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SEEFIRE

South-East Europe Fibre Infrastructure for Research and Education



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Regulatory and Legal Framework for the Support of Dark Fibre Infrastructure in SE Europe

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Abstract: This deliverable provides an overview of the evolving regulatory environment for the following countries in southeast Europe: Albania, Bosnia and Herzegovina, Bulgaria, The Former Yugoslav Republic of Macedonia, Romania, Serbia and Montenegro. The report has taken into account inhibitors of, and opportunities for, the ownership of dark-fibre networks by NRENs in these countries, and approaches to influencing the development of such networks towards best standards.

The SEEFIRE Project

The SEEFIRE Project is a special support action co-funded by the FP6 IST programme of the European Commission. SEEFIRE builds on the success of previous activities and projects, including SEEREN, to support research and education networks in southeast Europe and will provide input for preparing the next-generation networks for research and education in the region. The 12-month, project started on 1 March 2005, will:

- establish a benchmark of existing and potentially available optical fibre for NRENs in the region;
- make an analysis of the technical options available for the deployment of dark fibre and the management of optical transmission by NRENs in the region;
- report on economic aspects and regulations;
- disseminate information and increase awareness about dark-fibre deployment both at technical and policy-making levels.

The recent progress in technology for optical transmission at high speed has made the deployment of owned or leased fibre networks a reality for NRENs. SEEFIRE will make a first step in the direction of a cost-effective gigabit network in southeast Europe, connecting researchers and universities in the region with other research users in Europe and worldwide. In doing so, the project will contribute to reducing the digital divide that affects several countries in southeast Europe, due in part to past political and economic circumstances.

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1. Executive summary

What is the focus of this Deliverable?

The Deliverable examines the changing regulatory environment in which NRENs will be operating over the next few years and its implications for them, with particular reference to their use of dark fibre.

What is next in the process to deliver the SEEFIRE results?

SEEFIRE activities are drawing towards their conclusion. The conclusions of this Deliverable will be taken into account in the final Strategy Workshop to be held in Bucharest in January 2006 and in the White Paper to be delivered in February 2006.

What are the deliverable contents?

The Deliverable outlines the new EU regulatory framework for electronic communications towards which all countries in the region are moving, and provides a snapshot of what stage the countries have reached. It discusses the main features of the regulatory regime which are likely to affect NREN operations, and proposes approaches for NRENs to support and exploit liberalisation.

Conclusions

Moves towards the new EU regulatory framework will be wholly positive for NRENs in the long term, although some discomfort may be experienced as traditional relationships are adjusted. Liberalisation will bring NRENs more choice and lower prices. Electronic communications regulations bearing directly on NRENs' operations are minimal, although care may sometimes be needed to ensure that networks do not inadvertently become classified as 'public'. More problems may be experienced in other legal and regulatory areas not specific to the communications industry, such as those governing the establishment of new businesses or use of rights of way. Successful transition to the new environment is mainly a matter of managing changing relationships with the incumbent, ISPs, government and private sector customers.

2. Introduction

The SEEFIRE regulatory study has mainly been performed through interviews in the target countries with policy-makers, regulators, network providers and alternative fibre suppliers (as well as NREN experts). A background paper was prepared for circulation before the interviews and is reproduced as Annex I. Actual interviews were free-form, taking the background paper just as a starting point. Respondents were encouraged to talk about issues that were important for them, rather than to answer specific questions. This deliverable provides an overview of issues that emerged.

The interviews were a valuable exercise for several reasons:

- They provided input to this deliverable, partly in the form of specific information about each respondent's situation, but perhaps more importantly by raising questions for investigation and discussion with other respondents and team members. Thus each interview contributed to a more rounded picture of the whole situation.
- They raised the profile of the regulatory issues among the respondents, and by strengthening (or in some cases, making) links between the respondents, helped to lay foundations for future co-operation.

It is important to note that this is just a snapshot at a particular time. Throughout Europe, and especially in the target countries, regulatory frameworks are still evolving. Many questions have not yet been addressed. For example, in most cases the regulatory status of NRENs or the obligations of network providers to supply fibre have not yet been considered or determined.

Chapter 3 outlines the status of electronic communications regulation in the target countries from the point of view of NRENs. As the timing of this study was soon after a much larger systematic monitoring exercise by Cullen International for Directorate General Information Society and Media (DGIS), the published reports of this study¹ are the obvious current source for basic information on the progress of electronic communications regulatory reform in the region. Some information from its reports has been reproduced in Annex III. Readers are referred to those reports for fuller information.

All of the countries in the region are adapting their electronic communications regulation to the EU model. The study has confirmed that this is positive and straightforward for NRENs. As in the case of the previous SERENATE regulatory study², in-country discussions show few problems on the surface in this area.

Chapter 4 deals with regulatory topics of special interest to NRENs:

- The lack of regulation of access to dark fibre.
- Effects of regulation on network links between countries.
- Effects of regulation on network links within countries. These might have:
 - Implications for NRENs as providers of networks and services that may need to have certain authorisations or to comply with certain conditions.
 - Implications for NRENs as customers for networks and services in an ever more liberalised market.

Chapter 5 goes on to discuss related areas that emerged as most needing the attention of NRENs:

- The need for rights of way and construction permits, which can slow down or even prevent installation of optic fibre cables.
- General business regulations, which may make it hard for new suppliers to enter the market and compete.
- Institutional regulations and constraints, which may impede the ability of NRENs to deploy dark fibre.

¹ <http://www.cullen-international.com/documents/cullen/cipublic/studies.cfm>

² SERENATE deliverable D7: Report on the expected development of the regulatory situation in European countries relevant for the SERENATE project <http://www.serenate.org/publications/d7-serenate.pdf>

- The treatment of local connections, which may use various technologies other than dark, or even lit, fibre.

Underlying all these areas of concern are relationships between NRENs and various partners. In Chapter 6 we discuss how the health of the following relationships is critical to the progress of NRENs in the new regulatory climate:

- Relationships between NRENs and the network incumbent.
- Relationships between NRENs and ISPs.
- Relationships between NRENs and the government.
- Relationships between NRENs and private sector customers.

3. The status of electronic communications regulation

EU Directives in their preambles explain, and in their bodies lay down, legal provisions that EU countries must implement (“transpose”) in national law. In electronic communications, there have been two recent sets of directives, known as the 1998 or Open Network Provision (ONP) package, and the 2002 (or 2003) or New Regulatory Framework (NRF) package³. The 2002 package builds on the 1998 one, moving towards more open markets, simplifying rules and reducing market entry barriers. Annex IV summarises the main provisions of the 2002 package as described in the SERENATE regulatory study⁴.

To provide a concrete example of regulation as relevant to NREs and in particular to dark fibre, Annex II describes the situation in the Czech Republic before and after the recent Act on Electronic Communications. This is a good example for the target countries because the Czech Republic has joined the EU and the NREN, CESNET, has pioneered use of dark fibre⁵.

All countries of the region are in the process of implementing these EU Directives. By now, all of them are at least formally compliant with the 1998 package and most of them are well advanced towards implementing the 2002 package and are in the course of privatising their incumbents. Table 5 in Annex III⁶ summarises the status of ownership of incumbents, and Table 6 in Annex III summarises the formal status of liberalisation of fixed public voice and data markets. Table 7 in Annex III summarises the formal guarantees of independence of the National Regulatory Authorities (NRAs) and their dispute resolution powers and procedures. For reference, Table 8 in Annex III summarises authorisation requirements for public fixed networks and services and for ISPs (including information on ISPs’ interconnection rights), while Table 9 in Annex III summarises the state of play on Significant Market Power (SMP) regulation of incumbents.

