FINAL REPORT

FEES FOR LICENSING TELECOMMUNICATIONS SERVICES AND NETWORKS

This study has been prepared by ETO for the Commission of the European Union.

The report does not necessarily reflect the views of the Commission, nor does the Commission accept responsibility for the accuracy of the information contained herein.

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EXECUTIVE SUMMARY

Purpose of the study

The purpose of the study is first of all to identify fees imposed for telecommunications services and networks in different countries and to present them in an easily comparable manner. It will provide detailed information on the level of fees, their calculation methods and the structure of the fee. The latter refers to a description of the categories of fees existing in the different countries as well as a distinction between single payment (one-off) fees and recurring fees.

The level and structure of the fees imposed in different countries will be further illustrated in a number of case-studies. This approach makes it possible to analyse the impact of the different fees on the business case of market players offering different services or using different technologies to provide identical services.

This study covers the fees which providers of telecommunications services and operators of telecommunications network are required to pay for the granting of telecommunications authorisations and use of resources. The main focus will therefore be on networks and services which are provided on a commercial basis to the public.

Structure of the study

The study is based on extensive information collected from ECTRA countries. This country-related information is structured as follows:

- general structure of fees (section 2.2)
- level and structure of administrative fees (section 3)
- level and structure of numbering fees (section 4)
- level and structure of fees for mobile communications (section 5)
- fees covering administrative costs only (section 6).

Section 7 gives a survey of the results of fees for the following eleven case-studies described in annex 7.

not including numbers

1 voice/data to closed user groups
2 value added service (voice mail, conference calling, internet access provider...)
3 public fixed voice telephony
4 operation of a fixed public network
5 voice telephony over a self operated fixed network

including numbers

6 bearer data service using DNIC
7 premium rate service using specific service numbers
8 freephone/shared cost service using specific service numbers
9 service accessible via a short number
10 carrier selection service accessible via a carrier selection code
11 public fixed voice telephony, involving an access code and telephone numbers

The analysis of the fees consists of

- a summary of the structure of the fees (section 7.1)
- two tables placing the different countries within a limited number of categories according to the level of the fee. The two cases considered are
    - fixed services not including transmission means, different from Public Voice Telephony using different kinds of numbers (1 DNIC, short numbers, numbers for premium rate or freephone services) (section 7.2)
    - fixed Public Voice Telephony including the transmission network and 1 million telephone numbers. (section 7.3)

Conclusions and draft proposals are set out in section 8. These relate to:

- the interrelation between licensing and fees
- interrelation of fees and the financing of the NRA
- the methods used for ensuring that fees seek to cover only the administrative costs inherent to the licensing scheme and for distributing the cost over the different parties involved
- international disparities concerning the level of fees and the effect on competition

These conclusions and proposals will be summarized here.

Interrelation between licensing and fees

The national licensing regime and fees are strictly interrelated.

The control of market access as well as the act of imposing a set of obligations explicitly on operators by means of an individual licence or notification results therefore in costs for the NRA, which are recovered from the market parties.

A light licensing regime would alleviate the costs for both the NRAs and the market parties. As was pointed out also in another ETO study concerning "Information for verification", a light licensing regime is characterized by:

- limitation to a minimum of cases where market entry is made subject to *a-priori* provision of information
- a focus on clear objectives which are of prime importance to the NRA rather than being an instrument to verify compliance with the full set of obligations imposed on an operator or service provider or a means to obtain extensive information on the evolution of the market and technologies.

In no case does the goal of imposing a fee justify the use of an individual licence or notification.

1. ETO therefore recommends that fees should not impose unnecessary costs or burdens on the telecommunications sector. Therefore they should be a function of a light licensing regime and an administratively economical procedure distributing the cost of the work of the NRA over those operators for which the highest volume and/or the most complex work is done.

Interrelation with the funding of the NRA

As described in section 6, fees and charges are interrelated with the funding of the NRA.

From the information collected it appears that financial and budgetary departments are familiar with the procedure of presenting the budget of the NRA as part of the State budget, but less so with accounting principles and cost allocation.

2. ETO therefore recommends that NRAs acquire a detailed knowledge of the costs they incur for licensing, managing the numbering plan and frequency management. On the basis of this an analysis should be made of what is precisely responsible for generating the highest volume and complexity of regulatory work and an appropriate method for implementing cost-based fees should then be chosen. The following section will elaborate further on these methods.

3. ETO recommends also that the income and the expenditure of NRAs should be in balance. The exact income and expenditure should be made public as soon as possible after the end of the working year. In cases where the levied fees exceed the expenditure, this amount should flow back to the contributors in the form of a re imbursement or a deduction from the fee payable in the following year. If allowed by public finance regulation, another option is to calculate and levy the fees on a yearly basis at the moment the actual costs of the previous year are known.

Methods used to implement the principle of cost based fees

4. Concerning the methods used to implement the principle of cost-based fees ETO recommends the following

- *in the case of unit time costing:* **that benchmarking is applied.**

  This will allow the NRA

  1. to provide applicants with an estimate of the order of magnitude of the licence fee he is likely to incur
  2. to overcome delays in time due to inexperience of both the NRA and the applicant which could raise the price considerably and
  3. to allocate costs in general in a more transparent and proportionate way.

- *in the case of fixed costs which are an average cost per licencing category*

  to distinguish between a limited number of categories only, taking care that :

  - **the administrative management for applying fees to different licensing categories does not create costs disproportionate to the fees charged**
  - **the distinction between licensing categories does not create disparities between different technologies**

- *in the case of a fee varying according to a parameter such as turnover or coverage*

  - **there should be a demonstrated interrelation between the parameter and the cost for licensing incurred by the NRA**
  - **in order not to create costs which are disproportionate to the fees charged a minimum threshold should be set beneath which no fee is required**
  - **there should be a clear and economical administrative procedure to determine the basis for applying the parameter (e.g. clear definition of turnover)**
  - **the parameter should be chosen in such a way that publication of the fee by the NRA does make possible the deduction of commercially sensitive data**

International disparities concerning the level of fees

Fees for mobile communications

From the analysis in section 5, it can be concluded that when we consider the total licensing and frequency fee paid by GSM and DCS-1800 operators after 5 years, they are as divergent as 1 to 1700. Taking into account the number of inhabitants the difference is 1 to 350 Euro/inhabitant.

The main reason for this divergence lies in the high single payment fees which are requested in some countries for the delivery of the licence. It is in many cases difficult to distinguish clearly between the administrative fee, required to examine an application, grant the authorisation and verify the compliance with the terms of the authorisation once the service or network is operational on the one hand, and the charges for the use of frequencies which are a scarce resource on the other hand.

5. ETO therefore recommends that in the case of mobile licences distinction is made between administrative fees and fees for the use of frequencies. Administrative fees should be proportionate to the cost for examining the applications, granting the authorisation and verifying compliance with licensing conditions. Charges reflecting the need to ensure optimal use of a scarce resource should be related directly to the use of frequencies.

High fees might have a negative impact on the development of new mobile systems. Furthermore, on the treshold of convergence between mobile and fixed communications, diverging fees might prove to distort competition.

6. ETO therefore recommends that in order to avoid distortion of competition among mobile operators on the one hand and providers of fixed services and mobile services on the other hand, fees should be reconsidered and determined in a non-discriminatory way when new mobile licences are granted.

Fixed services and numbers

It can be concluded that for the first group of services (fixed services not including transmission means, different from Public Voice Telephony) using different kinds of numbers) fees exceed 13,000 Euro only in the event of high turnovers in certain countries or the use of a full DNIC or 3 digit short numbers in others. This kind of number can, however, be considered as a scarce resource, justifying a higher price. Notwithstanding the price for certain numbers, the level of fees for this kind of operator in EU countries seems unlikely to have an effect on competition.

For fixed public voice telephony including the transmission network and 1 million telephone numbers it can be concluded that also here, in general, administrative fees and numbering fees are at a level which does not impact negatively on the business of new operators. However, for three countries the level of the fees for operators having a high turnover or covering an extensive part of the territory or population is considerably higher than in other countries.

In March 1999, ETO held a first consultation with the industry. The questionnaire sent out mentioned different potential reasons for delay or burdens on market access. Most of these reasons were related to the information required for verification. There was, however, also the possibility to cite “excessive fees” as a reason for causing difficult market access. Within the total of 57 difficulties pointed out, excessive fees occurred 6 times. The countries where excessive fees were encountered were France, Germany and Spain.

1 PRESENTATION OF THE STUDY

1.1 Presentation of the work requirement

Purpose of the study

The purpose of the study is first of all to identify fees for telecommunications services and networks and to present them in an easily comparable manner. It provides detailed information on the level of fees, their calculation methods and the structure of the fee. The latter refers to a description of the categories of fees existing in the different countries concerned as well as a distinction between single payment (one-off) fees and recurring fees.

The level and structure of the fees imposed in different countries will be further illustrated in a number of case-studies. This approach makes it possible to analyse the impact of the different fees on the business case of market players offering different services or using different technologies to provide identical services.

Scope of the study

This study covers the fees which providers of telecommunications services and operators of telecommunications networks are required to pay for the granting of telecommunications authorisations and use of resources. The main focus will therefore be on networks and services which are provided on a commercial basis to the public.

The scope of the study does not cover fees which an NRA might require as a contribution to the universal service fund or for several other types of services such as type approval of terminal equipment, settlement of interconnection disputes, exam certificates, control of radio-electric installations, the allocation of frequencies for transmitters used for non-commercial aeronautical, maritime or terrestrial applications. Also excluded are fees which need to be paid to organisations other than the National Regulatory Authority. In relation to numbers in particular it is in some countries the case that the management is assumed by the incumbent operator.

Work Requirement

The terms of the work requirement are the following:

1. to identify administrative fees required from operators and service providers for the establishment and operation of networks and the provision of services in CEPT countries. To assess if such fees effectively cover administrative costs only.
2. to identify and analyse other fees requested when a scarce resource is being allocated.
3. to describe in particular the level of fees (in an easily comparable manner) and their structure, e.g. initial fees paid once and annual fees.
4. to outline a few hypothetical cases and to calculate fees in order to illustrate any divergence between countries and between technologies.
5. to analyse and compare national specificities with regard to fee-calculation systems in order to identify, on the one hand, common practices and general trends and, on the other hand, countries where specific fees are required. If feasible, to propose "codes of best practice" within CEPT countries.

The text of the work order signed by the Commission and ETO is attached as annex 1.

1.2 Methodology and time schedule

The collection of information was carried out by means of a questionnaire, analysis of elements of national legislation and direct contact with NRAs.

The questionnaire sent out in April 1998 to all 43 CEPT countries is included in annex 2. It is composed of the following five separate parts:

- identification of administrative fees
- identification of fees for numbers
- identification of fees for frequencies
- costs and objectives underlying fees
- description of the procedure used to establish fees.

The questionnaire was structured as described in order to facilitate the collection of information from different national experts involved in budgetary issues and fees for different types of authorisations or resources.

A fully completed questionnaire would make it possible to review

- the amounts and structure of fees for different services, networks and resources
- what administrative expenses are covered
- what pricing mechanisms are used to promote the most efficient use of numbers and frequencies.

As only a few countries provided complete and detailed information, all EC countries were recontacted in June 1998 in order to collect the texts of relevant legislation.

Mainly on the basis of the analysis of the legal texts, country files were composed, and these were then submitted for correction and validation to the relevant NRA's and regularly updated.

On the basis of initial analysis of the collected information, case studies were worked out which compare licensing fees for different services, networks and numbers in the different countries.

A Workshop, during which ETO presented the results of the study to telecommunications operators, service providers, European Associations, industry and administrations was organised in September 1999. Section 8 of this final report summarises the comments expressed on this occasion. This final report was sent out to all ECTRA representatives for approval on 4 October 1999.

2 GENERAL BACKGROUND

In order to present the information on the level and structure of different categories of fees in an easily comparable manner it is important to work out a structure which can be used as a common framework for the country-related information regarding all countries.

A first section (2.1) reviews the relevant provisions of the Licensing Directive which can be considered as the general framework for licensing conditions, including fees, in all EU countries.

In a second section (2.2) a general description is provided of the structuring of fees in different countries. On the basis of the general trends which emerge from this, a more detailed description and analysis for each of the categories (administrative fees, fees for numbers and fees for frequencies) is carried out in the following chapters 3 to 5.

2.1 Community Law

Fees are a typical example of a domain left for decision in each national member state. At the European level only the Licensing Directive[1] includes some references to fees.

The general principles applicable to fees are stated in "whereas" (12) of the Licensing Directive as follows: "*any fees or charges imposed on undertakings as part of authorization procedures must be based on objective, non-discriminatory and transparent criteria"*.

In order to provide transparency, it is required that fees "*be published in an appropriate and sufficiently detailed manner, so as to be readily accessible"*[2].

The directive distinguishes further between fees and charges for general authorisation procedures and those for individual licences. In the latter case, the use of scarce resources is subject to a specific provision. Furthermore, some economic parameters need to be taken into account, in particular the duration of the licence.

According to article 6 of the licensing directive[3] fees for **general authorisation** procedures should only seek to cover the administrative costs incurred in the general authorisation scheme for

- issue
- management
- control and enforcement

[1] Directive 97/13 of the European Parliament and of the Council on a common framework for general authorisations and individual licences in the field of telecommunications services

[2] Article 6 and 11 (2) of the Licensing Directive

[3] Art 6 of the Licensing Directive reads as follows: "Without prejudice to financial contributions to the provision of universal service in accordance with the Annex, Member States shall ensure that any fees imposed on undertakings as part of the authorisation procedures seek only to cover the administrative costs incurred in the issue, management, control and enforcement of the applicable general authorisation scheme. Such fees shall be published in an appropriate and sufficiently detailed manner, so as to be readily accessible."

Unlike the case of individual licences, described below, these fees need not be related to the costs involved in the individual case of the applicant or licensee. They should, however, still be proportionate and non-discriminatory.

In the case of **individual licences**, the same principles apply according to article 11. Unlike for general authorisation, the fee for an individual licence needs to be proportionate to the work involved for the particular applicant in the issue, management, control and enforcement of his licence.

Recovery of administrative costs involved in the individual case applies to the following licensing activities[4]:

- the granting of access to radio frequencies or numbers
- the granting of particular rights with regard to access to public and private land
- the safeguarding of obligations and requirements relating to the mandatory provision of publicly available telecommunications services and/or networks, including universal service obligations
- the imposition of specific obligations where the licensee has significant market power
- the provision of publicly available voice telephony services
- the establishment and provision of public telecommunications networks as well as other networks involving the use of radio frequencies.

Where **scarce resources** are to be used Member States are allowed to[5] "*impose charges which reflect the need to ensure the optimal use of these resources"*. An element to take into account in this context is "*the need to ensure optimal use of these resources and competition"*.

The directive does not define in detail what is meant by "scarce resources", but on the basis of article 7, it can be assumed that these include access to

- radio frequencies,
- numbers,
- public or private land.

The liberalisation of telecommunications networks, (first mobile networks followed by satellite networks and fixed networks) has in all EU countries created competition between several operators. This competition stimulates the market and new applications. A multi-operator environment, a still growing market and new technological opportunities spur greater demand for the limited spectrum and make the work of spectrum management more complex.

