty trucks and heavy duty trucks (disaggregated to four weight classes). Four road types are distinguished.

REMOVE models the transport activities within these areas without explicit network disaggregation. This simplification allows to calibrate a simple but complete policy simulation model starting from an exogenous baseline transport forecast. The baseline transport flows are taken from the SCENES model which is a genuine network model. Thus, to a certain extent, the REMOVE demand module is a reconstruction of the SCENES model.

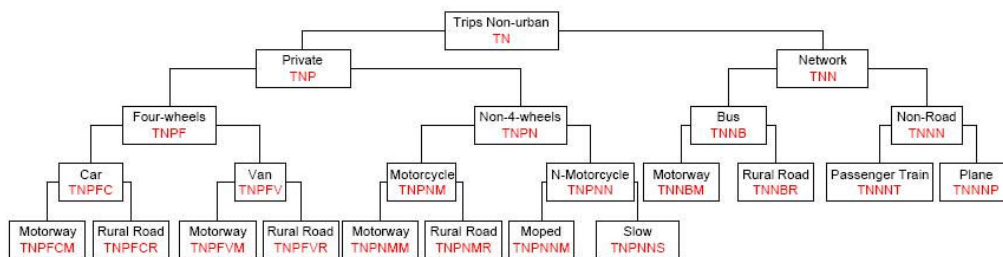
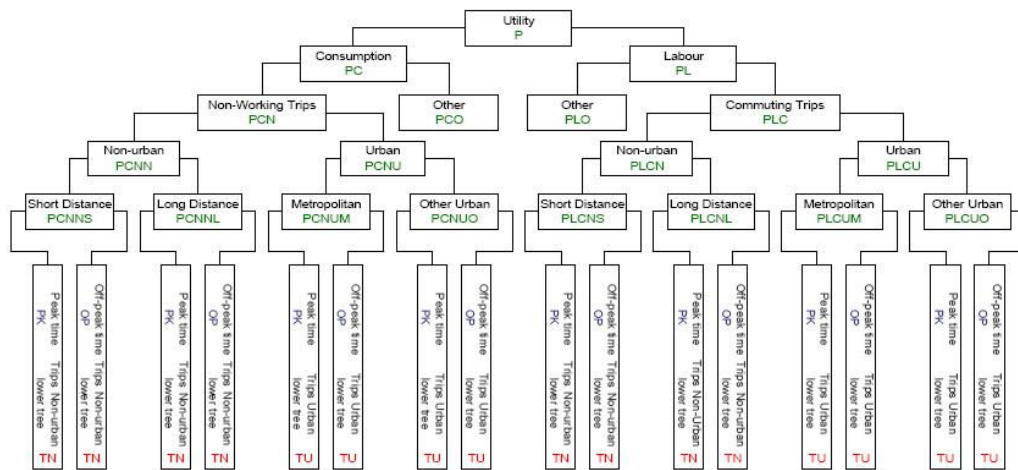
Modelling transport decisions of households and firms

Private transport and business transport are modelled separately in the transport demand module.

The demand for private transport (non-work and commuting passenger trips) is the result of the decision processes of all households in a country. Private transport demand has been determined assuming that, within the constraints of their available budget, households choose their preferred consumption bundle.

I.e. they choose the combination of goods that maximizes their utility. The demand for goods and services follows then from this maximizing behaviour.

The decision processes of households are modelled using nested Constant Elasticity of Substitution (CES) utility functions. These represent the preference relation of all households for the different transport options. Knowing the substitution elasticities between the different transport options, it is possible to model the change in consumed quantities in policy simulations. As an example, the following two figures present parts of the nested utility function.



The demand for business transport (freight transport and business passenger trips) is modelled as a result of the decision processes within firms. The business transport demand is determined by generalized prices, desired production quantities and substitution possibilities with other production factors.

It is assumed that, in any given year, the production level of all firms in a country is given and kept constant. For a given production level, profit maximization then is equivalent with cost minimization. The cost-minimizing substitution processes are represented by a nested CES production function. At the highest level, there is the total production, which is a function of the components at the lower levels. At the lowest level, the arguments are the inputs in the production process. The latter inputs include, amongst others, freight transportation and business passenger trips.