Country	Employees handling telecoms regulatory tasks on:	
	1.1.2004	1.1.2005
Albania	11	14
Bosnia & Herzegovina	8	11
Bulgaria	78	80
Romania	52	57
Serbia & Montenegro -Montenegro	15	17
Serbia & Montenegro -Serbia	NRA not yet established	NRA not yet established
Serbia & Montenegro - Kosovo	3	5
FYR Macedonia	11	11

Source: Cullen International Comparative Report Table 8

Table 1 NRA employees handling telecoms regulatory tasks

From these data, the interview programme and other sources, we summarise the regulatory status in the target countries, as relevant to NREs, on the following lines:

- The countries are at different stages and moving at different speeds along the road to effective competition. The two EU candidate countries, Romania and Bulgaria, are leading, with Romania to date having moved both the fastest and the furthest. After many years of delay, the privatisation of BTC is a major milestone for the industry in Bulgaria, which could signal an acceleration in the pace of change. Both the Former Yugoslav Republic of Macedonia and Serbia are in the very early stages of implementing new legislation and establishing competent regulatory bodies. Table 1 above illustrates an important difficulty for most

³ The package was finalised in 2002 for implementation in EU Member States by mid-2003.

⁴ See *Overview of the EU regulatory framework for the electronic communications sector* (EU, March 2005) at http://europa.eu.int/information_society/policy/ecom/todays_framework/index_en.htm for another survey of the purpose and content of the directives and other regulations.

⁵ Thanks to Jana Jandusová of CESNET for supplying this material.

⁶ All information in Annex III quoted from the Cullen International study was current in the first quarter of 2005.

countries, namely a shortage of qualified employees in the NRA. Even where employee numbers are adequate, they inevitably lack experience in dealing with competitive market conditions. Most NRAs are not yet offering their staff salary packages which compare with what is available in the private sector, which naturally makes it hard for them to recruit and retain good people. All NRAs have many pressing tasks to fulfill in the interest of opening their national markets, and NRENs cannot expect that their affairs will have a great priority.

- Authorisation procedures should be unproblematic for NRENs, with fees (if any) set at moderate levels⁷. SMP regulation in principle should be helpful to NRENs, but it may be some time before it becomes fully effective.
- In all countries, fixed incumbents hold a commanding market position and also continue to exercise considerable political influence. Alternative long-distance operators (mainly offering voice over IP) are beginning to make inroads and reduce prices, in some cases working with cable television operators to provide alternative fixed access. The mobile market is more competitive, with at least two competing operators in each country. As is shown by Table 2, the ISP market is the most competitive, with the incumbent's market share below 50% in several countries.
- National leased line prices are generally around European averages, but are much higher in Albania for most line lengths and types, and also in the Former Yugoslav Republic of Macedonia for 34Mbit/s lines. International leased line prices remain well above European average levels (except for Montenegro, and in some cases Romania).
- Internet use is measured at under 20 users per 100 people in all countries, being highest in Bulgaria. Broadband internet access is very low throughout the region, the maximum penetration being 4 per 1000, in Romania. Generally, dial-up prices are rather high, especially taking account of low average income levels.

Country	Number of ISPs		Estimate of market share of ISP of fixed incumbent operator
	National	Local	
Albania	17	9	Not available
Bosnia & Herzegovina	3	40	42%
Bulgaria	13	192	18%
Romania	515 active internet providers		1.35%
Serbia & Montenegro: Montenegro	2	0	98%
Serbia & Montenegro: Serbia	10	30	0%
Serbia & Montenegro - · Kosovo	3	8	20%
FYR Macedonia	5	-	Not available

Source: Cullen International Comparative Report Table 67

Table 2 Number of ISPs and estimate of market share of ISP of fixed incumbent operator

4. Regulatory topics of relevance to NRENs

4.1. Dark fibre access is unregulated

In principle, access to dark fibre provided by operators with Significant Market Power could be required under Article 12 of the Access Directive (obligations of access to, and use of, specific network facilities), which is

⁷ Except for international service providers authorised in Montenegro, which are subject to very high fees.

reproduced as Annex VI. This is the provision under which, for example, local loop unbundling, co-location and duct sharing are required. However, before it can impose an obligation of this kind, an NRA has to be satisfied that it is necessary for sustainable competition, and that competing investment is unlikely to be viable. The first step towards imposing an access obligation is a market definition, which must then be followed by a market analysis showing lack of effective competition in the defined market, and identifying one or more operators with Significant Market Power (SMP) who could provide access. Dark fibre is not among the markets so far defined by the European Commission for analysis⁸, nor have NRAs chosen to add it to the list. To date, dark fibre access remains unregulated in the EU⁹ and in the study countries.

Whether this will remain the case in coming years is not clear. There has been some debate on the issue, and it could be a topic for the 2006 Review of the EU electronic communications regulatory framework. However, calls for regulated access to dark fibre are in the context of extending household broadband penetration, and relate to local access rather than to long distance links, which are usually seen as potentially if not actually competitive.

4.2. Effects of regulation on network links between countries

The study has looked for regulatory issues arising for cross-border links. If the border in question is between two countries of the region, or between one of them and an EU member, there are no special issues, beyond the national issues mentioned below – which of course may arise in either of the two countries. In fact the Framework Directive, Article 8(3)(b), requires that National Regulatory Authorities (NRAs) contribute to the development of the internal market by encouraging the establishment and development of trans-European networks and the interoperability of pan-European services.

Obviously, close co-operation between the two NRENs and their network suppliers is essential. To minimise complications, the NRENs may consider setting up a separate entity for actual procurement and set-up of the link. In the EU this entity could even be a legal entity of a third country: the Access Directive Article 3(1) requires that member states ensure that there are no restrictions which prevent undertakings in the same or different member states from negotiating between themselves technical and commercial arrangements for access and interconnection. It could expand in due course into a regional network entity.

The Czech NREN CESNET¹⁰, which has considerable experience with cross-border links, has identified the following administrative/legal problems:

- Limitations imposed by rules on funding. This is not just a question of finding enough money, but of ensuring that the conditions on which the money is supplied permit it to be used for the desired purpose.
- It is operationally essential to have only one provider for the whole line, so the two NRENs must agree on this supplier, which means a joint tendering process.
- Even if the contract is between both NRENs and the provider, tendering procedures and the contract itself have to follow the rules and governing laws of one or other country. It is important to be clear which rules prevail. If the provider is based in one of the two countries, that would point to the contract being under that country's law.
- The choice of where the contract 'belongs' may also be influenced by different tax regimes (in particular, different rates of VAT) at the two ends.

⁸ Commission Recommendation C(2003)497 of 11/02/2003 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation

⁹ With the single exception of LLU in Denmark. There is a current issue between Germany and the EC over withdrawal of required access to optic fibre local loops – see the Commission's opinion at http://forum.europa.eu.int/irc/Download/k-eGAiJYmSG-z9QJU0RCF-9gqmf-Hc9icN_qGsw5eLS26-YQ42tR4tDgDjtJLc-yi21RDP0Kc_gTFle6q3z3F4E-uG3f/case%20DE-2005-0150-public.pdf. Singapore and Bahrain have also required incumbents to include dark fibre access in their Reference Interconnection Offers (RIO), and for a period there was an FCC local loop unbundling requirement on US incumbents which applied to fibre as well as to copper.