In order to give operators an incentive to use the spectrum as efficiently as possible and in a concern to generate sufficient revenue to cover the working cost of the bodies

[4] These activities reflect what article 7 of the Licensing Directive includes in the limitative list of purposes for which Member States may issue individual licences.

[5] Article 11 (2) of the Licensing Directive states: "Notwithstanding paragraph 1, Member States may, where scarce resources are to be used, allow their national regulatory authorities to impose charges which reflect the need to ensure the optimal use of these resources. Those charges shall be non-discriminatory and take into particular account the need to foster the development of innovative services and competition".

involved in spectrum management, economic approaches to spectrum pricing are attracting increasing attention.

The same factors influencing the demand and price of frequencies are at the moment also increasing the importance and economic value of numbers.

Scarcity in this domain, however, is sometimes a temporary problem. Unlike frequencies which are a limited natural resource, it is possible to make more numbers and addresses available over time. But scarcity can occur because of limitation of the maximum length of certain categories of numbers in international standards, limited technical capabilities of networks, and consumer interest in short numbers which are as stable as possible.

Chapter 5, concerning fees for numbers, will concentrate mainly on a comparison of the different categories of fees handled in European countries and the levels of the amounts charged. This seems timely at the moment when several EU countries are in the process of setting up fee structures. Consideration will also be given to approaches to economic pricing, which has become a topical issue following the publication of the OFTEL consultation document[6].

Pricing of public or private land left out of the study. Telecommunications regulators are in this domain not the only and far from the most important protagonists. In general, these fees are subject to contractual terms, subject to commercial law and market prices.

An important economic parameter to take into account alongside the fee, is the duration of the licence. In particular when operators need to pay a high "up front" fee for the right to use scarce resources, it is important that the extent of the period is long enough to enable operators to make a profit out of the investment. The directive therefore specifies that the duration may not be unreasonably short[7].

2.2 Categories of fees

This overview is based on extensive country files, which can be found in annex 3. The purpose, as it was mentioned in the introduction, is to describe the structure of different fees and charges in a general way. The common framework allowing for easy comparison between different countries is based on the distinction between "administrative fees" and "fees for resources" found in the previous section, 2.1. An in-depth analysis of the amount of the fees will follow in chapters 3 to 5.

2.2.1 Administrative fees

Administrative fees are fees required to examine an application, grant the authorisation and verify the compliance with the terms of the authorisation once the service or network is operational.

[6] OFTEL, Developing Number Administration, Consultative Document (July 1998).

[7] Point 4.4 of the annex to the Licensing Directive states maximum duration as one of the "Specific conditions which may be attached to individual licences, where justified and subject to the principle of proportionality" in the following wording: "4.4 Maximum duration, which shall not be unreasonably short, in particular in order to ensure the efficient use of radio frequencies or numbers or to grant access to public or private land, without prejudice to other provisions concerning the withdrawal or the suspension of licences".

It is obvious that categorisation of administrative fees is closely interrelated with the general licensing framework applicable in the individual countries.

The categories of administrative fees will depend upon whether **market entry** is subject or not to an individual licence or a notification under a general authorisation scheme. If no administrative steps with the NRA are needed prior to the start of the service provision or network exploitation, it is difficult in practical terms to apply a fee, for the simple reason that NRAs can only apply fees to those parties which are known to them. Countries where market entry is to a large extent subject to a general authorisation without obligation for notification are therefore likely to have fewer categories of administrative fees. On the other hand, it is a fact that individual licence and notification tend to involve the payment of an administrative fee. In some countries like Germany, notification does not give rise to any payment.

The following table reviews in general the kinds of operation for which fees are charged. Consideration will also be given to whether:

- there is no fee because the activity does not require action from the NRA or because the NRA does not charge for the activity. In the first case the indication "not applicable" is used, and in the second "none"
- the charge is a single payment fee (S) or an annual recurring fee (A)
- the fee varies according to specific parameters such as coverage, time spent by the administration on the individual case, frequency coordination, significant market power .

As it is common in the EU that national telecommunications regulations are built on a layer model, distinction is made between infrastructure (or transmission means) and the provision of services.

Within the category of "provision of services only", voice telephony is separated from the other services because in many countries it is subject to a distinct licensing regime.

"Provision of capacity/networks" is subdivided according to general practice on the basis of the technology used (fixed networks, satellite networks or mobile networks). With regard to mobile networks, only GSM and DCS-1800 have been considered.

Two last columns concern specific fees for operators with significant market power and other fees which are specific to single countries.

Table 1: Administrative fees: general overview of categories and structure

S single payment
S(t) single payment in the case of tenders
S(f) single payment in case of frequency coordination
A annual fee
A(smp) annual fee for operators having smp
n.a : not applicable because no individual licence or notification is required
none: a licence or notification is required but no fee is charged

	provision of services only		**provision of capacity/networks**			**operators with smp**	**Specificities**
	other services than fixed voice telephony	*fixed voice telephony*	*fixed network*	*satellite network*	*mobile networks GSM/DCS-1800*		
AU	no fee	**S** (covering network and service)			**S** **S (t)**	n.a.	**A** to contribute to overall cost of regulator
BE	BPT[8]: **S** CUG: **A** other services: **S**	**S** **A** **A (smp)**	**S** **A** **A (smp)**	V-SAT : **S or S(f)**	**S** **A**	extra annual fee for operators of public telecommunications networks and voice telephony	
CH	**S** depending on time spent	only if operator also runs the installation used for transmission (see next column)	only if combined with services **S** depending on time spent	**S** depending on time spent by administration	**S** depending on time spent on bidding process to be equally divided among participants **S** depending on time spent for grant of licence	no specific fees	**S, A** for universal service licence, granted as result of a comparative bidding procedure.
DE	no fee	**S** *varying according to coverage*	**S** *varying according to coverage*	**S** *varying according to expenditure for individual case*	**S** *varying according to expenditure for individual case*	no specific fee	fees are calculated on case-by-case basis
DK	n.a.	n.a.	n.a.	n.a.		n.a.	

[8] Bureau Privé de Telecommunication (Private Bureau for Telecommunications) refers to call centres or the offer of telephone booths outside the public domain.

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S(t) single payment in the case of tenders
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	provision of services only		**provision of capacity/networks**			**operators with smp**	**Specificities**
	other services than fixed voice telephony	*fixed voice telephony*	*fixed network*	*satellite network*	*mobile networks GSM/DCS-1800*		
ES	**A** *depending on gross income*	**A** *depending on gross income*	**A** *depending on gross income*	**S,A** *depending on coverage*	**A** *depending on gross income and coverage*	n.a.	
FL	n.a.	n.a.	n.a.	n.a.		n.a.	
FR	n.a.	**S, A** *both varying according to coverage*	**S,S(t),A** *all varying according to coverage*	**S,S(t),A** *all varying according to coverage*	**S,S(t),A** *all varying according to coverage*	annual fee doubled for operators of public tele-communications or satellite networks	specific fee for supervision of France Telecom
GR	**A** *varying according to total gross income*	in process of liberalising	in process of liberalising	in process of establishing fees	**S** **A**	no specific fee	
IE	**S, A** *varying according to turnover*	**S, A** *varying according to turnover*	**S, A** *varying according to turnover*	?	**A**	n.a.	
IT	**S, A** *varying according to coverage*	**S, A** *varying according to coverage*	**S, A** *varying according to coverage*	**S, A** *varying according to coverage*	**S, S (t),A** *varying according to coverage*	no specific fee	

S single payment
S(t) single payment in the case of tenders
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	provision of services only		**provision of capacity/networks**			**operators with smp**	**Specificities**
	other services than fixed voice telephony	*fixed voice telephony*	*fixed network*	*satellite network*	*mobile networks GSM/DCS-1800*		
LU	**S,A**	**S,A**	**S,A**	**S,A**	**S** **A**	no specific fee	
NL	**S,A**	**S,A**	**S, A**	V-SAT/SNG: **S**	**S**		**S, A** fee for registration for interconnection **A** for intervention of NRA[9]
PT	**S, A**	**S,A**[10]	in process of liberalising	networks **S, A** services **S**	**S, A**	no specific fee	
SE	no fees if service does not require allotment of numbers	**S, A** *depending on turnover and market position*	**S, A** *depending on turnover and market position*	**S, A** *depending on turnover and market position*	**S, A** *depending on turnover and market position*	Different fees apply in case of smp. If turnover is over 5 millon SEK, an additional annual fee is charged for financing emergency measures	**S** for assessment of necessity of licence
UK	n.a.	international simple voice resale : **S, A** main PTO : **S, A** minor PTO :**S, A**	**S, A** if main PTO, major PTO or minor PTO	**S, A**	**S, A**	no specific fee, although "main PTO's" are a specific licensing category	fees for major PTOs are fixed in the licence

[9] fee to cover the intervention of the NRA for terminal equipment and satellite ground stations

[10] In Portugal, only networks for the provision of services different from Public Voice Telephony are liberalised.

2.2.2 Fees for numbers

While historically the management of national plans for numbering, naming and addressing was assumed by the incumbent PTO, this responsibility remains now in most EU countries with an independent regulator for the most important categories of numbers[11]. In the process of developing the management of these national plans, the independent regulators have started recently to charge fees for the use of numbers, names and addresses. This is the case in Belgium, Denmark, France, Finland, Germany, Italy, The Netherlands and Switzerland. In Denmark and Finland, charges for numbers are a major source of income for the NRA. Other countries like Austria, Ireland, Luxembourg, Portugal and UK are in the process of elaborating relevant legislation. Sweden decided not to charge for numbers, names and addresses separately but to include the charge in general administrative fees.

The national plans for the different categories of numbers, names and addresses are mainly based on ITU-T Recommendations. The following categories concerned are distinguished (the relevant ITU-T Recommendations are shown between brackets for most categories):

- telephone numbers (E.164)
- data network numbers (X.121)
- IMSIs (International Mobile Subscriber Identities; E.212)
- ISPCs (International Signalling Point Codes; Q.708)
- NSPCs (National Signalling Point Codes; Q.704)
- X.400 names (X.400 series)
- X.500 names (X.500 series)
- NSAP addresses (Network Service Access Point addresses; X.213)
- IINs (Issuer Identifier Numbers; E.118)
- Object identifiers (X.660 series)
- CUGICs (Closed User Group Interlock Codes; X.180)
- NCCs (Network Colour Codes; ETSI standard ETS 300 523).
- Centrex codes (only nationally defined).

The list is not exhaustive but it comprises all categories of numbers, names and addresses for which information on fees has been collected for the study. The most important other categories, not considered here, are Internet domain names, IP (Internet Protocol) addresses, AESAs (ATM End System Addresses), Global Titles and telex numbers.

The thirteen categories listed have hierarchical structures within which countries can manage their national domain. These categories are further described below while focussing on the national domains.

Telephone numbers

Telephone numbers constitute by far the most important national plan at present. In general, national telephone numbering plans actually contain not only telephone numbers but also prefixes that can be dialled before the telephone numbers.

[11] See the Final Report on Harmonised National Numbering Conventions, ETO, 23 October 1997, and the First Interim Report on Harmonised National Conventions for Naming and Addressing, ETO, to be issued in October 1998.

Relevant in the context of fees are prefixes used to select specific networks. The best known examples are carrier selection prefixes which enable users to choose a specific long-distance network independent of their local access network operator when making a national or international call.

The national telephone numbers can be classified in three groups:

- Standard telephone numbers for the traditional telephone services in the fixed local loop. These are the numbers we have been familiar with for many decades. In most countries, standard telephone numbers consist of an area code followed by a subscriber number. Some countries may use the term 'geographic numbers' for standard telephone numbers.
- Service numbers for services such as mobile services and freephone, premium rate and personal number services. These numbers consist of a service access code followed by a subscriber number. An example of a service access code, also named 'service code', is '800' for freephone services. Some countries may use the term 'non-geographic numbers' for service numbers.
- Short numbers, mainly used for special services such as emergency services and directory enquiries. Some countries may use different terms for short numbers such as 'short codes' or 'access codes'.

National telephone numbers are usually assigned in blocks of subsequent numbers by the independent regulator to network operators or service providers. A block of numbers can be indicated by the first digits which the numbers have in common. Network operators or service providers assign numbers from their blocks to users. The independent regulator may assign certain numbers individually to users directly. Carrier selection prefixes are individually assigned to operators of long distance networks.

Data network numbers

Data network numbers are used on dedicated data networks, in particular packet switched data networks, for identification of network termination points. They usually consist of a Data Network Identification Code (DNIC) followed by a Network Termination Number (NTN). The DNIC comprises the first four digits. Data network numbers are usually assigned to data network operators in DNICs or decimal parts of DNICs. The operators assign numbers from their blocks to users.

IMSIs

IMSIs are used for unique international identification of mobile terminals and mobile users in order to enable these terminals and users to roam among public networks which offer mobility services. The national domain of the IMSI consists of a Mobile Network Code (MNC) followed by the Mobile Subscriber Identification Number (MSIN). The MNC consists of two or three digits. IMSIs are usually assigned to providers of mobility services in MNCs. The service providers use these blocks to program IMSIs in cards that are inserted in telephones such as the GSM (Subscriber Identification Module) SIM card. The older mobile telephones do not have cards but have the IMSI integrated into the hardware.

ISPCs and NSPCs

Signalling Point Codes (SPCs) are used in public telephone networks using Signalling System no. 7 (SS#7). SS#7 is a modern protocol for information interchange between

exchanges and other network nodes named signalling points. SPCs are the addresses of the signalling points. There are three types of SPCs: ISPCs, NSPCs and network-specific SPCs. Each of the three types constitutes an independent addressing scheme. ISPCs are used in international transit networks, to address for instance international exchanges. NSPCs are used in the national transit networks which connect the different networks in a specific country, to identify for instance the national gateways of the different networks. ISPCs and NSPCs are usually individually assigned to network operators. Network-specific SPCs are used by operators within their own network and need not be assigned.

X.400 names

X.400 names are used for identification of users of Message Handling System (MHS) services. The X.400 naming plan uses so-called Management Domains on two different hierarchical levels: Administration Management Domains (ADMDs) and Private Management Domains (PRMDs). ADMD names are assigned to public MHS providers. Usually, the MHS providers assign PRMD names within their ADMD to users, in particular organisations. The independent regulator may assign PRMD names to users directly. The organisations make, within their PRMD, further subdivisions into names to identify their departments and their employees.

X.500 names

X.500 names are used for identification of users, organisations in particular, in order to offer the so-called X.500 Directory Service. The idea is to store address information in different physical locations and to present the data to users as if constituting a single database. The database is hierarchically structured. Countries are defined on the highest level of the hierarchy. Downwards in the hierarchy, countries are, usually, followed by organisations and organisations by persons. The organisation names are assigned to the organisations which, for their domain, assign names to their employees.

NSAP addresses

NSAP addresses identify an access point between the OSI layers 3 and 4 of a data network which has a structure in accordance with to the seven layer model of OSI (Open Systems Interconnection). Two types of NSAP addresses are distinguished:

- The ICD (International Code designator) type is used to identify coding schemes of organisations. Some countries act on behalf of the British Standards Institute which is responsible for the assignment of ICD codes to organisations.
- The DCC (Data Country Code) type is used to identify countries. Countries assign blocks of NSAP addresses from their national domain to users, in particular organisations.