Transport prices

Transport users react on the generalized price of transport. Therefore, the price is represented as a sum of detailed price components. The resource cost for transport services consists of the monetary producer costs of all inputs necessary for these services (cars, fuels, maintenance, etc.). On top of the resource costs, the consumer usually pays taxes or receives a subsidy. These are taken into account to calculate the market price. The distinction between user prices and costs is important for the welfare assessment module, as it determines the governments tax revenue from the transport sector. In the demand module, transport users are assumed to make their decision on the basis of user prices.

Furthermore, time costs are added in the generalized price. Time costs depend on the ‘value of time’ of the considered transport trip mode and the travel speed. For the road modes, speed is modelled explicitly and varies with transport demand, time period and road type. The speed values are also used in the calculation of emissions.

Simulations

Baseline transport demand is taken from the SCENES model. The TREMOVE demand module then enables to assess changes in transport demand under various policy scenarios. Policy measures will affect the generalised prices of transport in the demand module. The prices can be affected by technological measures and new taxation or regulation policies. Within the demand module, these new prices will lead to a change in transport demand. Overall transport volumes will alter and substitution between modes will occur. As a consequence also congestion, travel speed and the time price of transport will be affected.

Welfare module

To evaluate policies in TREMOVE, a welfare assessment module has been constructed. Differences in welfare between the baseline and the simulated policy scenarios are calculated.

Based on the utility functions for the private transport demand, the aggregate utility level of households is quantified. The modelling of business decisions leads to an aggregate measure for the change in production costs of firms. Additionally, welfare changes stemming from changes in tax revenues are incorporated by using the marginal cost of public funds. This latter approach accounts for the options of the government to beneficially use additional tax revenues from the transportation sector to lower taxes in other sectors. Emissions to air are calculated in detail as explained in the next section. The external costs of these emissions are also incorporated in the welfare evaluation of policy measures.

Life cycle emissions

In TREMOVE, a restricted life cycle assessment module is implemented, focusing on the fuel cycle only.

To concentrate on fuel implies that not only operational emissions of vehicles, but also emissions due to production and distribution of the fuel (or electricity) are taken into account. I.e. well-to-tank and tank-to-wheel emissions are calculated.

Detailed documentation on the various modules of TREMOVE can be found at:

http://www.tremove.org/documentation/Final_Report_TREMOVE_9July2007c.pdf

Executive summary	2
Section 1: Procedural issues and consultation of interested parties	4
1.1 Organisation and timing	4
1.2 Consultation and expertise	4
1.2.1 Consultation with Member States and stakeholders.....	4
1.2.2 Expertise.....	6
1.2.3 Opinion of the Impact Assessment Board.....	6
Section 2: Problem definition.....	7
2.1 What is the issue or problem that may require action?	7
2.1.1 Discriminatory and excessive security charges.....	7
2.2 Drivers of these problems.....	10
2.2.1 Lack of transparent security costs	10
2.2.2 Security charges are the only airport fees not regulated.....	12
2.3 Who is affected, in what ways, and to what extent?	13
2.4 How would the problem evolve, all things being equal? Should the EU act?	13
2.5 Treaty base	14
Section 3: Objectives	15
Section 4: Policy options	15
4.1 Option 1: No EU action.....	16
4.2 Option 2: Self-regulation.....	16
4.3 Option 3: EU Directive on non-discrimination, transparency, cost-relatedness and possibility to appeal.....	17
4.4 Option 4: Full state funding of airport security.....	17
Section 5: Analysis of impacts	18
5.1 Option 1: No EU action.....	18
5.2 Option 2: Self-regulation.....	19
5.3 Option 3: EU Directive on non-discrimination, transparency, cost-relatedness and possibility to appeal.....	19
5.4 Option 4: Full state funding of airport security.....	22
Section 6: Comparing the options	25

Section 7: Monitoring and evaluation 31