¹⁰ Again, thanks to Jana Jandusová of CESNET for this contribution.

The special position of NRENs, and the widespread emphasis on international academic co-operation, lets NRENs set an example of co-operation on networking, both within a country and throughout the region. This can be of great value given the region's troubled history, and an increasing tendency for ever smaller units to "go it alone". The recent rebirth of BIHARNET is a particularly hopeful sign for Bosnia and Herzegovina.

The remainder of this deliverable concentrates on questions that might arise within countries, rather than between them.

4.3. Effects of regulation on network links within countries

As was explained in the SERENATE regulatory study, electronic communications regulation has implications for NRENs as both providers of networks and services and customers for networks and services.

4.3.1. Implications for NRENs as providers of networks and services

Differences between the 1998 and 2002 packages are not very significant for NRENs as providers of networks and services. The main difference is a formal one: licensing (where needed) is abolished and replaced by general authorisation. There has never been any difficulty or great cost for NRENs in getting licences, when they were needed. In most cases no licence was needed because the NREN was viewed as a private network or did not charge for its services. Similarly, with the 2002 package, authorisation to run NRENs is automatic, requiring at most notification to the regulator and payment of a modest fee. Network providers can be subject to many conditions in general authorisations and in grants of rights to use spectrum and numbering. Annex V lists the conditions, as laid down in the Authorisation Directive Annex. However, for NRENs that serve closed user groups, the conditions are likely to be largely technical (concerned with compliance with certain technical standards).

Depending on the country, providing and lighting dark fibre may or may not require licensing or authorisation, but in any case there should be no difficulty in getting any necessary permission, subject only to minimal conditions on standards which for example ensure safety and interoperability.

The licensing or authorisation status of NRENs has not really been problematic in any of the target countries. In principle, as in the SERENATE regulatory study, the question could arise of NRENs becoming public networks, which confers preferential interconnection rights but is also subject to more stringent conditions. The Authorisation Directive Article 4(2) gives providers of public electronic communications networks (and public telephone networks) the right to negotiate access to or interconnection with other providers of such networks. However, they also have obligations. As shown in Annex IV, these are not usually onerous, but some may have financial implications (eg administrative charges and universal service contributions) while others relate to consumer protection¹¹.

NRENs become public electronic communications networks if they are used mainly for public electronic communications services. Broadly, a network which makes available a few terminals in public areas of otherwise private offices is unlikely to be public; while a network that makes available many terminals in homes or shops may well be public. There are awkward intermediate cases. For example, NRENs might be regarded as public electronic communication networks if they do some of the following:

- Extend services to private houses rented to university students.

¹¹ Decisions about what these obligations should be are not entirely straightforward, because they must balance the need to protect consumers against the need to open markets. New market entrants, such as voice over IP providers, may find more difficulty in meeting obligations (for emergency calls and legal interception, in particular) than do traditional network providers that use mature technologies. See *The treatment of Voice over Internet Protocol (VoIP) under the EU Regulatory Framework* (EU, June 2004) at http://europa.eu.int/information_society/policy/ecomms/doc/info_centre/commiss_serv_doc/406_14_voip_consult_paper_v2_1.pdf for a tentative opinion about the rights and obligations of voice over IP providers in the EU and *List of comments on "Voice over IP", submitted in response to the public call for input* (EU, 2004) at http://europa.eu.int/information_society/policy/ecomms/info_centre/documentation/public_consult/interoperability_idtv/index_en.htm for some public comments on this opinion.

- Extend services to schools.
- Extend services to private homes of the families of school pupils.
- Open internet access points in schools for use by the families of school pupils outside school hours.
- Open internet access points in schools for use by anyone outside school hours.

Of course, any of these courses of action could be beneficial to the country and might be requested by the government. In particular, access points located in schools and provided by the NREN could make a significant contribution to universal internet access, especially in rural areas (where commercial internet cafés may not be viable).

Two possible approaches to this situation may be put forward:

- A special authorisation status for NRENs, justified by their public ownership and educational functions. The rights and obligations associated with the ‘public’ activities of NRENs could be different from those associated with the activities of public electronic network providers. For example, NRENs might not be required to contribute to universal service funding, as they are themselves publicly funded and may be supplementing inadequate services in underserved areas.
- Logical partitioning of the services into separately authorised private and public parts, with different rights and obligations for each. This would minimize the impact of any ‘public’ obligations, in particular as any revenue-related charges would be based on the ‘public’ turnover only.

4.3.2. Implications for NRENs as customers for networks and services

When NRENs are regarded as customers for networks and services the implications for them of the changing regulatory regime are almost entirely positive. For customers generally, open markets and more competition – or even the threat of more competition – lead to lower prices, more choice and improving quality. Already we are seeing the benefits of market opening, as optic fibre cable is becoming available to NRENs from alternative suppliers such as electricity distributors and railways. Some NRENs, such as the one in Bulgaria, find that there is a significant advantage in having a single supplier for their whole network, so that they want one supplier with national coverage. For the time being this limits them to the incumbent. In such a case there will still be benefits from competition as prices fall (and as the NREN grows and gains economies of scale), but they will be realised more slowly.

An obvious implication of more open markets, of which NRENs are well aware, is to avoid getting tied in to long term contracts which could prevent them from gaining the full advantage from falling prices.

The changes also have implications for the nature of relationships within the sector. For example, there may traditionally have been a certain closeness and trust between the NREN and the incumbent, as two state-owned entities. When external companies make investments in the incumbent, such a situation is likely to be less tenable. Managing relationships is discussed further below.

Overall, although there may be passing regrets about losing familiar ways of doing things, it is clear that liberalisation is very much in the long-term interests of NRENs. Usually, the faster complete liberalisation can be achieved, the better – and the example of Romania shows that it can be done very fast, at least in the initial stages¹². In most countries of the region progress is found to be disappointingly slow. Even the enticing prospect of EU membership is often not enough to convince governments to over-ride the objections to liberalisation of powerful incumbents.

A competent, properly resourced and genuinely independent regulatory body can make a huge difference to the speed of real liberalization. The academic institutions which give rise to the NRENs (and in particular, communications professionals, who may cluster in the NREN’s own management) may be able to make an important contribution by sharing their expertise with the NRA. They can also help to broaden policy debate, which is too often confined to sector participants, by voicing public interest concerns on issues under consultation.

¹² In Romania the regulator was established in September 2002, introduced general authorisations in December 2002, published the national numbering plan in January 2003, identified markets having dominant providers in August 2004 and imposed obligations on the dominant providers in July 2005.

5. Some related potential concerns

5.1. The need for rights of way and construction permits

The Framework Directive Article 11(1) lets all authorised network providers apply for rights to install facilities on, over or under public property and all public electronic communications network providers apply for rights to install facilities on, over or under private property. These basic rights are implemented through procedures for obtaining rights of way and construction permits that must be 'transparent and non-discriminatory'. The procedures impinge significantly on the deployment of fibre by NRENs throughout the region. This is true whether the NRENs lay fibre themselves or get fibre laid on their behalf, though in the latter case they may be shielded from the problems. Long distance fibre may require multiple permissions from local and regional authorities, entailing long delays and sometimes significant extra costs.