IINs

IINs are assigned to providers of international telecommunication charge card services for identification of these providers. The IIN is part of the Primary Account Number which is assigned by the provider to the user. The IINs enable providers to charge each other for the charge card services offered to each others' customers. The remaining part of the Primary Account Number enables the providers to charge their own customers.

Object Identifiers

Object identifiers constitute a global system for unique identification of any object. Countries have, within the global system, their own domain which they can manage and structure themselves. Object identifiers can in principle be assigned to anybody for any purpose.

CUGICs

CUGICs are used to identify Closed User Groups (CUGs) on data networks and telephone networks. They are usually assigned in blocks to network operators which then assign individual CUGICs from their blocks to their customers.

NCCs

NCCs are used in Base Station Identity Codes for GSM-systems to separate GSM-networks of operators of different countries in the border areas. They are assigned to GSM network operators.

Centrex codes

Centrex codes are used in country-wide Centrex (virtual private network) systems to separate customers belonging to different Centrex groups. They are usually assigned in blocks to network operators which then assign individual Centrex codes from their blocks to their customers.

The following tables 2 and 3 review in a general way the categories of numbers subject to fees in all countries imposing fees as well as the structure of these fees. Table 2 includes the information on telephone numbers while table 3 reviews all other numbers.

For each of the categories described above it will be indicated whether the fee

- is an annual recurring fee **(A)** or a single-payment **(S)**
- varies according to the amount of digits the number is composed of
- varies according to the number of codes, names or numbers allocated
- distinguishes between reservation or allocation.

The recently adopted numbering fees for Germany can be found in annex 8.

Table 2 Fees for telephone numbers: general overview of categories and structure

S one-off fee
S(r) one-off fee in the case of allocation of a number that had been reserved before
A annual fee
A(r) annual fee for reserved numbers
A(a) annual fee for allocated numbers

	BE	CH	DK	ES	FL	FR	IT	LU	NL
standard E.164 telephone numbers	per 10,000 **S, A**	per 1,000 **S,A** per 10,000 **S,A**	per number **A**	per number **A**	per number **A**	per number **A(r) A (a)**	per number **A(r) A (a)**	per number **S, A**	
short numbers		3 figures **S,A** 4 figures **S,A** 5 figures **S,A**	3 digit **A** 4 digit **A**	per number **A** related to space occupied in numbering plan	3 digit **A** 4 digit **A** 5 digit **A** ≥ 6 **A**	4 figures **A(r) A (a)**	3 digit **A(r) A (a)** 4 digit **A(r) A (a)**	**S, A**	
service numbers									
freephone	freephone per 10,000 **S,A**							**S, A**	reservation **S, A** allocation **S, S(r), A**
shared revenue	3 digit for shared revenue **S,A**		**A**					**S, A**	reservation **S, A** allocation **S, S(r), A**
personal/	per 10,000 **S,**				**S**				

S one-off fee
S(r) one-off fee in the case of allocation of a number that had been reserved before
A annual fee
A(r) annual fee for reserved numbers
A(a) annual fee for allocated numbers

	BE	CH	DK	ES	FL	FR	IT	LU	NL
portable numbers	**A**				**A** depending on amount of numbers				
VPN access code								**S, A**	reservation **S, A** allocation **S, S(r), A**
carrier selection code	4 digit **S, A**			**A**	**A** varying according to international or national long distance traffic and to length of 3, 4 or 5 digits	4 digits **A(r) A (a)** 1 digit **A(r) A (a)**	4 digits **A(r) A (a)** 5 digits **A(r) A (a)**	**S, A**	reservation **S, A** allocation **S, S(r), A**
Prefixes									
prefixes for VPN	4 digit **S, A**								
prefixes for special purpose networks					3 digit **A.** 4 digit **A** 5 digit **A**				

Table 3 Fees for numbers other than telephone numbers: general overview of categories and structure

S one-off fee
S(r) one-off fee in the case of allocation of a number that had been reserved before
A annual fee
A(r) annual fee for reserved numbers
A(a) annual fee for allocated numbers

	BE	CH	DK	FL	FR	IT	LU	NL
IMSI's	**S**	operator code **S,A**	**A**	3 digit **A.** 4 digit **A** 5 digit **A**				
CUG IC code				per group of 10 **A**				
Data network nr	per 1/10 **S,A**	**S,A**	**A**	**S, A**			**S, A**	per 1/10 DNIC reservation **S, A** allocation **S, S(r), A**
X.400 names	**S,A**						**S, A**	
ADMD names		**S,A**		**S, A**				
PRMD names		**S,A**		**S, A**				
X.500 names		**S,A**					**S, A**	
IIN's		**S,A**	**A**					
Object identifiers		**S,A**						
NSAP-Addresses								
DCC type		**S,A**						
ICD type		**S, A**						
NCC codes				**A**				
ISPC	**S,A**	**S,A**	**A**	**A**			**S, A**	reservation **S, A** allocation **S, S(r), A**
NSPC	**S,A**	**S,A**		per group of 10 **A**			**S, A**	reservation **S, A** allocation **S, S(r), A**

2.2.3 Fees for frequencies

From the information collected an extremely wide variety of categories of fees appeared.

In the section 1.1 it was stated that the scope of this study would be limited to networks and services which are provided on a commercial basis to the public. This excludes systems in the public interest (such as national defence), private communications, maritime and aeronautical systems as well as broadcasting. Fees for frequencies used for public mobile communications (GSM and DCS-1800), satellite communications and fixed links, which occupy in many countries only a minor part of the categories distinguished in the fee structure, will be the main focus of attention of this chapter.

An in-depth study of approaches towards spectrum pricing cannot be accomplished within the limited time frame of this study. On the other hand, administrations are currently in a process of rethinking ways of funding the increasing workload for spectrum management and of promoting at the same time economic, technical and administrative efficiency. A review of the parameters by which different countries try to achieve this is therefore potentially useful.

Tables 4 and 5 give an overview of the parameters used in different countries.

Finland, Greece and Italy are treated separately because these countries follow a global approach. This means that all charges can be calculated on the basis of a single formula, described below. In the other countries, fees are fixed on a case-by-case basis, depending on the service offered (e.g. voice, data, mobile, fixed...), on the technology used (e.g, analogue, digital, cellular...) or on other elements (e.g. frequencies, number of years frequencies are being used).

Formula used in Finland:

fee = K1 x K2 x K3

K1 = frequency band coefficient
K2 = coverage area coefficient
K 3= coefficient depending on the billing year

K1 is a frequency band coefficient, the size of which is determined by the frequency band assigned to the licence holder. A frequency band is the total amount of sub-bands allocated to the radio system.
The frequency band coefficients are the following:

Frequency band	K1
below 470 MHz	1
470-960 MHz	0.8
960-3000 MHz	0,6
3000-10000 MHz	0.5

K2 is a coverage area coefficient determined by the geographical area of the radio system assigned to the licence holder. If the right to use covers the whole country, the coefficient is 1. The coverage area coefficient for a restricted right of use area is determined as the sum of the right to use area and the guard zone determined below divided by the whole area of Finland.

The guard zone is a 20-kilometre wide zone around the right of use area assigned to the radio system. However, no guard zone exists in a sea area or an area crossing the border. An area partly covering a right of use area assigned to a holder of a licence for another similar radio system is not considered a guard zone if the use of the frequencies is co-ordinated between the licence holders. The guard zone is not taken into consideration when determining the coverage area coefficient of the radio system of a local loop.

K3 is a coefficient depending on the billing year starting at the date of the right to use the frequencies assigned to the radio system of the licence holder.

Time of use	K3
1st billing year	0.2
2nd billing year	0.2
3rd billing year	0.4
4th billing year	0.6
5th billing year	0.8
6th billing year or later	1

Formula used in Greece

fee = Σ1 x Σ2 x Σ3 x Σ4 x Σ5 x KPA x EP/EPA

Σ1 **frequency band congestion factor**
Σ2 **technology factor**
Σ3 **number of transmission stations**
Σ4 **number of transmission stations factor**
Σ5 **factor for frequency band**
EP/EPA **cost of Reference Radio Channel x width of Radio Channel used / width of Reference Radio Channel**

Σ1: Frequency band congestion factor

9 KHz ≤ PP ≤ 470 MHz	1.8
470 MHz < PP ≤ 960 MHz	1.5
960 MHz < PP ≤ 3000 MHz	1
3 GHz < PP ≤ 10 GHz	0.8
10 GHz < PP ≤ 17,7 GHz	0.6
17,7 GHz < PP ≤ 40 GHz	0.4
40 GHz < PP ≤ 60 GHz	0.2

Σ2: technology used factor
To be translated

Σ3: Number of transmission stations

Σ4: Number of transmission stations factor

≤ 10	1
≤ 50	0.8
≤ 100	0.6
≤ 500	0.5
≤ 1000	0.4
> 1000	0.3

Σ5: factor for frequency band

9 KHz ≤ PP ≤ 470 MHz	1.3
470 MHz < PP ≤ 960 MHz	1.2
960 MHz < PP ≤ 3000 MHz	1.1
3 GHz < PP ≤ 10 GHz	1.075
10 GHz < PP ≤ 17,7 GHz	1.05
17,7 GHz < PP ≤ 40 GHz	1.025
40 GHz < PP ≤ 60 GHz	1

Italy

Fees for frequencies (in It Lira)				
Bandwidth	**Frequency up to 10 GHz**	**Frequency >10GHz and < 20 GHz**	**Frequency >20 GHz and <30 GHz**	**Frequency > 30 GHz**
≤ 25 kHz	300,000	_	_	_
> 25 kHz; ≤125 kHz	650,000	_	_	_
> 125 kHz; ≤ 250 kHz	1,300,000	_	_	_
> 250 kHz; ≤ 500 kHz	1,900,000	_	_	_
> 500 kHz; ≤ 1.75 MHz	2,500,000	1,250,000	850,000	650,000
> 1.75 MHz; ≤= 3.5 MHz	3,150,000	1,900,000	1,250,000	850,000
> 3.5 MHz;	5,000,000	3,800,000	2,500,000	1,700,000

Fees for frequencies (in It Lira)				
Bandwidth	**Frequency up to 10 GHz**	**Frequency >10GHz and < 20 GHz**	**Frequency >20 GHz and <30 GHz**	**Frequency > 30 GHz**
≤ 7 MHz				
> 7 MHz; ≤ 14 MHz	6,950,000	5,650,000	3,800,000	2,500,000
> 14 MHz; ≤ 28 MHz	8,800,000	7,550,000	5,000,000	3,350,000
> 28 MHz; ≤ 56 MHz	10,700,000	9,450,000	6,000,000	4,200,000
> 56 MHz	12,600,000	11,350,000	7,550,000	5,000,000

In the case of fixed uni-directional links, the amounts shown in the table above have to be divided in two.

In the case of fixed bi-directional links, the amounts shown in the table above are calculated with a progressive scale method on the basis of the coefficients of correction listed below, which take into account the numbers of fixed bi-directional links.

a) up to 10 fixed bi-directional links	1
b) more than 10 and up to 40 bi-directional links	0.75
c) more than 40 and up to 80 bi-directional links	0.50
d) more than 80 bi-directional links	0.25

Table 4 Fees for frequencies: overview of parameters used in countries with incentive fee formulas

Parameter	FL	GR	IT
frequencies			X
coefficient for no. of fixed bi-directional links			X
number of transmission stations		X	
number of tranmission stations factor		X	
bandwidth	X	X[12]	X
congestion factor		X	
technology factor		X	
factor for frequency bands used	X	X	
coverage area coefficient	X		
coefficient for time of use	X		

[12] channel width used divided by width of the reference radio channel

Table 5: Fees for frequencies: overview of parameters used outside of incentive fee formulas

	Total	AU	CH	DE	DK	ES	FR	IR	LU	NL	NW	PT	SE	UK
MOBILE COMMUNICATIONS														
exclusive/common	2	X				X								
coordination	1	X												
coverage	3	X	X			X								
data only	1													X
number of years	3					X		X						X
per channel	4					X	X	X						X
per base station	2									X				X
repetition of channel	1									X				
technology	3				X	X				X				
FIXED LINKS														
coordination	1	X												
coverage	3	X	X		X	X								
frequency band	4		X		X	X	X							X
bandwidth	6		X		X	X	X			X		X		X
bandwidth coefficient	3		X		X	X				X				
uni or bi directional	2											X		x
receive or transmit only	2		X											
apparent radiated power	1		X											
kilometre of microwave link	2				X	X						X		
point-to-multipoint	2				X	X				X		X		
connection to space segment	2											X		
no. of transmitters	1													

	Total	AU	CH	DE	DK	ES	FR	IR	LU	NL	NW	PT	SE	UK
SATELLITE COMMUNICATIONS														
coordination	2	X								X				
bandwidth	4		X			X				X				x
operation to no. of satellites	1													x
number of terminals	1													x
no. of transmitters	2		X							X				
class of frequencies	2		X			X								
receive only	1		X											
bandwidth coefficient	2		X			X								
Specific categories	1													
commercial mobile non voice and fixed services	1	X												
duplex/semi-duplexsimplex	1	X												
“kanaleinheit”	1	X												
fixed links for establishment of cellular mobile networks	2					X	X							
no. of telephony channels used for fixed links	1				x									
no. of television channels used for fixed links	1				X									

3 ADMINISTRATIVE FEES

Based on the categories of services distinguished in section 2.2.1, comparisons will be made of the actual amounts which need to be paid for

1. services over fixed network other than voice telephony
2. voice telephony (not including the transmission means)
3. operation of fixed infrastructure (not including services)
4. operation of fixed infrastructure and provision of voice telephony.

3.1 Services over the fixed network other than voice telephony

From table 1 it appeared that in five European countries these services can be offered without administrative steps prior to market entry. In Austria, Germany and Luxembourg service providers have to give notification but no fee is imposed.

The following tables set out the payments required in Belgium, Ireland, Italy, Portugal, Spain and Sweden.

Table 6 summarises the fees for Greece, Ireland, Italy, Spain and Switzerland which do not handle further subcategories.

Table 7 indicates the fees and subcategories found in the remaining countries (Belgium, Netherlands, Portugal and Sweden).

Belgium imposes, besides a one-off fee, an additional annual fee for services provided to closed user groups (voice as well as data). Italy and Portugal vary the fee according to the coverage while in Greece and Spain it depends on the annual turnover. The latter is also the case for Sweden for those services which need an allotment of numbers from the national numbering scheme[13].

Figure 1 gives an overview for all countries where fees do not vary according to the annual gross income.

[13] It would be possible to consider these fees as “fees for numbers”. The Swedish NRA confirmed, however, that they consider these fees licensing fees and not fees for numbers.