This study has not included detailed examinations of the procedures in the target countries. Table 10 in Annex III summarises the position as found by the Cullen International study. However, evidently several of the target countries could benefit from simplified, centralised systems for obtaining rights of way and construction permits for communications networks. This would of course help all such networks. Features implemented in some EU countries and worth considering include:

- Granting providers of electronic communications networks (or physical components of networks, such as cable or duct) rights to use public rights of way and to apply for a Court order to over-ride objections to the use of private rights of way where these objections impede network construction¹³. To protect the public from excessive construction works, the rights would not be granted automatically, but would have to be applied for. A provider would be granted the rights if the responses to a public consultation by the regulator about doing so did not raise significant objections.
- Setting up a streetworks register, with access to records of all utilities' plant¹⁴. This makes it easier for construction works to be co-ordinated, lowering both costs to the industries and disruption to the public. It also helps to guard existing plant from damage caused by new construction works.

As the study found in Bosnia and Herzegovina, the ownership of existing civil infrastructure such as duct may not always be clear. The status of installations financed under public ownership may not have been well recorded. Where this is true, the matter must be clarified. It may offer an opportunity to encourage shared use in the public interest.

5.2. General business regulations

For a company interested in entering the newly opened electronic communications market, especially if it is not already established in the country in question, numerous bureaucratic obstacles must be overcome. Sector-specific regulation is only one (and a minor one), alongside, for example, rules for starting companies, hiring labour, registering property, enforcing contracts and getting credit. For instance, in many of the target countries starting up new companies involves judicial procedures (to obtain approval from courts of law) instead of just administrative procedures, and shutting down failed companies needs many years and different legal proceedings. These obstacles affect enterprise across the whole economy. However, reform efforts are under way¹⁵. They are said to be among the most cost-effective actions for many countries: relatively small

¹³ See *Electronic Communications Code Frequently Asked Questions* (Ofcom, 2003) at http://www.ofcom.org.uk/telecoms/loi/e_c/c/160778/?a=87101 for a summary of the position in the UK.

¹⁴ See *Report on Information Systems for Street and Highway Works* (AMTEC, May 2004) at http://www.dft.gov.uk/stellent/groups/dft_roads/documents/page/dft_roads_028598.pdf for an overview of the potential for using information technology to improve co-ordination.

investments, for example in electronic registration systems, can greatly cut delays in market entry and pay for themselves many times over¹⁶.

Such reforms are not as easy to achieve as they may seem at first sight. Strong vested interests may be lined up against them, including:

- Domestic companies who are already established in a country, or at least “know the ropes”, and have no wish to make life easier for new entrants from outside.
- Organised labour, and indeed individual officials, who perceive their jobs or status as threatened. However, they can recognise that excessive regulation can hamper the protection of labour, by encouraging employers to move out of the formal economy into an informal one where there is no regulation.
- Politicians who have been elected with a mandate to uphold particular sectional interests (for example, ethnic or linguistic) and who may see giving up a local permission in favour of a central one as an unacceptable loss of autonomy. This happens in Bosnia and Herzegovina.

NRENs can only support these reforms in a small way, but plainly they should do what they can.

5.3. Institutional regulations and constraints

Relationship with Government	Separate legal entity	Part of larger organisation	Other	Total
EU - 15/EFTA				
Indirect	9			9
Government appoints at least half		1		1
Direct		3		3
Other	3	1		4
None				
Total	12	5		17
EU - new member states				
Indirect	3	2		5
Government appoints at least half	1			1
Direct	1	1		2
Other	2	1		3
None				
Total	7	4		11
Non-EU/EFTA - GEANT2 partners				
Indirect	3			3
Government appoints at least half				
Direct	2			2
Other	1	1		2
None				
Total	6	1		7
Other countries				
Indirect	3	2	2	7
Government appoints at least half		1		1
Direct	1		2	3
Other			1	1
None	1			1
Total	5	3	5	13

Source: TERENA Compendium of NRENs 2005

Table 3 Aggregated information on legal form of NRENs

Another problem area in some countries derives from the shape and position of the NREN itself. If the NREN is not yet a separate legal entity, then some other body (typically, a parent university) must sign contracts on its behalf and represent it formally. This may work well enough for a while, but it is not really satisfactory for a

¹⁶ See *Doing Business in 2005: Removing Obstacles to Growth* (World Bank, 2005) at <http://rru.worldbank.org/Documents/DoingBusiness/DB-2005-Overview.pdf>. There are also correlations between cumbersome regulation, the informal economy and corruption.

co-operative organisation serving many universities and research institutes, all of which should have an input to decisions. All NRENs recognise that it is desirable to be set up as separate legal entities with suitable representation for participating institutions. Table 3 from the TERENA Compendium of NRENs shows that many have already achieved this, while others are still moving towards this goal.

Being state-owned often requires compliance with public procurement practices. Open tendering in itself is a normal procedure, with the advantage of transparency and achieving competitive outcomes as well as the disadvantage of slower processes. However, in Albania, procurement rules have been taken to extremes that are proving obstructive. Small purchase orders must be aggregated for public tendering at Ministry level. The process is often so slow that the available budget cannot be spent before the end of the financial year. Then, because the budget was not spent, it is not renewed for the following year and the proposed purchase cannot be made at all.

This is not specifically an NREN problem, and, as above, there is not much that an NREN can do to improve things, beyond joining alliances and supporting reform wherever possible. In most countries it is normal for public procurement procedures to allow more flexibility for relatively small purchases, and this is not seen as opening the gates to large-scale profiteering.

Of course, the most basic institutional constraint is an inadequate budget to cover expected infrastructure, tasks and reasonable staffing. While all NRENs might welcome more funding, there seems to be particularly acute difficulty in Romania. A modest level of charging to user institutions is always wise. In the new environment, the option of barter with other state-owned organisations disappears (for example, railway rights-of-way in exchange for training), and cash budgets must reflect this.

5.4. The treatment of local connections

The incumbent and other network providers may be able and willing to make fibre available to NRENs between towns and even between countries. However, within towns, fibre may not be readily available, especially for access to sites having few end users. There are, of course, many possible technologies, such as cable modem links, Digital Subscriber Lines (DSL), Power Line Communications (PLC), Free Space Optics (FSO) and radio frequency wireless links. Many of these are being tested or deployed in the target countries (albeit not generally by NRENs yet); for instance, PLC is being considered seriously in the Former Yugoslav Republic of Macedonia¹⁷. The changing regulatory regime creates opportunities for NRENs to use these access technologies, including:

- Local loop unbundling. The Access Directive Article 12(1) can be invoked to make dominant local loop network providers ‘unbundle’ access to copper local loops so that other network providers can use them to support DSL. In some of these forms of unbundling the other network providers can introduce their own modems to support high bandwidth services such as an isolated university site might need. There are usually operational difficulties when local loop unbundling is introduced, partly because the procedures and systems of incumbents are not designed to let other network providers have access to the local loop equipment. Regulators may need to set up dispute resolution agencies to ensure that difficulties are eliminated rapidly¹⁸.
- Municipal broadband networking. Municipal broadband networks are localised open access platforms that use the infrastructure and funding that cities can provide. The Framework Directive Article 11(2) requires there to be structural separation between agencies granting rights of way and agencies owning or controlling networks. Nonetheless, municipal broadband networks provoke controversy about whether cities should invest their own funds in developing and operating networks¹⁹. The business models vary

¹⁷ Though FSO may not have been deployed in the target countries, it has been deployed to connect the buildings of a university campus in Turkey.