Table 6 Administrative fees (in Euro) charged for the provision of services other than public voice telephony in countries with global approach

	Single Payment	**Annual fee**	
CH	150 Euro/hr min 150 max 626	none	
ES	0	1,5 ‰ of turnover	
GR	none	*Total gross income (GI)*	*Fees*
		GI < 320,213,000	0.005*GI (min 320 Euro)
		320,213,000< GI < 640,426,000	0,5 + 0.002*(GI-320,213,000)
		640,426,000< GI <960,639,000	0.7 + 0.0015*(GI-640,426,000)
		960,639,000< GI < 1,280,852,000	0.85 + 0.001*(GI-960,639,000)
		1,280,852,000< GI < 1,601,065,000	0.95 + 0.0005*(GI- 1,280,852,000)
		GI > 1,601,065,000	1.0 + 0.00025*(GI-1,601,065,000)
IR	2,500	1,015 Euro is requested for a turnover < 634,870 Euro. If the turnover[14] exceeds 634,870 Euro, the levy amounts to 2% of the turnover.	
IT	one region: 516 more regions: 5,164	one or more regions: 516	

Table 7 Administrative fees (in Euro charged for the provision of services other than public voice telephony in countries handling different subcategories.

	Category of service	**Single Payment**	**Annual fee**
BE	*Private bureau for telecommunications*	173	0
	CUG (voice and/or data)	1,295	0
	other than cug	495	0
NL	*fixed dataservice*	363	1,724
	mobile data service	363	1,724
	system for conditional access > 1,000 decoders	363	59,898
PO	*bearer data services*	199	7,482
	Value added services	199	499
	services subject to individual licence	9,976	9,976
SE	*services requiring allotment of number*	0	turnover < 346,770 turnover ≥ 346,770

[14] Turnover has been defined as: "the gross revenue excluding value added tax paid to the provider in respect of such services." In the "Compliance Guidelines for providers of Telecommunications Services" ODTR explains that that it expects that relevant turnover for most licencees will not differ from total turnover as revenue generated from telecommunications services in Ireland form the bulk of the revenue generated from most licencee

3.2 Fixed Public Voice Telephony (not including transmission means)

In most European countries fixed public voice telephony has only been liberalised as recently as 1 January 1998. With the entry into force of the Full Competition Directive the calendar was established for when Member States had to withraw all special or exclusive rights for voice telephony, defined as "*the commercial provision for the public of the direct transport and switching of speech in real-time between public switched network termination points, enabling any user to use equipment connected to such a network termination point in order to communicate with another termination point"*. Greece and Portugal are still in the process of liberalising.

Due to its social function, fixed Public Voice Telephony is recognised as a service with a particular status. Apart from Denmark and Finland , all other European countries with free competition make it subject to a licence (registration in The Netherlands) and a licensing fee. Moreover, in France, Germany and Sweden[15], voice is the **only** fixed service subject to a fee.

Switzerland is the only country where administrative fees for services are equal for voice and other kinds of applications.

This kind of fee must not be confused with a fee related to the provision of universal service. This can be a contribution to a mechanism for funding universal service provision or the fee paid for the right to provide universal service. Neither of these are within the scope of this study.

Austria, and to some extent UK, do not distinguish between the provision of the transmission capacity and the voice telephony service. Licences cover both the network (transmission means or capacity) and the service. In the UK International Simple Voice Resale is a form of Public Voice Telephony subject to a licence covering the service only. Other kinds of Public Voice Telephony are provided under the licensing schemes of Major and Minor PTOs and will therefore follow later under section 3.4 where fees are calculated for the provision of fixed infrastructure together with voice telephony. Austria will only appear in that section.

[15] It must be specified that services over the fixed network which require the allocation of numbers from the national numbering plan are subject to notification and a fee when the turnover passes a certain treshold.

Table 8 Overview of administrative fees (in Euro) for Public Voice Telephony services (not including transmission means)

	Single Payment	Annual Fee		
		All operators	**Operators not having SMP**	**Operator with SMP**
AU	0	0		
BE	8,676	not relevant	7,436	17,352
CH	125 Euro per hour spent by the administration (min 608- max 60,827)	0		
DE				
geographical licence	min 1,022 max 1,533,687	none	not relevant	not relevant
trunk line licence	5,112 per trunk line	none	not relevant	not relevant
local line licence	51 per local line (min 1.022)	none	not relevant	not relevant
ES	0	0.15% of turnover	not relevant	not relevant
FR				
> 5 regions	114,336		228,673	475,346
≤ 5 regions	45,734		91,469	182,938
≤ 1 region	22,867		45,734	91,469
≤ 1 department	15,244		30,489	60,978
≤ one city of 100.000	7,622		15,244	30,488
IE	12,500	1,015 Euro or 2% of turnover if turnover > 634,870		
IT				
whole territory	51,640	61,968	not relevant	not relevant
≤ 10 million inh	20,732	20,656	not relevant	not relevant

	Single Payment	Annual Fee		
		All operators	**Operators not having SMP**	**Operator with SMP**
≤ 200.000 inh	10,328	10,328	not relevant	not relevant
LU	620	37,184 + percentage of turnover, minimum 0.15 max 0.30[16]		
NL	363		1,724	888,955
PO	199 (notification of service) 9,976 (granting of licence)	9,976		
SE	0 but in case of SMP: 11,559 per licence and licence segment	not relevant	turnover < 346,770 turnover ≥ 346,770 OR 0.9‰ of turnover with minimum 5,780 Euro per licence area	extra 4.7‰ on turnover exceeding 577.950 EURO with a minimum of 5.780
UK	722	361		

***** In Sweden, Operators with Significant Market Power are determined on the basis of 25% market share. Operators of which the activity is considered "considerable" are, however, subject to a licence and a licence fee of 9‰ of turnover, with a minimum of 5.780 EURO per licence area. These operators have typically a market share of 10-15% (never less than 5%)

[16] For Luxembourg, the following percentages apply, depending on turnover

Turnover	% of turnover
0 - 12,395	0.15 %
12,395 - 24,789	0.20 %
24,789 – 123,946	0,25 %
> 123,946	0,30 %

3.3 Fees for the operation of transmission means – not including services

Restrictions on the provision of telecommunications infrastructure have been lifted in two phases. Through the adoption of Directive 95/51[17] carriage of all telecommunications services -except Public Voice Telephony- over CATV-networks was liberalised. Full liberalisation was achieved by 1 January 1998 through Directive 96/18[18]. A postponement of this deadline was granted to Ireland, Greece and Portugal.

Three countries (Austria, Switzerland, UK) do not have separate fees for infrastructure. The licence combines the right to provide services and infrastructure. Denmark and Finland have a free regime in operation.

[17] Commission Directive 95/51 of 18 October 1995 amending Directive 90/388/EEC with regard to the abolition of the restrictions on the use of cable television networks for the provision of already liberalised telecommunications services

[18] See footnote 17

Table 9 Overview of administrative fees (in Euro) for the operation of transmission means (not including services)

	Single Payment		Annual Fee	
		All operators	Operators not having SMP	Operator with SMP
AU	5,087	0		
BE	12,394	not relevant	8,676	17,352
GE				
geographical licence	min 1,022 max 5,419,029	0	not relevant	not relevant
trunk line licence	306/km straigth-line distance	0	not relevant	not relevant
local line licence	102 with min 1.022 per local line	0	not relevant	not relevant
ES	0	0.15% of turnover	not relevant	not relevant
FR				
> 5 regions	266,785	not relevant	533,571	1,067,142
≤ 5 regions	75,224	not relevant	152,449	304,898
≤ 1 region	37,112	not relevant	76,224	152,448
≤ 1 department	15,244	not relevant	30,489	60,978
≤ one city of 100,000 inh	7,622	not relevant	15,244	30,488
IE		1,015 or 2% of turnover if turnover >634,870:	not relevant	not relevant

	Single Payment		Annual Fee	
		All operators	Operators not having SMP	Operator with SMP
IT				
whole territory	61,968	103,280	not relevant	not relevant
≤ 10 million inh	20,656	51,640	not relevant	not relevant
≤ 200.000 inh	10,328	25,820	not relevant	not relevant
NL				
Voice Telephony network	363	not relevant	2,042	923,442
mobile voice network	363	not relevant	2,042	239,142
fixed datanet	363	2,042	not relevant	not relevant
data net mobile	363	2,042	not relevant	not relevant
PT (to be liberalised 1 Jan 2000)	199 (notification of service) 9,976	9,976	not relevant	not relevant
SE	0 but in case of SMP: 11,559/licence and licence segment		turnover < 346,770 turnover ≥ 346,770 OR 9‰ of turnover min 5,780 per licence area for operators which are influencial on the market*	extra 4.7‰ of turnover > 577,950 SEK with a min of 5.780

* In Sweden, Operators with Significant Market Power are determined on the basis of 25% market share. Operators whose activity is estimated to be "considerable" are, however, subject to a licence and a licence fee of 9‰ of turnover, with a minimum of 5,780 EURO per licence area. These operators have typically a market share of 10-15% (never less than 5%).

3.4 Fees for the operation of fixed infrastructure and voice telephony

Operators running the network on which they provide a Public Voice Telephony service are in general subject to two licences, one for Public Voice Telephony and a second one for Public Infrastructure. The relevant fee is the sum of the fees for both of these licences.

Austria, Italy and Luxembourg, however, apply a distinct licencing regime covering specifically the provision of Public Voice Telephony over a self-operated network. Switzerland combines in a similar way the network and service aspect. The difference between this and Luxembourg and Austria is that the Swiss licence is not limited to the provision of Voice Telephony.

The fees applied in Portugal after liberalisation on 1 January 1999 will also include, besides the fee for the granting of two licences (one for the provision of public voice telephony and another one for the provision of the public network) a registration fee for the notification of the service.

Table 10 Overview of administrative fees (in Euro) for the provision of Voice Telephony and the operation of the underlying infrastructure

	Single Payment	**Annual Fee**		
		All operators	**Operators not having SMP**	**Operators having SMP**
AU[19]	5,087	0		
BE	21,070	not relevant	16,112	34,704
CH	rate 125 /hour min 626 max 62,688	0	not relevant	not relevant
DE geographical lic line licence *trunk line licence* *local line licence*	 min 2,044 max 6,952,707 153/local line min 2,044	 0	not relevant	not relevant
DK	0	0	not relevant	not relevant
ES	0	1.5‰ of turnover	not relevant	not relevant
FL	0	0	not relevant	not relevant

[19] In Austria, it is foreseen that operators of Mobile Communications, Self operated Fixed Networks to provide leased lines and Self Operated Networks to provide Voice Telephony should contribute to the over-all cost of the regulator in function of the market share and revenue. In 1997 only the incumbent and the two mobile operators contributed. The figures for 1998 are not known yet at this moment.

	Single Payment	Annual Fee		
		All operators	**Operators not having SMP**	**Operators having SMP**
FR				
> 5 regions	381,121	not relevant	762,244	1,524,488
≤ 5 regions	121,958		243,918	487,836
≤ 1 region	60,979		121,938	243,876
≤ 1 department	30,488		60,976	121,952
≤ city 100.000	15,244		30,489	60,978
GR	not liberalised			
IE	12,500	amount depends on turnover[20]	not relevant	not relevant
IT			not relevant	not relevant
whole territory	56,804	61,968		
≤ 10 million inh	25,820	25,820		
≤ 200.000 inh	15,492	10,328		
LU	7,436	49,578 plus % of turnover[21] min 0.20% max 0.35%	not relevant	not relevant
NL	726		3,766	1,812,397

[20] In Ireland, 1,015 Euro is requested for a turnover < 634,870 Euro. If the turnover exceeds 634,870 Euro, the levy amounts to 2% of the turnover. Turnover has been defined as: "the gross revenue excluding value added tax paid to the provider in respect of such services." In the "Compliance Guidelines for providers of Telecommunications Services" ODTR explains that it expects that relevant turnover for most licensees will not differ from total turnover as revenue generated from telecommunications services in Ireland forms the bulk of the revenue generated from most licensees.

[21]

Turnover	% of turnover
0 - 12,395	0.20 %
12,395 - 24,789	0.25 %
24,789 – 123,946	0.30 %
> 123,946	0.35%

	Single Payment	Annual Fee		
		All operators	**Operators not having SMP**	**Operators having SMP**
PT to be liberalised on 1 Jan 2000	20,151	19,952	not relevant	not relevant
SE notification licence[22]	0 11,463		turnover< 343,895: 115 turnover >343,895 : 573 OR 0.9‰ of turnover, min. 5,732/ licence area for operators which are influential on the market	extra 4,7‰ of turnover > 343,895
UK[23] major PTO minor PTO Internat facilities licence	 59,974 18.742 10,495	 29,987 14,993 11,995	not relevant	not relevant

[22] In Sweden, operators with significant market power are determined on the basis of 25% market share. Operators whose activity is estimated to be "considerable" are, however, also subject to a licence and a licence fee of 9‰ of the turnover with a minimum of 5,732 euro per licence area. These operators have typically a market share of 10-15% of the market (never less than 5%).

[23] In UK, OFTEL is in the process of reviewing the fees. The fixed annual renewal fee will be replaced by fees calculated on a percentage of the licensee's turnover with a minimum fee of 4,498 euro for the first two years of operation for new entrants as well as for licensees with a turnover below 7,496,768 euro.. For the others a fee of 0.08% on the relevant annual turnover of the licensable activities of the Licensee will be applied.

4. FEES FOR NUMBERS

The categories of numbers subject to fees in different countries as well as the general structure of the fees (single payment fee, annual fee, fee for allocation or reservation) has been reviewed in tables 2 and 3 of section 2.2.2. This section described also in an extensive way the different categories of numbers according to which the different fees have been classified.

The following tables 10 and 11 give an overview of the level of the different numbering fees.

The table takes into account all countries which have specific fees for certain numbers. Some of the missing countries are at the moment considering the introduction of payment for the use of numbers (e.g Germany and UK). In other countries (e.g. Ireland and Sweden) the licensing fee includes the right to use numbers.

In annex 7, fees are calculated for the following services including the use of certain specific numbers

- bearer data service including the use of 1 DNIC
- premium rate service using specific service numbers
- freephone/shared cost service using specific service numbers
- service accessible via a short number
- carrier selection service accessible via a carrier selection code
- public voice telephony service, involving an access code and 1 million telephone numbers.

In section X, the results of these case studies are analysed and summarised in two tables indicating the influence of numbering fees on the total licensing cost in different countries.

Table 11 Fees for telephone numbers: general overview of categories and structure

S one-off fee
S(r) one-off fee in the case of allocation of a number that had been reserved before
A annual fee
A(r) annual fee for reserved numbers
A(a) annual fee for allocated numbers

	BE	CH	DK	ES	FL	FR	IT	NL	LU
standard E.164 telephone numbers	per 10,000 **S :** 372 **A :** 124	per 1,000 **S** 1,254 **A** 627 per 10,000 **S** 940 **A** 157	per number **A** 0.2684	per number **A** 0.03	per number **A** 0.34	per number **A(r)** 0.0114 **A (a)** 0.0228	per number **A(r)** 0.005 **A (a)** 0.01		per number part of a block of 1,000 of 10,000 **S** 0.12 **A** 0.12 per number in amount < a block: **S** 61.97 + n*0.24 **A** 61.97 + n*0.24
short numbers		All: **S** 125/hr 3 figures **A** 3,134 4 figures **A** 1,567 5 figures **A** 784	3 digit **A** 26,843 4 digit **A** 2,684	per number **A** 0.03 x a factor indicating the number of 8 9-digit numbers occupied in the numbering plan	3 digit **A.** 43,731 4 digit **A** 8,746 5 digit **A** 1,749 ≥ 6 **A** 353	4 figures **A(r)** 22,867 **A (a)** 45,734	3 digit **A(r)** 51,640 **A (a)** 25,820 4 digit **A(r)** 25,820 **A (a)** 12,910		**S** 1,239 **A** 1,239
service numbers									
freephone	freephone per 10,000 **S:** 1,239			per number **A** 0.03		per 10,000 **A (r)** 114 **A (a)** 228		8 digits reservation **S** 57	per number part of a block of 1,000 of 10,000

S one-off fee
S(r) one-off fee in the case of allocation of a number that had been reserved before
A annual fee
A(r) annual fee for reserved numbers
A(a) annual fee for allocated numbers

	BE	CH	DK	ES	FL	FR	IT	NL	LU
	A 6,197							**A** 28 allocation **S** 57 **S(r)** 28 **A** 57 11 digits **S** 7 **S(r)** 11 **A** 9	**S** 0.12 **A** 0.12 per number in amount < a block: **S** 61,97 + n*0.24 **A** 61,97 + n*0.24
shared revenue	3 digit for shared re-venue **S:**1,239 **A:**6,197			per number **A** 0.03		**A (r)** 114 **A (a)** 228		reservation **S** 57 **A** 28 allocation **S** 57 **S(r)** 28 **A** 57	per number part of a block of 1,000 of 10,000 **S** 0.12 **A** 0.12 per number in amount < a block: **S** 62 + n*0.24 **A** 62 + n*0.24
personal/ portable numbers	per 10.000 **S** 1,239 **A** 1,239				**S** 1-9 numbers 17 10-1000 numbers 50 > 1000 numbers 168 **A/ number** 0.67	**A (r)** 114 **A (a)** 228			
VPN						**A (r)** 1,143		reservation	

S one-off fee
S(r) one-off fee in the case of allocation of a number that had been reserved before
A annual fee
A(r) annual fee for reserved numbers
A(a) annual fee for allocated numbers

	BE	CH	DK	ES	FL	FR	IT	NL	LU
access code						**A (a)** 2,286		**S** 908 **A** 227 allocation **S** 908 **S(r)** 454 **A** 454	
carrier selection code	4 digit **S** 1,239 **A** 12,395			per number **A** 0.03 x a factor indicating the number of 8-digit numbers occupied in the numbering plan	**A international trafic** 3 digits 92,509 4 digits 18,502 5 digits 3,700 **A nat long distance** 3 digits 92,509 4 digits 18,502 5 digits 3,700	4 digits **A(r)** 22,867 **A (a)** 45,734 1 digit **A(r)** 228,674 **A (a)** 457,347	4 digits **A(r)** 51,640 **A (a)** 103,280 5 digits **A(r)** 25,820 **A (a)** 51,640	reservation **S** 908 **A** 227 allocation **S** 908 **S(r)** 454 **A** 454	**S** 1,239 **A** 1,239
Prefixes									
prefixes for VPN	4 digit **S** 1,239 **A** 12,395								
prefixes for special purpose networks					3 digit **A** 50,459 4 digit **A** 10,092 5 digit **A** 2,018				

Table 12 Fees for numbers other than telephone numbers: general overview of categories and structure

S one-off fee
S(r) one-off fee in the case of allocation of a number that had been reserved before
A annual fee
A(r) annual fee for reserved numbers
A(a) annual fee for allocated numbers

	BE	CH	DK	FL	FR	IT	NET	LU
IMSI's	per 1/100 **S** 372	operator code **S** 313 **A** 63	per 10,000 **A** 2,684	3 digit **A** 50,459 4 digit **A** 10,092 5 digit **A** 2,018				
CUG IC code				per group of 10 **A** 17				
Data network nr	per 1/10 **S** 37 **A** 372	**S** 125/hr **A** 627	**A** 2,684	**A** 11,353			per 1/10 DNIC reservation **S** 908 **A** 227 allocation **S** 908 **S(r)** 454 **A** 454	**S** 991 **A** 495
X.400 names	**S** 372							**S** 1,239 **A** 1,239
ADMD names		**S** 940 **A** 313						
PRMD names		**S** 313 **A** 63						
X.500 names	**S** 372	**S** 313 **A** 63						**S** 1,239 **A** 1,239

S one-off fee
S(r) one-off fee in the case of allocation of a number that had been reserved before
A annual fee
A(r) annual fee for reserved numbers
A(a) annual fee for allocated numbers

	BE	CH	DK	FL	FR	IT	NET	LU
IIN's		**S** 125/hr **A** 125/hr	**A** 2,684					
Object identifiers		**S** 313 **A** 63						
NSAP-Addresses								
DCC type		**S,A**						
ICD type		**S, A**						
NCC codes				**A**				
ISPC	**S** 372 **A** 12,395	**S** 125/hr **A** 627	**A** 26,843	**A** 1,682			reservation **S** 908 **A** 227 allocation **S** 908 **S(r)** 454 **A** 454	**S** 991 **A** 495
NSPC	**S** 372 **A** 12,395	**S** 313 **A** 63		per group of 10 **A** 34			reservation **S** 908 **A** 227 allocation **S** 908 **S(r)** 454 **A** 454	**S** 991 **A** 495

5 FEES FOR MOBILE COMMUNICATIONS

Section 2.2.3 reviewed the parameters used by different countries in order to fund the increasing workload for spectrum management while promoting at the same time economic, technical and administrative efficiency.

An in-depth study of national approaches towards spectrum prices is not within the limited time frame of this study. Further information can be found in the ERO study concerning "Licensing and charging for radio equipment"[24], an ITU report on "Economic Aspects of Spectrum management"[25] and the report of the UMTS Forum on "The impact of licence cost levels on the UMTS business case"[26].

This section gives further consideration to the licensing and spectrum fees paid by operators of GSM and DCS-1800. Information is included from operators from Austria, Belgium, Switzerland, Denmark, France, Finland, Greece, Ireland, Luxembourg and Netherlands. From the other countries (Spain, Italy, Portugal, Sweden and UK) NRAs and operators failed to give sufficient details to provide information in a comparable manner. The annex 5 includes, however, general information for these countries.

At the moment mobile voice services are achieving a level where they become in some countries interchangeable with fixed voice services, this seems a worthwhile exercise in the framework of "technology neutral" fees.

In annex 5 the total fee (administrative fee plus frequency fee) has been calculated for several mobile operators. The present section examines:

- the difference is between the total amounts paid in different countries
- the relative importance is of frequency fees and licensing fees
- the average amount paid per inhabitant.

[24] Work requirement for the European Commission in accordance with the EC-ERO framework Contract Nr 48248.

[25] Study Group 1, report ITU-R (1/53)

[26] Report nr 3 of the UMTS Forum, August 1998

On the basis of the information collected in annex 5 it appears that the total fees paid for the licence and the mobile spectrum gives the following result.

Table 13 Total fees paid by selected GSM and DCS-1800 operators (licence and spectrum) after 1 and 5 years (fees in Euro) in order of magnitude

country/operator	total fee after 1 year	total fee after 5 years
DK GSM	33,449	167,246
NL (GSM)	104,827	524,138
DK DCS	330,641	478,761
FL NMT	625,057	3,125,289
FL Radiolinja	735,906	3,679,530
FL sonera	1,060,446	5,302,231
CH GSM 2	2,263,067	11,019,456
CH GSM 3	2,872,403	14,066,131
CH GSM 1	3,217,193	16,035,817
LU Millicom	3,891,666	12,092,291
PT Lux	3,891,666	12,092,291
PT	3,911,772	19,538,530
FR GSM	6,799,480	33,309,009
FR DCS	8,049,568	39,723,324
DE DCS	12,257,598	53,178,054
IE GSM3	16,737,318	20,436,985
NL Libertel	40,877,509	41,550,568
GR DCS	47,316,714	47,316,714
GR GSM	97,694,751	97,694,751
PTT telecom	135,866,364	136,539,423
AU DCS	165,885,223	166,963,495
BE DCS	200,004,915	214,317,512
IE GSM2	216,704,298	25,370,096
BE GSM	221,980,159	225,980,351
Dutchtone	271,563,105	272,236,164
AU GSM	288,291,472	289,369,745

It can be observed that the variation is extremely wide. The highest and lowest fees after five years are in the relative proportion of 1 to 1700. Different aspects could of course influence the fee; coverage, bandwidth attributed, scarcity of the spectrum etc.

The following table examines the relative share of the licence and the frequency fee in the total fee.

Table 14 Relative share of licence and frequency fees in the total fee paid by GSM and DCS-1800 operators (fees in Euro)

	1 year		5 years	
	% lic fee	% freq fee	% lic fee	% freq fee
AU GSM	99.91	0.09	99.53	0.47
AU DCS	99.84	0.16	99.19	0.81
BE GSM	99.67	0.33	98.37	1.63
BE DCS	98.34	1.66	92.27	7.73
CH GSM 1	0.38	99.61	0.078	99.92
CH GSM 2	3.26	96.73	0.671	99.32
CH GSM 3	2.57	97.42	0.525	99.47
DE DCS	18.95	81.05	6.59	93.41
DK GSM	0	100	0	100
DK DCS	88.80	11.20	61.33	38.67
FR GSM	5.06	94.94	3.10	96.90
FR DCS	3.77	96.23	2.50	97.50
FL sonera	0	100	0	100
FL Radiolinja	0	100	0	100
FL NMT	0	100	0	100
GR GSM	100	0	100	0
GR DCS	100	0	100	0
IE GSM2	97.56	2.44	83.33	16.67
IE GSM3	96.84	3.16	79.31	20.69
LU Millicom	66.25	33.75	45.69	54.31
PT Lux	66.25	33.75	45.69	54.31
NL (GSM)	0	100	0	100
Libertel	99.59	0.41	97.98	2.02
PTT telecom	99.88	0.12	99.38	0.62
Dutchtone	99.94	0.06	99.69	0.31

In Switzerland, France and Finland the frequencies account for the highest share of the overall charges paid after one year and after 5 year. In Austria, Belgium, Greece, Netherlands and Ireland the single payment is so much higher than the frequency fee that it is still relatively the most important factor, even after 5 years. In Denmark the importance of the single licence payment decreases over time. In Luxembourg there is a more equal balance between licensing and frequency fee.

It seems remarkable that the major burden in several countries is placed on the operator through administrative fees and not through frequency fees, which can take into account the scarcity of the resource.

In order to have a more comparable result, the total fee will be related to the number of inhabitants. The difference between the highest and the lowest fee is again extremely high: 1: 350. The high one-off fees are the reason for this.

Table 15 Total fee for GSM and DCS-1800 per inhabitant after 1 year and 5 years (fees in Euro)

	inhabitants	**Euro / inhabitant 1 year**	**Euro/inhabitant after 5 years**
AU GSM	8,161,200	35.32	35.46
AU DCS	8,161,200	20.33	20.46
BE GSM	10,188,000	21.79	22.18
BE DCS	10,188,000	19.63	21.04
CH GSM 1	7,277,000	0.44	2.20
CH GSM 2	7,277,000	0.31	1.51
CH GSM 3	7,277,000	0.39	1.93
DE DCS	82,190,000	0.15	0.65
DK GSM	5,248,000	0.01	0.03
DK DCS	5,248,000	0.06	0.09
ES GSM			
ES DCS			
FR GSM	58,543,000	0.12	0.57
FR DCS	58,543,000	0.14	0.68
FL sonera	5,142,000	0.21	1.03
FL Radiolinja	5,142,000	0.14	0.72
FL NMT	5,142,000	0.12	0.61
GR GSM	10,522,000	9.28	9.28
GR DCS	10,522,000	4.50	4.50
IE GSM2	3,559,000	6.09	7.13
IE GSM3	3,559,000	4.70	5.74
IT GSM	57,240,000		
IT DCS	57,240,000		
LU Millicom	417,000	9.33	29
PT Lux	417,000	9.33	29
NL (GSM)	15,661,000	0.01	0.03
Libertel	15,661,000	2.61	2.65
PTT telecom	15,661,000	8.68	8.72
Dutchtone	15,661,000	17.34	17.38
SE Telia	8,844,000	not available	
SE Comviq		not available	

	inhabitants	Euro / inhabitant 1 year	Euro/inhabitant after 5 years
SE Europolitan		not available	
SE DCS		not available	

It can be concluded that when we consider the total licensing and frequency fee paid by GSM and DCS-1800 operators after 5 years, they are as divergent as 1 to 1700. Taking into account the number of inhabitants the difference is 1 to 350 Euro/inhabitant.

The main reason for this divergence is the high single payment fee which is requested in some countries for the delivery of the licence. The major burden is in several countries placed on the operator through administrative fees and not through frequency fees.

High fees might have a negative impact on the development of new mobile systems. The industry members of the UMTS Forum are of the opinion that high single payments, which are imposed at the moment when the licence is granted, can be very burdensome for an operator who does not generate an income and has high investments to make in order to roll out the network and deploy his service. They fear that high up-front fees "*will increase the tariffs for the consumer, slow down the development of new, innovative services, such as UMTS services, diminish the infrastructure investments and harm competition."* It is therefore recommended that "*large downpayments at the beginning of the licence period should be avoided, in favour of charges related to the use of the system, like royalty or annual fees."*[27]

A draft ERC report28 concerning "The role of Spectrum Pricing as a means of Supporting Spectrum Management" describes practical applications and experiences with cost based pricing, administrative incentive pricing, auctions and spectrum trading. The report recommends that, as the pressures on spectrum demand are likely generally to increase, attention be given to the potential use of pricing. It is thought that benefits of using new techniques for spectrum pricing can be significant in improving spectrum efficiency.

A second concern is that in a mobile market characterised by fierce competition from competing mobile operators on the one hand and fixed operators on the other hand, the high fees might prove to distort competition. This could be the case in the event that different mobile operators pay substantially different fees. There have been examples in the past where the first GSM licence was granted automatically to an operator holding a monopoly position and no licence fee was imposed. Second and third licences were granted after a selection procedure entailing the payment of substantial fees. In order to avoid such distortion of competition, fees should be determined in a non-discriminatory way when new licences are granted.

At the same time customers see fixed and mobile voice services more and more as interchangeable. In this case, NRAs should reconsider fees which are too divergent.

[27] The impact of licence cost levels on the UMTS business case, UMTS Forum, report nr 3, October 1998, section 7.

6 FEES COVERING ADMINISTRATIVE COSTS

According to the work order, this study should not only describe the level of fees and their structure but it should also assess " *if such fees are effectively covering administrative costs only"*

In a questionnaire (see annex 2) ETO asked all CEPT countries to indicate or describe:

- *the type and the amount of yearly expenses the NRA has for the licensing activities, the management of the numbering plan and frequency management*
- *the type and the amount of costs the NRA recovers in the form of licensing fees for*
    - *the licensing of networks and services*
    - *frequency management including reservation and assignment of frequencies*
    - *management of the national numbering plan including reservation and allocation of numbers*

The replies to this question were extremely poor. The main reason for this is simply that NRAs usually have no detailed knowledge of the costs incurred for different activities. Analysis of income and expenditure is mostly done with a view to presenting the budget of the NRA as part of the state budget. The financial specialists are therefore more familiar with the rigid procedures and rules applicable to the budget of a public office than with cost allocation. Another reason might be that the question was perceived as leading to an evaluation of the efficiency of the NRA.