¹⁸ See <http://www.offta.org.uk/> for an example of a dispute resolution and performance monitoring agencies for local loop unbundling in the UK and <http://www.otelo.org.uk/> and <http://www.cisas.org.uk/> for examples of such agencies concerned with retail services instead of wholesale ones.

¹⁹ There are views that cities should not develop the networks if commercial companies either intend to develop them (because that would lead to suggestions of cross-subsidy and unfair competition) or refuse to develop them (because that would show that there was no viable business case).

between investments in the lower network layers (such as duct, dark fibre, and co-location offices) and investments in the higher network layers (for example, by creating demand through online government applications). The tendency currently is for cities to consider providing the infrastructure to develop the network but not to operate the network; in such cases NRENs might either operate the networks or use the network through other providers.

Spectrum liberalisation. There is a growing trend towards removing rigid prescriptions about allowed applications of bands of spectrum, instead introducing market mechanisms (such as auctions and resale) in some bands and permitting licence-exempt uses in other bands (subject to power limitation, frequency hopping and other interference avoidance measures)²⁰. In fact various municipal broadband networks intend to use wireless access, in both licensed and licence-exempt bands, to provide ‘hot spots’ and backhaul meshes. Bands that have been reserved or underused are now starting to become available and can be pressed into service; for instance, in the United Kingdom the DECT guard bands, formerly reserved for separating GSM and DECT frequency ranges, are to be auctioned and will probably be used in short range GSM applications where there is limited mobility (such as student hostels, university campuses and shopping streets)²¹. Ultra Wide Band (UWB) may also become common outside bands where it is believed to cause economically significant interference. Spare broadcast television channels are being considered for licence-exempt broadband transmissions of up to 40 Km. Thus there are opportunities for NRENs to advocate and promote novel licensed and licence-exempt uses, not just in the WiFi bands (licence-exempt in the EU for 2.400-2.4835 GHz, 5.150-5.350 GHz and 5.470-5.725 GHz) and WiMax bands (3.5 GHz and 5.8 GHz).

6. Relationships between NRENs and crucial partners

Careful management of relationships is key to NRENs making a successful transition to the new regulatory regime. Some of these relationships have already been referred to. This section discusses them in more depth.

Throughout the region there is a widespread perception of corruption, illustrated in Table 4 below.

Country Rank	Country	2004 CPI score ²²
1	Finland	9,7
15	Germany	8,2
27	Portugal	6,3
31	Estonia	6,0
	Slovenia	6,0
42	Hungary	4,8
	Italy	4,8
44	Lithuania	4,6
49	Greece	4,3
51	Czech Republic	4,2

²⁰ See *What is Open Spectrum?* (Open Spectrum Foundation, June 2005) at <http://www.openspectrum.info/> for a discussion of the case for liberating spectrum from government constraints.

²¹ See *Award of available spectrum: 1781.7-1785 MHz paired with 1876.7-1880 MHz* (Ofcom, July 2005) at <http://www.ofcom.org.uk/consult/condocs/1781/1781.pdf> for the consultation about the auction, *Low-power concurrent use in the spectrum bands 1781.7 – 1785 MHz paired with 1876.7 – 1880 MHz* (Ofcom, July 2005) at <http://www.ofcom.org.uk/consult/condocs/1781/low/low.pdf> for a technical study of possible interference, *GSM Guard Bands Economic Impact Study* (National Economic Research Associates, July 2004) at http://www.ofcom.org.uk/consult/condocs/ra_condoc_2g3g_spectrum_old/gms.pdf for an economic study of probable uses, and *Use of the 1781.7-1785.0 / 1876.7-1880.0 MHz Bands for the provision of GSM 1800 telecommunications services - a consultation document* (Radiocommunications Agency, April 2003) at <http://www.ofcom.org.uk/static/archive/ra/topics/pmc/consult/gsm1800/gsm1800condocfinalweb.pdf> for a consultation about one use. The need for public consultations can make spectrum liberalisation slow: in this particular case the process, including a re-organisation of the regulators, is taking from 2002 to 2006.

²² Source: <http://www.transparency.org/cpi/2004/cpi2004.en.html#cpi2004>, where full details of the index methodology can be found. The scale is 0 to 10; Finland ranks highest with a score of 9.7.

54	Bulgaria	4,1
57	Latvia	4,0
	Slovakia	4,0
67	Croatia	3,5
	Poland	3,5
77	Turkey	3,2
82	Bosnia and Herzegovina	3,1
87	Romania	2,9
97	FYR Macedonia	2,7
	Serbia and Montenegro	2,7
108	Albania	2,5

Table 4 Corruption Perceptions Index for some European countries

6.1. Relationships between NRENs and the network incumbent

Traditionally, the great bulk of the communications infrastructure of NRENs has been provided for them by incumbent telephone companies (network providers), usually in the form of leased circuits. Often, NRENs have been able to get good discounts for high-capacity leased circuits, because network providers see the NREN as a special non-commercial case. There are few customers for these circuits, and there is not always a list price. But with market opening and the new economics of dark fibre, we are seeing:

- Network providers are often unwilling to supply dark fibre (unless at a prohibitive price), or to say why they will not supply it. In the new environment, they may naturally be concerned about the commercial implications of large spare capacity controlled by the NREN or of supply to the NREN setting a precedent for supply to competitors. The notable exception is in Serbia, where the network provider has supplied the NREN with an extensive national network of dark fibre. It may not be coincidence that Serbia is late in liberalising.
- NRENs can go elsewhere for both leased circuits and dark fibre. In particular, the electricity transmission and distribution networks are all installing optic fibre for their own communications use, and will generally be willing to make it available to NRENs and others.
- Network providers may supply some educational links or internet service (for example, to schools) at very low prices or even free of charge. This can be seen as a public-spirited gesture towards closing the Digital Divide. At the same time, it can tie the schools or the NREN to the network provider for supply of other facilities and services and keep a large part of the market out of competitors' reach.

In summary, with external investment in the incumbent, and with foreign investment in the incumbent and other network providers, the old option of cosy relationships – where the network provider and NREN could count on each other – is fast disappearing. While in part this may be cause for regret, overall it will probably serve NRENs well. NRENs have become increasingly demanding customers, and in fact have often not got what they wanted from the network providers, or at least not at the right time or at the right price. Where new strategic investors in network providers in the region come from countries with liberalised industries (as for example in the Former Yugoslav Republic of Macedonia), the companies may become more open to fulfilling the requests of NRENs. As in Bulgaria, they can be brought to realise that the NREN is really not a threat to their new commercial orientation.

6.2. Relationships between NRENs and ISPs

In most countries of the region, NRENs have succeeded to date in having a good and positive relationship with the commercial ISP community. As the SERENATE study showed, this has not always been the case throughout the European Union. Sometimes, ISPs have felt that educational internet access provided by the NREN was eating into what was rightfully their market; and doing so with the unfair advantage of public funding.