It must be observed that the obligation to cover only administrative costs aims at avoiding a situation where fees become an instrument of taxation. Countries are allowed to fund the operational cost of the NRA by means of levying fees. The fact that these operational costs are very divergent has as a consequence that "cost related fees" are in no sense synonymous with "harmonised fees" or "low fees". Section 6.1 will take a closer look at the reasons for the diversity in fees. Elements to be considered are:

- the interrelation with the funding of the NRA
- the interrelation with the licensing regime
- external factors.

Section 6.2 will examine what methods countries have used to implement the principle of fees covering administrative costs only.

6.1 The relation between fees and the funding of the NRA

Interrelation with the tasks and responsibilities of the NRA

As indicated in the introduction, countries are allowed to fund the operational costs of the NRA by means of fees.

Notwithstanding the fact that the budget is generally part of the overall state budget, it is common that independent regulators are completely or for the largest part[29] financially autonomous and user-financed. Fees and other charges can therefore be seen as a means to distribute the cost of the NRA over different actors (service providers, operators, users of frequencies and numbers, manufacturers, parties seeking mediation etc.). The following section will elaborate more on these choices concerning the distribution over different actors.

It is clear that the way in which regulatory tasks are organised and the responsibilites given to the NRA result not only in varying importance of licensing fees in the total budget but also in justifiable differences in licensing fee as such. While some countries have all tasks allocated to a single entity**,** other countries organise tasks on a regional basis (e.g. regional offices) or on a functional basis. In the latter case separate entities can be responsible for the preparation of the regulation, for numbering, frequency matters or supervision of compliance with licensing conditions. The costs of preparing the legislation, organising consultation with the industry and of international collaboration are in some countries incurred by a Ministry and taken from the general state budget while in others these are tasks to be supported by the NRA. Supervision of operators with a certain presence on the market and consumer complaints are other examples of costs which can in certain countries be recovered through licence fees. In Sweden the licence fee even includes the right to use numbers.

It is clear that the costs recovered from administrative licensing fees imposed on service providers and operators vary as a result of different responsibilities and organisation of NRAs. This in turn results in diverging fees.

Interrelation between fees and the licensing regime

NRAs have made very different choices as to the spreading of their costs over different actors. In Denmark only the users of resources (frequencies and numbers) contribute. There are no administrative licensing fees for operators or service providers. In Spain on the other hand, all public operators contribute an equal percentage of their turnover. In Austria, the over-all cost of the regulator is distributed mainly over 3 operators (the public mobile operators and the incumbent fixed operator). Other countries (France, Belgium, Netherlands, Sweden) also impose considerably higher fees on operators which are significant on the market.

It is clear that there is a close interrelation between the approach taken towards licensing and the fee structure. Licences should have as a primary function to establish a set of rights and obligations and to enable market access as well as the monitoring of the observation of licensing conditions. Apart from this, an important function of the licensing regime seems to be the identification of the actors obliged to contribute to the funding of the NRA.

[29] NTA in Denmark receives an appropriation under the Finance Law. This has been reduced from 20% to 5%.

The following table illustrates this interrelation. For each country the first row identifies the national categories of licences. The second row describes the associated licensing regime. Bold text indicates that no fee applies. It should be observed that the table does not indicate the relative importance of the administrative fees within the total income of the NRA nor does the width of the column give an indication of the level of each fee.

From the table it appears that all services, networks or operators subject to an individual licence are charged a fee. General authorisations which are not accompanied by a notification are not subject to a fee. Notification is free of charge in Austria, Denmark, France, Germany and Finland while it is subject to a fee in other countries such as Belgium, The Netherlands, Luxembourg, Italy, Portugal and Sweden. In the latter countries, the notification regime requires some verification of the information provided by the applicant, filing and sometimes a written confirmation.

It can be concluded that light licensing regimes which do not imply extensive verification before market entry result in lighter fees or a total absence of fees.

Table 16 : Relation between licensing regimes and administrative fees

IL =fee for individual licence not = fee for general authorisation with notification gen aut = general authorisation without notification **text in bold: no fees**

	category of administrative licence fee in relation to the licencing regime applied						
	Mobile	**fixed public network**		**Public voice telephony**	**Others**		
AU	self operated mobile network to provide VT or non-voice services	self operated fixed network to provide leased lines	VT on self operated network		**public telecommunications services**	special fee to cover over-all costs of regulator	
	IL	IL	IL		**notification**		
BE	mobile networks	fixed public network	private networks	public voice telephony	private telecommunications bureau	voice or data to CUG	other services over fixed network
	IL	IL	not	IL	not	not	not
CH	mobile services using frequencies subject to bidding	providers running independently substantial part of transmission means			provision of universal service	fixed services using freq subject to bidding	other services
	IL	IL			IL	IL	not
DE	transmission lines for mobile communications	transmission lines for public telecommunications services		public voice telephony	**other services**		
	IL	IL		IL	**not**		
DK	mobile communications				**premium rate services**		
	IL				**not**		

IL =fee for individual licence not = fee for general authorisation with notification gen aut = general authorisation without notification **text in bold: no fees**

	category of administrative licence fee in relation to the licencing regime applied						
	Mobile	**fixed public network**		**Public voice telephony**	**Others**		
ES	all public telecommunications services and networks IL or not						
FL	mobile communications	other services and networks					
	IL	**not**					
FR	mobile communications	public networks	independent networks	public voice telephony	**other services than public voice telephony**	**certain installations**	**telecom services over broadcast networks**
	IL	IL	IL	IL	**gen auth**	**gen auth**	**not**
GR	mobile communications				other services on the fixed network		
	IL	*not liberalised*		*not liberalised*	not		
IE	mobile telephony and networks				services not involving use of numbers	services involving use of numbers	
	IL				IL	IL	
IT	mobile communications	fixed public telecommu-nications networks	fixed public telecom network to provide VT	Public Voice Telephony	other services on fixed network		
	IL	IL	IL	IL	reg		

IL =fee for individual licence not = fee for general authorisation with notification gen aut = general authorisation without notification **text in bold: no fees**

	category of administrative licence fee in relation to the licencing regime applied														
	Mobile			**fixed public network**						**Public voice telephony**			**Others**		
LU	mobile communications			fixed infrastructure						Public Voice Telephony			fixed infrastructure to provide VT	other public services than public voice telephony	
	IL			IL						IL			IL	not	
NL	mobile network for VT	mob net for data	mob voice telephony	fixed network for datacommunication	leased lines	fixed network for VT				fixed public voice telephony			fixed/mobile data service		conditional access
	not	not	not	not	not	not				not			not		not
PO	services under tender (scarce frequencies)			public network for services other than VT									audio-text services	other fixed services that VT and audio-text	
	IL			not						*not liberalised*			not	not	
SE	mobile communications service			network capacity						telephony service			other services requiring numbers	special fee for covering provision of emergency services	
	not IL if significant on the market not			not IL if significant on the market not						not IL if significant on the market			not IL if significant on the market	SMP operators	
UK	mobile communications			major PTO	minor PTO	major non-PTO	minor non PTO	international facilities					**conditional access**	**Telecommunications service licence**	**self provision licence**
	IL			IL	IL	IL	IL	IL					**gen aut**	**gen aut**	**gen aut**

External factors

Furthermore, a number of external factors such as the general level of cost of living, housing, wages, telecommunications etc also determine to a certain extent the disparity of costs underlying licensing activities. Exactly the same activity, executed in exactly the same circumstances and by the same people would give varied costs in different countries.

6.2 Methods to implement fees recovering costs only

In order clarify further the methods used by NRAs to avoid the distinction between taxes and fees for recovery of costs becoming blurred, the following questions are addressed in this section:

- who collects the fees (are fees payable directly to the NRA or to the treasury)
- what is the destination of excess money (is it returned to the sector or paid to the treasury)
- what methods are used to implement the principle of cost based fees

Collection of fees and destination of excess money

The following table summarises the information collected in annex 6. It appears that the majority of the independent regulators are responsible for collecting the fees to cover the costs of licensing. In Belgium, Denmark, Finland, Luxembourg, The Netherlands, Sweden and UK, the NRA bills and receives the contributions directly. Denmark receives also a small contribution from the treasury.
In France and Italy on the other hand the NRA does not receive any resources directly through licensing fees. The total financing comes from the general state budget.

The fact that the budget of NRAs is generally part of the overall state budget means that the fees have to be fixed well in advance, based on an estimation of the expenditure. The estimation necessarily includes an assumption regarding the parameters on which the fee is based such as the number of applicants, their coverage or turnover. It is likely that the real costs will differ from the estimates made. In order to verify that the actors on the market are not unnecessarily burdened it is relevant to analyse what happens in the event the collected fees exceed the costs incurred by the NRA. Denmark, France, Ireland, Luxembourg and UK apply a system where this money is returned to the sector while in other countries such as Belgium, Germany and the Netherlands it is paid to the treasury.

Table 17 Collection of fees and destination of excess money.

	BE	**CH**	**DE**	**DK**	**ES**	**FR**	**FL**	**GR**	**IE**	**LU**	**NL**	**PT**	**SE**	**UK**
Who collects the fees?														
fees payable directly to NRA	X	X	X	X	X		X	?	X		X	?	?	X
fees payable to treasury					X	X		?		X		?	?	
Destination of excess money?														
excess money paid to the treasury	X	?	X		X		?				X	?	?	
excess money returned to the sector		?		X		X	?		X	X		?	?	X

Methods used to implement the principle of cost-based fees

This question deals essentially with "how" and "to whom" countries allocate the costs involved with the volume of regulatory work. From the country-related information collected in annex 5 it appears that countries calculate fees according to the following methods:

- unit time costing which equals the cost of the time spent by the NRA on the individual case
- fixed cost per licensing category which is an average for the work incurred for a certain type of operator or service
- fee based on a parameter which is closely related to the amount of work (e.g. turnover, geographical coverage...)
- fee established as a function of the applicant's position on the market

The following table reviews the situation in different EU countries.

Table 18 Method used to implement the principle of fees covering administrative costs only

	price/hr	**fee function of certain parameters**			**average admin pricing**	**fee function of position on the market**		
		coverage geogra-phical	*coverage population*	*turnover*		*SMP*	*significance on the market*	*even distribution*
Au					X			X
BE					X	X		
CH	X				X			
DE		X						
DK	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ES				X				
FL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FR		X	X			X		
GR				X				
IE				X				
IT			X					
LU				X	X			
NL			X		X	X		
PT					X			
SE						X	X	
UK				in future	X will change			
total on 16	1	2	3	3 4 in future	7 6 in future	4	1	1

Denmark and Finland apply no licensing fees.

Only one country (CH) bases its **fees on the price per hour spent by the administration**. The licensing cost is thus in this case determined by the efficiency of the applicant in filling in the application and the efficiency of the administration in handling the file.
Although obviously based on real costs, certain flexibility needs to be built in. If not, the risk exists that providers who are the first to apply for a licence for a certain type of service end up paying a higher fee than the following applicants offering similar services. Discussions with the NRA regarding the categorisation of the authorisation, the associated rights and obligations or the precise terms of the licence tend to be longer for a case which sets a precedent before the administration has gained relevant

experience. Furthermore, applicants not used to filing applications (typically smaller companies) or unfamiliar with the Swiss licensing regime (typically foreign companies) might be at a disadvantage.

For these reasons some "benchmarking" would be useful. This would allow the NRA to inform an applicant as to what order of magnitude of licence fee he is likely to incur, to overcome delays in time due to inexperience of both NRA and applicant and to allocate the cost in general a more transparent and proportionate way.

The most common method for implementing cost based fees is to allocate the costs involved to the different relevant licensing categories. Depending on the national licensing regime the costs are spread over a limited or a large number of market parties. In general, the highest fees are paid by operators of public telecommunications networks and providers of public telephony services. Denmark and Finland apply no licensing regimes for telecommunications services and networks unless frequencies are involved. Certain activities such as assignment of a number or control operations can, however, also be subject to a fixed fee.

Fixed fees which equal the average cost for a certain type of licence or activity have the advantage that they are clearly known in advance. This type of fee is strictly interrelated with the licensing regime and it is important that fees do not create disparities between different technologies (e.g mobile and fixed voice telephony when these services become interchangeable).

The use of a parameter makes it possible to distinguish between operators according to their importance without applying different methods of calculation. It is mainly the larger EU countries which apply this system (France, Germany, Italy, Spain). For the UK, OFTEL sets out new principles for a reviewed fee regime in a *Statement on the revised licence fees regime* published in August 1999. This new regime will entail all individual licencees will be required to pay an annual fee calculated on turnover. OFTEL opted for this solution after it had undertaken an internal evaluation of the relationship between licence renewal fees collected and the volume of regulatory work generated. This evaluation was conducted by assessing the amount of time spent by each of the branches on a range of regulatory issues as a percentage of the working year. This assessment demonstrated that there was a close relationship between the turnover of licensees and the volume of regulatory work generated. OFTEL also undertook an evaluation to establish the practicality of unit time costing. It was found that this would prove administratively difficult and would in all likelihood impose unnecessary and unjustified additional costs which would need to be passed on to operators in the form of increased licence fees.

Belgium, France, The Netherlands and Sweden impose significantly higher fees on operators with SMP.

7. ANALYSIS OF CASE STUDIES

It was agreed during the meeting of the PT GAIL in May 1998 that the case studies included in this study should reflect as closely as possible the reality on the market for telecommunications services and networks.

From chapter 2 describing in general terms which kind of services/networks or resources are subject to fees, it became evident that

- the kinds of services/networks subject to administrative fees are closely related to the licensing regime.
- 7 out of the 17 countries included in the study at the moment apply fees for numbers
- all countries require payment for the use of frequencies but the approach varies widely between different systems as well as between countries.

In order to illustrate the divergences between countries, it is therefore necessary to include examples which

- cover the different categories of licences found in the countries concerned
- imply in some cases the use of different kinds of numbers

In annex 7, fees are calculated for the following eleven different services over the fixed network :

not including numbers

1 voice/data to closed user groups
2 value added service (voice mail, conference calling, internet access provider...)
3 public fixed voice telephony
4 operation of a fixed public network
5 voice telephony over a self operated fixed network

including numbers

6 bearer data service using DNIC
7 premium rate service using specific service numbers
8 freephone/shared cost service using specific service numbers
9 service accessible via a short number
10 carrier selection service accessible via a carrier selection code
11 public fixed voice telephony, involving an access code and telephone numbers

Each section is introduced by a description of the case.

This is relevant because the name used for the different services relates to applications the providers offer to their customers. The administrative fees will, however, result from the national licensing category to which the service belongs. Services which are from the perspective of the user identical might belong to different national licensing categories depending on the way they are commercialised or technically realised.

Descriptions make it possible to determine the possible national licensing regime(s) in the different countries.

It is further indicated in each of the sections what hypothesis has been used concerning the amount of numbers as well as the parameters according to which administrative fees may vary (such as annual turnover, market power, time spent by the administration or coverage).

The analysis of the fees consists of

- a summary of the structure of the fees (section7.1)
- two tables placing the different countries within a limited number of categories according to the level of the fee. The two cases considered are
    - fixed services not including transmission means, other than Public Voice Telephony using different kinds of numbers (1 DNIC, short numbers, numbers for premium rate or freephone services) (section 7.2)
    - fixed Public Voice Telephony including the transmission network and 1 million telephone numbers. (section7.3)

      In both cases it has been assumed that the operator or service provider has no significant position on the market.

7.1 Overview of the structure of the fees for each of the case studies

In order to give a general overview, the following table describes

- the different types of services included,
- whether an administrative fee applies
- the structure of the administrative fees (annual payment and/or single payment)
- whether a fee for numbers applies
- the structure of the fees for numbers (annual payment and/or single payment)

The details of the fees can be found in annex 7.

Table 19 General overview of fees applied in 11 hypothetical cases

Services not implying use of numbers

O no administrative or numbering fee applies
S single payment administrative fee
A annual administrative fee

		AT	BE	CH	DE	DK	ES	FL	FR	GR	IE	IT	LU	NL	PT	SE[30]	UK
1	voice/data to closed user groups	O	S,A	O	O	O	A	O	O	A	S, A	S, A	S, A	O	S, A	O	O
2	value added service (voice mail, conference calling, internet access provider...)	O	S	S	O	O	A	O	O	A	S, A	S, A	S, A	O	S, A	O	O
3	public fixed voice telephony	O	S, A S(SMP)	O	O	O	A	O	S, A S(SMP)	not lib	S, A	S, A	S, A	S, A S(SMP)	not lib	S, A	S, A
4	operation of a fixed public network	S	S, A S(SMP	S	S	O	A	O	S, A S(SMP)	not lib	S, A	S, A	S, A	S, A S(SMP)	S, A	S, A	S, A
5	voice telephony on a self operated fixed network	S	3 + 4	S	S	O	3 + 4	O	3 + 4	not lib	S, A	4 +5	3 + 4	3 + 4	not lib	S, A	S, A

[30] In Sweden an additional single payment is required from those operators providing telephony services which are significant regarding the area of distribution, the number of users or other similar factors.

Services implying use of numbers

O no administrative or numbering fee applies
S single payment administrative fee
A annual administrative fee
A (SMP) annual administrative fee for operators having significant market power

1 single payment fee for numbers
2 annual fee for numbers

		AT	BE	CH	DE	DK	ES	FL	FR	GR	IE	IT	LU	NL	PT	SE[31]	UK
6	bearer data service – DNIC	O	S 1, 2	S 1, 2	O	 2	A	 1, 2	O	A	S, A	S, A	S, A 1, 2	S, A 1 ,2	S, A	A	O
7	premium rate service – service number	O	S 1, 2	S	O	O	A	O	O	not lib	S, A	S, A	S, A 1, 2	 1, 2	S, A	A	O
8	freephone/shared cost – service number	O	S 1, 2	S	O	O	A 2	O	O	notlib	S, A	S, A	S, A 1, 2	 1, 2	S, A	A	O
9	service accessible via a short number	O	S	 1, 2	O	 2	A	2	2	A	S, A	S, A 2	S, A 1, 2	 1, 2	S, A	A	O
10	carrier selection service– carrier selection code	O	S,A 1, 2	S	O	O	A	2	2	not lib	S, A	S, A 2	S, A 1, 2	S, A 1, 2	not lib	A	S, A
11	public fixed voice telephony telephone numbers ISPC NSPC	O[32]	S,A 1, 2 1, 2 1, 2	S 1, 2 1, 2 1, 2	S	 2 2	A 2	 2 2 2	S, A 2	not lib	S, A	S,A 2	S, A 1, 2	S, A 1, 2	not lib	A	S, A

[31] In Sweden an additional single payment is required from those operators providing telephony services which are significant regarding the area of distribution, the number of users or other similar factors.

[32] In Austria the single payment applies only for public fixed voice telephony services which include transmission means

7.2 Summary of case studies related to services other than Voice Telephony and Infrastructure

The following table reviews the results of the case studies 6 to 10 included in annex 7.

They concern :

6 bearer data service using DNIC
7 premium rate service using specific service numbers
8 freephone/shared cost service using specific service numbers
9 service accessible via a short number
10 carrier selection service accessible via a carrier selection code

Fees are classified in the following categories:

- high fee exceeding 13,000 Euro
- medium fee between 4,000 and 13,000 Euro
- low fee under 4,000 Euro
- no fee

Each of the elements composing the total fee has been arranged in one of these categories according to the level. The administrative single payment fees are all lower than 4,000 Euro. For yearly fees which are a function of turnover (or the number of switches), a calculation has been made of what the turnover should be in order for the service provider to be obliged to pay the corresponding fee.
The numbering fees have been categorised in the same way as administrative fees. Distinction has been made between

- 1 DNIC
- premium rate/freephone service numbers
- short numbers.

More details concerning the definition of each of the included services and the assumed licensing regime can be found in annex 7.

It can be concluded that for the first group of services fees exceed 13,000 Euro only in the event of very high turnovers in certain countries or the use of numbers (in particular a full DNIC or 3 digit short numbers) in others. Notwithstanding the price of certain numbers, the level of fees for these kinds of service providers in EU countries seems unlikely to have a negative effect on competition.

Table 20 Overview of administrative and numbering fees for fixed Services, not including transmission means, other than Public Voice Telephony and Transmission means

	Administrative fee			**numbering fee**			**total admin and numb fee**
	single payment fee	**yearly fee**	**total admin fee after 1 year**	**single payment fee**	**yearly fee**	**total numbering fee after 1 year**	
high > 13,000		Greece turnover > 2,600,000 Spain turnover > 866,667 Ireland turnover > 650,000 Italy one region and ≥ 25 switches or more regions and ≥ 15 switches	Greece turnover > 2,600,000 Spain turnover > 866,667 Ireland turnover > 634,870 Italy one region and ≥ 25 switches or more regions and ≥ 15 switches		*Short numbers* Denmark 3 digits Finland 3 digits France Italy	*DNIC* Netherlands *Short numbers* Denmark 3 digits Finland 3 digits France Italy	Greece, Spain, Ireland, Italy given certain turnover *Bearer data/DNIC* Netherlands *3 digit short numbers* Denmark France Finland Italy
medium 4,000-13,000		Greece turnover 800,000-2,600,000 Spain turnover 266,667-866,667 Italy: one region and > 7 switches or more regions and max 2 switches Portugal	Greece turnover 800,000-2,600,000 Spain turnover 266,667-866,667 Italy: one region and > 7 switches or more regions and max 2 switches Portugal	*DNIC* Netherlands	*DNIC* Netherlands *Premium rate/Freephone* Belgium *Short numbers* Finland 4 digits	*Premium rate/Freephone* Belgium	Greece, Spain, Italy, Portugal given certain turnover or coverage *Premium Rate/Freephone* Belgium *Short numbers* Finland 4 digits

	Administrative fee			numbering fee			total admin and numb fee
	single payment fee	**yearly fee**	**total admin fee after 1 year**	**single payment fee**	**yearly fee**	**total numbering fee after 1 year**	
low < 4,000 euro	Belgium, Switzerland Ireland Luxembourg Portugal Sweden	Belgium (only CUG) Greece turnover < 800,000 Spain turnover < 266,667 Ireland turnover< 650,000 Italy (one region and less than 7 switches) Luxembourg Sweden	Belgium Greece turnover < 800,000 Spain turnover < 266,667 Ireland turnover< 650,000 Italy (one region and less than 7 switches) Luxembourg Sweden	*DNIC* Belgium Switzerland Luxembourg *Premium Rate/Freeph* Belgium Switzerland Luxembourg *Short number* Switzerland Luxembourg	*DNIC* Belgium Switzerland Luxembourg *Premium Rate/Freephone* Switzerland Luxembourg Denmark Spain Finland France Italy *Short numbers* Finland 5 digits Switzerland Luxembourg	*DNIC* Belgium Switzerland Luxembourg	Ireland, Spain, Italy depending on turnover or coverage Portugal *Bearer data/DNIC* Belgium, Switzerland Luxembourg *Premium Rate/Freephone* Switzerland Luxembourg Denmark Spain Finland France Italy *Short numbers* Finland 5 digits Switzerland Luxembourg

	Administrative fee			numbering fee			total admin and numb fee
	single payment fee	**yearly fee**	**total admin fee after 1 year**	**single payment fee**	**yearly fee**	**total numbering fee after 1 year**	
none	Austria, Germany Denmark Finland France Netherlands Spain Switzerland UK	Austria, Germany Denmark Finland France Netherlands UK	Austria, Germany Denmark Finland France Netherlands Sweden UK	*for the analysis of which numbers require a fee and the structure of the fee, please refer to tables in section 8.1*		No numbering fees Austria Greece Ireland Portugal Sweden UK	no fees at all in Austria Germany UK

7.3 Summary of case studies related to Public Voice Telephony including transmission means and numbers

The following table considers

- Public Voice Telephony
- Transmission means
- 1 million telephone numbers.

It combines the results of the following case studies

3 public fixed voice telephony
4 operation of a fixed public network
5 voice telephony over a self operated fixed network
11 public fixed voice telephony, involving telephone numbers (not the access code).

No results are included for Greece and Portugal as these countries are in the process of liberalising the service.

Compared to the previous section 7.2, more and higher categories of fees are considered, as follows:

- exceeding 3,000,000 Euro
- between 1,000,000 and 3,000,000 Euro
- between 350,000 and 1,000,000 Euro
- between 200,000-350,000
- between 50,000-200,000
- below 50,000
- no fee

In a similar way as in section 7.2, each of the elements composing the total fee has been arranged in one of these categories according to the level. For yearly fees which are function of turnover or coverage, it has been calculated what the turnover or coverage should be in order for the service provider to be obliged to pay the corresponding fee. Where the calculated turnovers exceed the realistic figure for turnover of an important newcomer in a certain country, this is indicated by using strikethrough (e.g ~~using strikethrough.)~~
More details concerning the definition of each of the included services and the assumed licensing regime can be found in annex 7. Portugal and Greece are in the process of liberalising the service and have therefore not been considered.

For Germany, the case is based on figures for an operator with a geographical licence.

Regarding the assumption of the use of 1 million telephone numbers, it must be observed that, although this is a realistic assumption in many European countries, it is not in the smaller or less populated ones like Austria, the Benelux countries, Denmark Finland and Switzerland. For these countries, an example of 300,000 numbers has been considered. These results are indicated in italics. In order to compare the results of the different national fee systems under identical circumstances, the calculated fees assuming the use of 1 million telephone numbers has not been deleted from the table.

From the comparison in the table below it appears that total fees are below 200,000 Euro in Austria, Belgium, Denmark (for 300,000 numbers), Finland (for 300,000 numbers), Italy, Netherlands, Sweden and UK. The highest fees are found in Germany, France and Spain for services having a large coverage or turnover. As opposed to the other countries claiming a yearly fee, the fee in Germany is a single payment fee. After three years, fees in France and Spain result in a level of fees equal to that in Germany.

In Ireland, the percentage of turnover is 2%. This is considerably higher than in Luxembourg or Spain and therefore some operators risk paying considerable fees.

It can be concluded that in general the level of administrative fees for Voice Telephony and Infrastructure are at a level which does not impact negatively on the business of new operators. In Germany, France, Spain and Ireland the level of the fees for operators having a high turnover or covering an extensive part of the territory or population is considerably higher than in other countries.

In March 1999, ETO held a first consultation with the industry. The questionnaire sent out mentioned different potential reasons for delay or burdens on market access. Most were related to the information required for verification. There was, however, also the possibility of citing “excessive fees” as a reason for causing difficult market access. Of the total of 57 difficulties pointed out, excessive fees occurred 6 times. The countries where excessive fees were encountered were France, Germany and Spain.

Table 21 Overview of administrative and numbering fees for fixed Services other than Public Voice Telephony, not including transmission means

	Administrative fee ~~strikethrough indicates that the turnover exceeds the level of what is realistic for an important newcomer in that country~~			**numbering fee** ***italics: fees for 300,000 numbers in smaller countries (Benelux; CH, DK, FL)***			**total admin and numb fee** *italics, fees for 300.000 numbers* ~~*strikethrough: irealistic turnover*~~
	one-off fee	**yearly fee**	**total admin fee**	**one-off fee**	**yearly fee**	**total nr fee**	
>3,000,000	Germany >35,463,839 inhabitants	~~Spain turnover >200,000,000~~ ~~Ireland turnover >149,375,000~~ ~~Luxembourg turnover >842,977,714~~	Germany >35,463,839 inhabitants ~~Ireland turnover >149,375,000~~ ~~Spain turnover >200,000,000~~ ~~Luxembourg turnover >842,977,714~~				Germany >35,463,839 inhabitants ~~Ireland turnover >149,375,000~~ ~~Spain turnover >200,000,000~~ ~~Luxembourg turnover > 779,484,571~~
1,000,000-3,000000	Germany 11,821,279-35,463,839 inhabitants	Spain turnover 66,666,666-200,000,000 Ireland turnover 49,375,000-149,375,000 ~~Luxembourg turnover 271,549,142-842,977,714~~	France > 5 regions Germany 11,821,279-35,463,839 inhabitants Ireland turnover 49,375,000-149,375,000 Spain turnover 66,666,666-200,000,000 ~~Luxembourg turnover 271,549,142-842,977,714~~				France > 5 regions Germany 11,821,279-35,463,839 inhabitants Ireland turnover 49,375,000-149,375,000 Spain turnover 66,666,666-200,000,000 ~~Luxembourg turnover max 779,484,571~~

	Administrative fee ~~strikethrough indicates that the turnover exceeds the level of what is realistic for an important newcomer in that country~~			**numbering fee** ***italics: fees for 300,000 numbers in smaller countries (Benelux; CH, DK, FL)***			**total admin and numb fee** *italics, fees for 300.000 numbers* ~~*strikethrough: irealistic turnover*~~
	one-off fee	**yearly fee**	**total admin fee**	**one-off fee**	**yearly fee**	**total nr fee**	
350,000-1,000000	France> 5 regions Germany 4,137,447-11,821,279 inh	France > 5 regions Germany 4,137,447-11,821,279 inh Ireland turnover 23,333,333-49,375,000 ~~Luxembourg turnover 85,834,857-271,549,142~~ Spain turnover 23,333,333-66,666,666	France max 5 regions Germany 4,137,447-11,821,279 inh Ireland turnover 23,333,333-49,375,000 ~~Luxembourg turnover 85,834,857-271,549,142~~ Spain turnover 23,333,333-66,666,666				France max 5 regions Germany 4,137,447-11,821,279 inh Ireland turnover 23,333,333-49,375,000 ~~Luxembourg turnover max 208,056,000~~ Spain turnover 23,333,333-66,666,666
200,000—350,000	Germany 2,364,255-4,137,447 inhabitants	France max 5 regions Ireland turnover 9,375,000-16,875,000 Luxembourg turnover max 85,834,857 Spain turnover 13,333,333-23,333333	Germany 2,364,255-4,137,447 inhabitants Ireland turnover 9,375,000-16,875,000 Luxembourg turnover max 85,834,857 Spain turnover 13,333,333-23,333,333		Denmark Finland	Denmark Finland Luxembourg	Germany 2,364,255-4,137,447 inhabitants Denmark Finland Ireland turnover 9,375,000-16,875,000 Luxembourg turnover max 22,341,714 Spain turnover 13,333,333-23,333,333