While this point of view is understandable, especially in a country like Albania where educational internet access accounts for a high proportion of the total (small) internet market, arguably it is a rather short-term one. NRENs may support their position by pointing out that:

- Apart from it being public policy, high-quality educational access which is free at the point of use is an excellent way to grow the internet market: today's students are tomorrow's managers, teachers and officials, who will be used to and will demand good internet facilities.
- All educational access is subject to stringent Acceptable Use Policies (AUPs), which for example prevent peer-to-peer and other extensive non-educational applications²³. There may very occasionally be a need to extend these policies to cover voice over IP, at least as a temporary measure, but usually ISPs are not worried by voice over IP; even the incumbent is unlikely to raise objections, at least if it is not expected to connect the NREN to its public telephone network.
- The NREN is pioneering the use of new technology, such as dark fibre.
- In some cases, such as Romania, ISPs are actually providing the infrastructure of the NREN.
- Because it is commercially neutral and a centre for technical facilities and expertise, the NREN is well-placed to carry out various functions on behalf of the country's internet community. For example, it might provide technical training in networking, consultancy, top level domain name management, or an internet exchange.

Naturally, NRENs must also respect legitimate concerns of ISPs about fair competition. If this is done, NRENs and ISPs should be able to support each other and work together well.

6.3. Relationships between NRENs and the government

NRENs are ultimately government-owned and can expect to continue to have a good relationship with government. In the countries concerned, this is supported by the pervasiveness of academic connections and the generally small size of the ruling and educated class. Most politicians and officials were educated at one of the universities served by the NREN, and remain on friendly terms with their classmates and professors. Many senior academics contribute part-time to various public boards and committees, while some have moved entirely into politics. This adds up to a widespread appreciation of, and support for, the role of NRENs in the circles where it matters.

Of course, similar factors make it hard for regulators to be independent and to be seen to be independent. This is a problem in all small countries and many larger ones, with no complete solution. However, as was pointed out forcefully in the Former Yugoslav Republic of Macedonia, transparency of all proceedings is a major step towards achieving the best possible outcomes. This means public consultation on decisions, with non-confidential responses publicly available, and a requirement for the authority to explain and justify decisions. The use of a website makes all this easier than before, and enables the press and public to scrutinise proceedings.

6.4. Relationships between NRENs and private sector customers

Traditionally, NRENs have been wholly public undertakings dealing only with other public (educational) organisations. But with growth of private enterprise in every sphere, NRENs will need to develop interfaces with private customers (schools, colleges, and research institutes) as well as with privately owned suppliers.

This is plainly a welcome opportunity, and should not give rise to problems, so long as sensible guidelines are observed, such as:

²³ See *Acceptable Usage Policy* (Heanet, July 2003) at <http://www.heanet.ie/about/policy.html> for an example from Ireland and *Acceptable Usage* (DANTE, 2003) at <http://www.dante.net/server/show/conWebDoc.788> for the Acceptable Use Policies of other NRENs using GÉANT.

- Services and facilities should not be simply given away to private customers. Preferably, all customers, public and private, should pay shares of the costs of the NREN. The basis for charging should be clear and fair.
- Use should be limited to educational and research applications. Acceptable Use Policies are discussed above.
- Care should be taken to avoid turning the NREN into a public electronic communications network if it is not intended to be one. The limitations that the NREN might need to observe are discussed above.
- Separate accounting should be used to distinguish any commercial activities that are allowed from activities that may be subsidised by the government.

All NRENs should review their own rules to ensure that nothing in them presents an obstacle to supplying private customers. However, national policy may either encourage NRENs to supply private customers, or discourage them from doing so (perhaps in order to foster the development of commercial alternative providers).

Annex I: Background paper circulated before the interviews

The SEEFIRE (South-East Europe Fibre Infrastructure for Research and Education) project is studying options available for network infrastructure and strategies for the development of research and education networking in southeast Europe, with particular emphasis on the deployment and use of dark fibre.

As part of SEEFIRE, this regulatory enquiry seeks to understand the telecoms regulatory environment in which NRENs are now operating and how this will change over the next few years, with particular reference to dark fibre. A similar regulatory study was carried out during 2002 as part of the SERENATE project, which looked at the future of academic networking throughout the EU. Some key findings from that study are attached as an annex, showing that NRENs may need to clarify their status as private network providers. Other legal or regulatory areas which may affect NRENs' use of dark fibre include taxes, rights of way, and activities undertaken to justify dark fibre (e.g. partnerships for boosting demand).

All six countries targeted for SEEFIRE (Albania, Bosnia-Herzegovina, Bulgaria, Former Yugoslav Republic of Macedonia, Romania and Serbia-Montenegro) aim to join the European Union, and therefore plan to line up their regulatory framework with the EU's fully liberalised one. However the countries are moving in this direction from different starting points and at different rates.

Issues on which we seek information and views therefore include:

1. Will your answers apply to the whole of your country? If not, which part do they apply to and who else should we talk to about other parts?
2. Current regulatory status, and plans for adopting EU communications package.
3. Current and expected state of competition to supply dark fibre in your country, and how prices have been changing.
4. Any moves among government and public bodies towards provision of fibre for shared use (often referred to as "community broadband networks").
5. Significance of the NREN's formal/legal status (eg limitations because of charitable status? Requirements because publicly funded?)
6. Any supply obligations (most likely to be placed on the incumbent) relating to dark fibre, including prices and delivery times.
7. Any tax implications of using dark fibre.
8. Status options for your country's NREN when supplying services based on dark fibre. For example, might they have network operator status (public or private), or are they a customer?
9. How is this status determined? (Is it a matter of objective fact, or is there some choice?)
10. Would operator status entitle the NREN to negotiate access to fibre on more favourable terms than are available to customers? What obligations would it entail?
11. Any differences in obligations towards the regulator or in network operator status in case of purchasing dark fibre, leasing dark fibre or building dark fibre lines.
12. Procedures and costs for obtaining necessary permissions for civil works (eg rights of way, planning permissions), assuming cable routes follow existing roads or railways.
13. Any relevant health and safety regulations, for example limiting laser power used to protect the eyes of staff working with optic fibre.
14. Any special factors relating to cross-border links, both international and intranational.
15. The expected strength and independence of the regulatory body.
16. Any other regulatory or political problems or factors you feel we should be aware of.

Annex II: Regulatory situation in the Czech Republic

The Czech regulatory environment in telecommunications has recently undergone a major change. A new Act on Electronic Communications has been adopted, effective as of 1 May 2005, to implement the EU new regulatory framework. This replaced the Telecommunications Act of 2000. Below the situation is described under the old and new Acts.

Situation under the old Act

The Telecommunications Act of 2000 (hereinafter referred to as “the Act”) set out the following basic objectives:

- to set conditions for running a business in telecommunications
- to create equal conditions for entering the telecommunications market
- to set optimum extent of state regulation for individual types of telecommunications activities.

In order to attain these basic objectives the Act also provided the basis for the establishment of the Czech Telecommunication Office (hereinafter referred to as “the Office”) as an independent administrative office under the authority of the government of the Czech Republic (Ministry of Transport and Communications), beginning service on the 1 July 2000. The main office is located in Prague, but several offices/departments are located around the country. The Office executes state administration in the field of telecommunications.

Two kinds of authorization were needed for the provision of telecommunication services:

1. general authorization licence – for non-public provision of telecommunication services, for the provision of telecommunication service of lease of telecommunication lines and other activities defined by the Act. A provider only needed to register with the Office and obtain a certificate of registration.
2. telecommunication licence – for the provision of public telecommunication network and other services defined by the Act. For obtaining a telecommunication licence, a provider needed to apply to the Office and fulfill all requirements defined by the Act (Art. 18 of the Act). The Office decided whether it would grant the licence and stated in its decision also the conditions for the provision of the service. A fee for issuing the licence for the operation of public telecommunication network amounted to 100 000,- Kc (approx. 3 300 EUR).

As for dark fiber acquisition, CESNET has always only leased dark fiber lines. It is the obligation of the lessor to have all necessary permissions for the provision of such service. Accordingly, the lessee has to obtain all necessary permissions to be able to provide the services on the leased fiber lines. In case of CESNET, who provides the NREN services only non-publicly, a certificate of registration under the general authorization licence was needed and together with the registration general conditions for the provision of a particular service have to be submitted to the Office.

A provider of dark fiber lines had to obtain either a general authorization licence or a telecommunication licence depending on the range of services he intended to provide. Cable routes are, according to the Czech legal system, real estates. Therefore the provider needs all necessary permissions required by building regulations (in particular building licence, in some cases also planning permission). The decision-making body in these cases is the construction administration in the relevant county/city and depending on the county/city the procedure may take from a few weeks up to several months (especially when planning permission or its change is necessary). The costs of these permissions range from 300,- Kc to 3 000,- Kc per item (approx. 10 to 100 EUR).

Under Art. 33 of the Act, the Office had to impose on the provider with significant market power a duty to provide a public telecommunication service of lease of telecommunication lines.

Pursuant to Art. 37 of the Act, the providers of a public telecommunication service of lease of telecommunication lines with significant market power were obliged to allow authorized providers of telecommunication services an access to their network. The Act also set out for the provider with significant market power a duty to conclude a contract for an access to his network or for an interconnection of their networks, if another provider applied for it. These provisions have enabled the entry of alternative operators and at this moment we can say that there is quite effective competition on the market of dark fiber supplies.

What might be of importance is the fact that in case the NREN is funded by public grant it has to adhere to the rules for tenders when purchasing dark fiber lines – this is the situation of CESNET.

As regarded supplies of services based on dark fiber under the Act, there were no status options to choose – the status arose out of the conditions for the provision of the service. CESNET had to follow the prerequisite to supply the services only to its members and other subjects that comply with the Acceptable Use Policy; therefore under the Act it had the status of private network operator. A public network operator was obliged to supply the service to anybody who applies for it which is incompatible with CESNET policy as mentioned in the previous sentence. However, from the legal view of the public providers of the dark fiber lines, there is no difference between a private network operator and a customer/end user. Nonetheless, CESNET has been able to negotiate access to fiber on more favourable terms, but due rather to the amount of purchased (leased) services than to the status of CESNET as private network operator.

Situation under the new Act

The Czech regulatory environment in telecommunications has recently undergone a major change. A new Act on Electronic Communications has been adopted which replaced the Telecommunications Act of 2000. The Act on Electronic Communications (hereinafter referred to as “the Act”) is effective as of 1 May 2005 and implements the EU communications package.

One of the major changes is that the Act does not regulate telecommunications but electronic communications, which means the infrastructure that enables provision of electronic communications services. The Act concentrates on public networks and most of the obligations are imposed on public network providers. The Act also excludes regulation of the content of the services (Art. 1, par. 2 of the Act) provided through the electronic communications network.

The Act sets out the following objectives:

- to set conditions for running a business in the field of electronic communications
- to execute state administration, including market regulation, in the field of electronic communications.

In order to attain these basic objectives the Act also provides the basis for the establishment of the Czech Telecommunication Office (hereinafter referred to as “the Office”) as an independent administrative office, beginning service on 1 May 2005. The main office is located in Prague, but several offices/departments are located around the country (it is successor to the Czech Telecommunication Office established under the Telecommunications Act of 2000). The Office executes, next to the Ministry of Informatics, state administration in the field of electronic communications.

The Act sets out different (compared with the Telecommunications Act of 2000) conditions for running a business in the field of electronic communications. Anybody who wishes to run a business in the field of electronic communications has to comply with general conditions set out in Art. 8, 9 and 10 of the Act and notify the Office in advance of its intent to run a business.

The Act sets out the subject of the business in electronic communications (Art. 8 par. 1 of the Act), which is the provision of electronic communications services or the provision of public communication networks. According to this article, CESNET provides electronic communications services.

For the provision of electronic communications services it is necessary to fulfill the following conditions:

1. submit a form to the Office – in this form the applicant states the subject of its business and describes the services provided and its network (whether it is private or public)
2. an authorized representative of the applicant must be at least 18 years old, he must enjoy full legal capacity and be without criminal record
3. both the applicant and its authorized representative must submit to the Office a confirmation that they have no debts to the state (both in tax and social security system).

Other conditions may be set out in general authorization (Art. 9 of the Act). For the provision of electronic communications services a general authorization was issued effective as of 1 August 2005, however it does not set any special conditions.

Within one week from the delivery of the above mentioned documents to the Office, the Office issues a confirmation of the notification. The Office also has to keep a database of the persons that fulfilled the notification duty.

The existing operators of telecommunication networks were obliged, according to the transitional provisions of the Act, to fulfill the notification duty within 1 month from the date of issuance of a general authorization at the latest; therefore the deadline for fulfilling the notification duty elapsed on 31 August 2005.

The business in the field of electronic communications, under the Act, is excluded from the operation of the trading regulations. No trade licence is needed any more for running a business under the Act (under the Telecommunications Act of 2000 the relevant trade licences were needed).

For CESNET, the Act does not set out many new obligations, as CESNET2 is non-public network. CESNET only has to fulfill the notification duty and set up an Access Policy and Acceptable Use Policy that will be in accordance with the Act (in particular the non-public character of its network has to be declared there).

The Office has a new obligation to conduct regular analyses of relevant markets (Art. 51 of the Act). The relevant markets are defined in delegated legislation in accordance with the EU directives. Based on the results of the analysis, the Office indicates a provider with significant market power or states that there is effective competition on the relevant market.

According to Art. 51 of the Act, based on the relevant market analysis the Office shall impose on the provider with significant market power a duty, among others, to provide a service of lease of lines within a minimum extent on the whole territory of the Czech Republic or its part.

State administration and control of electronic communications is executed by the Office. The Office supervises the fulfillment of the obligations and conditions stated by the Act, the delegated legislation and the decisions issued in accordance with the Act. If the Office determines non-compliance or breach of obligation, it shall ask the person in question to relieve the shortage.

All providers are obliged (Art. 115 of the Act) to supply the Office all information, data and materials necessary for the conduct of its activities under the Act.

For breach of obligations stated in the Act the Office may impose fines up to 10 million Kc (cca 330 000 EUR).

A provider of public communications network is authorized, or in case another provider asks him he is obliged, to negotiate about interconnection in order to secure the provision of publicly available electronic communications services, so that the provision and interoperability of these services in the area of EU member state is ensured (Art. 79 of the Act).