	Administrative fee ~~strikethrough indicates that the turnover exceeds the level of what is realistic for an important newcomer in that country~~			**numbering fee** ***italics: fees for 300,000 numbers in smaller countries (Benelux; CH, DK, FL)***			**total admin and numb fee** *italics, fees for 300.000 numbers* ~~*strikethrough: irealistic turnover*~~
	one-off fee	**yearly fee**	**total admin fee**	**one-off fee**	**yearly fee**	**total nr fee**	
50,000-200,000	France max 5 regions Germany 591,123-2,364,255 inhabitants Italy whole territory Switzerland max UK major PTO	France max 1 region Ireland turnover 1,900,000-9,375,000 Italy whole territory Luxembourg turnover max 42,977,714 Spain turnover 3,333,333-13,333,333	France max 1 region Germany 591,123-2,364,255 inhabitants Ireland turnover 1,900,000-9,375,000 Italy, whole territory or not Luxembourg turnover max 42,977,714 Switzerland max Spain turnover 3,333,333-13,333,333 UK major PTO	Luxembourg Switzerland	Luxembourg *Denmark* *Finland*	Switzerland *Denmark* *Finland* *Luxembourg*	Belgium Germany 591,123-2,364,255 inhabitants Switzerland Italy UK major PTO *Denmark* *Finland*

	Administrative fee ~~strikethrough indicates that the turnover exceeds the level of what is realistic for an important newcomer in that country~~			**numbering fee** ***italics: fees for 300,000 numbers in smaller countries (Benelux; CH, DK, FL)***			**total admin and numb fee** *italics, fees for 300.000 numbers* ~~*strikethrough: irealistic turnover*~~
	one-off fee	**yearly fee**	**total admin fee**	**one-off fee**	**yearly fee**	**total nr fee**	
≤ 50,000	Austria Belgium France max 1 department Germany< 591,123 inhabitants Ireland Italy if not whole territory Luxembourg Netherlands Switzerland min Sweden UK minor PTO	Belgium France max 1 city Ireland turnover < 1,900,000 Italy if not whole territory Netherlands Spain if turnover < 3,333,333 Sweden UK major PTO UK minor PTO	Austria Belgium France max 1 city Germany< 591,123 inhabitants Ireland turnover < 1,900,000 Netherlands Switzerland min Sweden UK minor PTO	Belgium Netherlands Switzerland	Belgium France Italy Netherlands Spain Switzerland	Belgium France Italy Netherlands Spain	Austria Germany< 591,123 inhabitants Netherlands Sweden UK minor PTO
none	 Denmark Finland Spain	Austria Denmark Finland Switzerland Germany	 Denmark Finland	Austria Germany Denmark Finland Italy Spain Sweden UK	Austria Germany Sweden UK	Austria Germany Sweden UK	
not liberalised	Greece, Portugal						

8 CONCLUSIONS AND DRAFT PROPOSALS

As reviewed in section 2.1, the Licensing Directive distinguishes between fees and charges for general authorisation procedures and those for individual licences. In the latter case the use of resources is subject to a specific provision. As a general principle the Directive states that fees or charges should be based on objective, non-discriminatory and transparent criteria. Furthermore, administrative fees should only seek to cover the administrative costs incurred for issue, management, control and enforcement of the general licensing scheme or the work involved in these activities in the case of the particular applicant in order to deliver an individual licence.

The determination of the level and the structure of fees is left to the national level. In sections 2 to 7 of this study information is presented concerning these national practices. Annex 7 includes the fees for different case studies.

This section will concludes the analysis and formulates proposals for a code of conduct for each of the following issues :

- the interrelation between licensing and fees (section 8.1)
- interrelation of fees and the financing of the NRA (section 8.2)
- the methods used for ensuring that fees seek to cover only the administrative costs inherent in the licensing scheme and for distributing the costs over the different parties involved (section 8.3)
- international disparities concerning the level of fees and the effect on competition (section 8.4)

The findings and proposals of this study have been presented to telecommunications operators, service providers, European Associations, industry and administrations during a workshop held in Brussels on 20 September 1999. The main observations made on that occasion are summarised in section 8.5.

8.1 Interrelation between licensing and fees

From the description of the administrative fees in section 2.2.1 and the case studies described in section 8, there appear to be a multitude of different fees and it is evident that the kinds of activities and operations subject to administrative licensing fees vary considerably from country to country.

In a summary table in section 6, the different administrative fees have been related to the applied national licensing regime. The conclusion is clearly that the national licensing regime and fees are strictly interrelated. All services, networks or operators subject to an individual licence are charged a fee. General authorisations which are not accompanied by a notification are not subject to a fee. Notification is free of charge in Austria, Denmark, France, Germany and Finland while it is subject to a fee in other countries such as Belgium, The Netherlands, Luxembourg, Italy, Portugal and Sweden. In the latter countries, the notification regime requires some verification of the information provided by the applicant, filing and sometimes a written confirmation.

The control of market access as well as the act of imposing a set of obligations explicitly on operators by means of an individual licence or notification results therefore in costs for the NRA, which are recovered from the market parties.

A light licensing regime would alleviate the costs for both the NRAs and the market parties. As was pointed out also in another ETO study concerning "Information for verification", a light licensing regime is characterized by:

- making market subject to *a-priori* provision of information in only a strict minimum of cases

- focusing requirements for information on clear objectives which are of prime importance to the NRA rather than using such requirements as an instrument to verify compliance with the full set of obligations imposed on an operator or service provider or a means to obtain extensive information on the evolution of the market and technologies.

In no case does the goal of imposing a fee justify the use of an individual licence or notification.

1. ETO recommends that fees should not impose unnecessary costs or burdens on the telecommunications sector. Therefore they should be a function of a light licensing regime and an administratively economical procedure distributing the cost of the work of the NRA over those operators for which the highest volume and/or the most complex work is done.

8.2 Interrelation with the funding of the NRA

As described in section 6, fees and charges are interrelated with the funding of the NRA. It is evident that a precise assessment and comparison of licensing costs incurred by NRAs is complex due to the divergence in organisation of the tasks (e.g division between different entities or regional divisions), the statute of the NRA and external factors such as the general level of costs for housing, wages etc.

From the information collected it appears that financial and budgetary departments within NRAs are familiar with the procedure of presenting the budget of the NRA as part of the State budget, but less so with accounting principles and cost allocation.

2. ETO therefore recommends that NRAs acquire a detailed knowledge of the costs they incur for licensing, managing the numbering plan and frequency management. On the basis of this an analysis should be made of what is precisely responsible for generating the highest volume and complexity of regulatory work and an appropriate method for implementing cost-based fees should then be chosen.

The following section elaborates further on these methods.

3. ETO recommends also that the income and the expenditure of NRAs should be in balance. The exact income and expenditure should be made public as soon as possible after the end of the working year. In cases where the levied fees exceed the expenditure, this amount should flow back to the contributors in the form of a re imbursement or a deduction from the fee payable in the following year. If allowed by public finance regulation, another option is to calculate and levy the fees on a yearly basis at the moment the correct costs of the previous year are known.

8.3 Methods used to implement the principle of cost-based fees

From the summary table in section 6, based on the information provided in annex 6 as well as the case studies in annex 7, it appears that countries calculate fees according to the following methodologies:

- unit time costing
- fixed cost per licensing category related to the work incurred for certain types of operators or services
- fee based on a parameter related to the amount of work (e.g turnover, geographical coverage)
- position on the market

4. Concerning the methods used to implement the principle of cost-based fees ETO recommends the following

- *in the case of unit time costing:* **that benchmarking is applied.**

  This will allow the NRA

  1. to provide applicants with an estimate of the order of magnitude of the licence fee they are likely to incur
  2. to counteract delays in time due to inexperience of both the NRA and the applicant which could raise the price considerably and
  3. to allocate the costs in general in a more transparent and proportionate way.

- *in the case of fixed costs which are an average cost per licencing category*

  to distinguish between a limited number of categories only, taking care that :

  - **the administrative management for applying fees to different licensing categories does not create costs disproportionate to the fees charged**
  - **the distinction between licensing categories does not create disparities between different technologies**

- *in the case of a fee varying according to a parameter such as turnover or geograhical coverage*

  - **there should be a demonstrated interrelation between the parameter and the cost for licensing incurred by the NRA**
  - **in order not to create costs which are disproportionate to the fees charged a minimum threshold should be set beneath which no fee is required**
  - **there should be a clear and economical administrative procedure to determine the basis for applying the parameter (eg clear definition of turnover)**

- **the parameter should be chosen in such a way that publication of the fee by the NRA does not make possible the deduction of commercially sensitive data**

8.4 International disparities concerning the level of fees

At the national level, operators within the same licensing category are subject to the same principle for fees and charges. At the international level, the divergence in licensing categories has the result that operators with the same activity incur largely divergent fees in different countries. In the event that the fees are of a significantly high level, this could create distortion in competition.

Fees for mobile communications

From the analysis in section 5, it can be concluded that when we consider the total licensing and frequency fees paid by GSM and DCS-1800 operators after 5 years, they are as divergent as 1 to 1700 Euro. Taking into account the number of inhabitants the difference is 1 to 350 Euro/inhabitant.

The main reason for this divergence is the high single payment fees which are requested in some countries for the delivery of the licence. The major burden is in many countries placed on the operator through a single administrative fees and not through annual fees for frequencies. It must be observed that licences for GSM and DCS-1800 combine the right to access the market, to build the network, to offer a package of standardised services and the right to use frequencies. This makes it difficult to distinguish between, on the one hand, the administrative fee required to examine an application, grant the authorisation and verify compliance with the terms of the authorisation once the service or network is operational and on the other hand charges for the use of frequencies which are a scarce resource. This distinction is important in the light of the principles set in the Licensing Directive. As described in section 2.1, administrative fees should be proportionate to the work involved for the particular applicant while Member States are allowed to impose charges which reflect the need to ensure the optimal use of scarce resources.

5. ETO therefore recommends that in the case of mobile licences distinction is made between administrative fees and fees for the use of frequencies. Administrative fees should be proportionate to the cost of examining the applications, granting the authorisation and verifying compliance with licensing conditions. Charges reflecting the need to ensure optimal use of a scarce resource should be related directly to the use of frequencies.

High fees might have a negative impact on the development of new mobile systems. The industry members of the UMTS Forum are of the opinion that high single payments, which are imposed at the moment when the licence is granted, can be very burdensome for an operator who does not generate an income and has high investments to make in order to roll out the network and deploy his service. They fear that high up-front fees "*will increase the tariffs for the consumer, slow down the development of new, innovative services, such as UMTS services, diminish the infrastructure investments and harm competition.*" It is therefore recommended that "*large downpayments at the beginning of*

the licence period should be avoided, in favour of charges related to the use of the system, like royalty or annual fees."[33]

A draft ERC report[34] concerning "The role of Spectrum Pricing as a means of Supporting Spectrum Management" describes practical applications and experiences with cost-based pricing, administrative incentive pricing, auctions and spectrum trading. The report recommends that, as the pressures on spectrum demand are likely to increase in general, attention be given to the potential use of pricing. It is thought that benefits of using new techniques for spectrum pricing can be significant in improving spectrum efficiency.

A second concern is that in a mobile market characterised by fierce competition from competing mobile operators on the one hand and fixed operators on the other hand, high fees might prove to distort competition. This could be the case in the event that different mobile operators pay substantially different fees. At the same time, customers see fixed and mobile voice services more and more as interchangeable.

6. ETO therefore recommends that in order to avoid distortion of competition among mobile operators on the one hand and providers of fixed services and mobile services on the other hand, fees should be reconsidered and determined in a non-discriminatory way when new mobile licences are granted.

Fixed services and numbers

In annex 7, different case studies are presented. It appears that the fees with most impact are those for numbers and the licensing of public voice telephony over a self-operated network. On the basis of the case studies, the tables in section 7 categorise the different countries in a limited number of levels of fees. Two cases are considered.

- fixed services not including transmission means, other than Public Voice Telephony using different kinds of numbers (1 DNIC, short numbers, numbers for premium rate or freephone services)
- fixed public voice telephony including the transmission network and 1 million telephone numbers

In both cases it was assumed that the operator or service provider had no significant position on the market or SMP.

It can be concluded that for the first group of services fees exceed 13,000 Euro only in the event of high turnovers in certain countries or the use of a full DNIC or 3 digit short numbers in others. This kind of number can, however, be considered as a scarce resource, justifying a higher price. Notwithstanding the price for certain numbers, the level of fees for this kind of operator in EU countries seems unlikely to have an effect on competition.

For fixed public voice telephony including the transmission network and 1 million telephone numbers

[33] The impact of licence cost levels on the UMTS business case, UMTS Forum, report nr 3, October 1998, section 7.

[34] Draft report RR (99) 98

It can be concluded that in general administrative fees for Voice Telephony and Infrastructure are at a level which does not impact negatively on the business of new operators. In Germany, France, Spain and Ireland the level of the fees for operators having a high turnover or covering an extensive part of the territory or population is considerably higher than in other countries.

In March 1999, ETO held a first consultation with the industry. The questionnaire sent out mentioned different potential reasons for delay or burdens on market access. Most of these reasons were related to the information required for verification. There was, however, also the possibility to cite "excessive fees" as a reason causing difficulties in market access. Of the total of 57 difficulties pointed out, excessive fees occurred 6 times. The countries where excessive fees were encountered were France, Germany and Spain.

8.5 Comments expressed during the workshop

During the workshop held by ETO, further clarification was sought about the proposal that the excess money should flow back to the sector. The aim of the proposal is to bring the income and the expenditure of the NRA into balance. In order to achieve this, it is proposed to have the excess money reimbursed to the contributors and not to the sector in general (e.g a fund for research and development).

A consultant expressed the opinion that is was preferable to have nationwide licences and fees which did not vary according to coverage, be it in terms of population or geography. From experience in assisting different operators the definition of the coverage appeared to be a complex exercise. Moreover, as the operator grows and expands the service or network, he has to repeat the same administrative procedure all over again in order to extend the licence.

A representative of the Spanish operator and the UK regulator offered support in adding information related to the fees paid by mobile operators in their respective countries.

A regulator foresaw difficulties in raising funds for NRAs while moving towards more deregulation reducing the cases where individual licences are used and minimising the number of licensing conditions contained in these licences.

In reply ETO referred to a number of countries where the funding of the NRA is dissociated. Some NRAs who already have no licences or only a limited number of them are to a large extent funded through fees for resources. Another practice is to distribute the expenses over certain operators. Furthermore, there is no objection to imposing a fee on operators for work done for them outside of the framework of the licence.

An operator followed up on this discussion by asking for views on how the costs for interconnection dispute resolution should be recovered.

ETO set out different practices used in EU countries. These varied from being implicitly included in the fee for the individual licence, to a fee to be paid on the basis of time spent on the case by the administration.

In a written comment received after the workshop a mobile operator suggested the following refinement of recommendation 5: "*In the case of an auction of frequencies, the amount raised by the Treasury should partly be used to cover the administration costs and the costs for frequency management born by the relevant administrations, thus avoiding that additional fees are being paid by the operators. Operators should have the guarantee*

that the amount paid through the auction will be refunded if the right to use the frequencies is revoked before the end of the licensing period".