As for dark fiber acquisition, the situation has not changed significantly under the Act. Since CESNET has always only leased dark fiber lines, it is still the obligation of the lessor to have all necessary permissions for the provision of such service. Accordingly, the lessee has to obtain all necessary permissions to be able to provide the services on the leased fiber lines. In case of CESNET, a confirmation of the Office is needed together with the Access Policy and Acceptable Use Policy due to the non-public character of its network. These documents state who can be connected to CESNET2 network and what are the obligations he has to comply with.

A provider of dark fiber lines has to fulfill the same obligations in order to be able to provide the services. In some cases the Act imposes other obligations that depend on the type of the network and services provided. As mentioned already in the survey of the previous regulatory situation, cable routes are, according to the Czech legal system, real estates. Therefore the provider needs all necessary permissions required by building regulations (in particular building licence, in some cases also planning permission). The decision-making body in these cases is the construction administration in the relevant county/city and depending on the county/city the procedure may take from a few weeks up to several months (especially when planning permission or its change is necessary). The costs of these permissions range from 300,- Kc to 3 000,- Kc per item (approx. 10 to 100 EUR).

The Act has not changed the obligation of the NREN that is funded by public grant to adhere to the rules for tenders when purchasing dark fiber lines.

As regards supplies of services based on dark fiber under the Act, it is the provider who states whether its network is publicly available or not. CESNET as a provider of non-public network has to follow the prerequisite to supply the services only to its members and other subjects that comply with the Access Policy and Acceptable Use Policy. A public network operator is obliged to supply the services to anybody who applies for it which is incompatible with CESNET policy as mentioned in the previous sentence.

Annex III: Detail of regulatory situation in target countries

Country	Ownership by State			Non-State ownership participation		
	Name of operator	Percentage ownership by the State	Which government unit is responsible for ownership	Strategic partner Name & Ownership share	Investors Name, Ownership share	Public Ownership share
Albania	Albtelecom sh.a	24% (76% being sold)	Ministry of Economy	Turk Telecom	Calik Enerji	0%
Bosnia & Herzegovina	1. BH Telecom (Sarajevo) 2. Telekom Srpske (Banja Luka) 3. Hrvatske Telekomunikacije (Mostar)	1. 90%; 2. 65%; 3. 62.76%	Governments of entity Ministries (in Federation and in Republic of Srpska)	1. No 2. No 3. HT- Hrvatske Telekomunikacije d.d. Zagreb 30.29%	1. No 2. Pension fund 10% Restitution fund 5% 3. Hrvatska Pošta d.d. Zagreb 6.95	1. 10% 2. 20% 3. -
Bulgaria	Bulgarian Telecommunications Company (BTC)	Golden share. In Jan. 2005, 34.78% of BTC owned by the state was floated	Ministry of Transport and Communications keeps a “golden share” with a veto on some Board decisions.	Viva Ventures 65%	-	34.78%
Romania	1. S.C. ROMTELECOM S.A. 2. National Radiocom Co.	1. 45.99% 2. 100%	Ministry of Communications and Information Technology (MCTI)	OTE Greece 54.01%		
Serbia & Montenegro - Montenegro	Telecom Montenegro Inc.	51.12% ownership by the state (further 2% being sold)	Ministry of Economy	Magyar Telekom (59% owned by Deutsche Telekom) 51.12%	Privatisation investment funds 20.02%	28.86%
Serbia & Montenegro - Serbia	1. Telekom Srbija 2. MOBTEL	1. 80, 2. 49% (both through the 100% state-owned Public Enterprise of PTT Serbia)	1. Ministry of Capital investment 2. Ministry of Capital investment	OTE Greece 20%	-	-
Serbia & Montenegro - Kosovo	PTK (The Post and Telecommunications Enterprise of Kosovo)	100%	UNMIK (through Kosovo Trust Agency)	None	None	None
FYR Macedonia	A.D. Makedonski Telekomunikacii	47.125% plus golden share	Ministry of Finance	Magyar Telekom (59% owned by Deutsche Telekom) 51%	IFC 1.875%	None

Source: Cullen International Comparative Report Tables 6, 43 (updated for Albania and Montenegro)

Table 5 Ownership of incumbents

Country	Liberalisation status for public fixed networks and services				Liberalisation status for data networks and services		
	Local	National	International	Comments	National	International	Comments
Albania	Rural local networks liberalised from 1998. Urban local networks not defined in the law. In 2002, Albtelecom was granted exclusive rights for urban telephone services until at least June 30, 2003	Liberalised from July 2003	Liberalised from Jan. 1, 2005	Law No. 8287 of Feb. 18, 1998, Article 4 liberalised rural local networks; Council of Ministers Decision No. 464 of July 3, 2003 liberalised domestic long-distance and international services	Liberalised from 1998	Liberalised from 1998	Article 4 of the Law No. 8287 of February 18, 1998
Bosnia & Herzegovina	Liberalised from July 1, 2002	Liberalised from July 1, 2002	Planned from Jan. 1, 2006, as determined by the Telecommunication Sector Policy	-	Liberalised from July 1, 2002	Liberalised from July 1, 2002	-
Bulgaria	Liberalised from Jan. 1, 2003	Liberalised from Jan. 1, 2003	Liberalised from Jan. 1, 2003	Liberalisation introduced by §10 of the Final & Transitional Provisions of the Telecom Act of 1998.	Liberalised from 1993	Liberalised from 1993	-
Romania	Liberalised from Jan. 1, 2003	Liberalised from Jan. 1, 2003	Liberalised from Jan. 1, 2003	-	Liberalised from 1992	Liberalised from 1992	-
Serbia & Montenegro: Montenegro	Liberalised from Jan. 1, 2004	Liberalised from Jan. 1, 2004	Liberalised from Jan. 1, 2004	Article 27, Telecommunications Law of 2000	Liberalised from Jan. 1, 2004	Liberalised from Jan. 1, 2004	Article 27, Telecommunications Law of 2000
Serbia & Montenegro: Serbia	No	No	No	Telecommunications Law of April 2003 establishes Telekom Srbija's monopoly until June 2005.	Liberalised from 2003	Liberalised from 2003. Requirement to use the incumbent's international lines until June 2005.	Liberalisation introduced by Telecommunications Law of April 2003. Several ISPs were registered under the previous Telecom Law. Data services also offered by Cable TV providers via their own infrastructure, their status not yet being regulated.

Country	Liberalisation status for public fixed networks and services				Liberalisation status for data networks and services		
	Local	National	International	Comments	National	International	Comments
Serbia & Montenegro - Kosovo	Formally liberalised in 2003	Formally liberalised in 2003	Formally liberalised in 2003	Secondary legislation on licensing and authorisation under the Law on Telecoms UNMIK/REG 2003/16 of May 12, 2003 is not adopted.	Liberalised from May 2003	Liberalised from May 2003	The first ISP authorisations were issued to DardaNet (PTK subsidiary), IpkoNet and Kujtesa on May 18, 2005.
FYR Macedonia	Planned in 2005	Planned in 2005	Planned in 2005	Secondary legislation under the Law of Electronic Communications of March 5, 2005 is being prepared.	Liberalised from February 1998	Liberalised from February 1998 Requirement to use the incumbent's lines for international traffic until April 2000.	-

Source: Cullen International Comparative Report Tables 15, 16

Table 6 **Liberalisation of public voice and data networks**

Country, NRA	How is NRA independence assured?	Type of commercial disputes that can be resolved by NRAs	Conflict resolution procedures and deadlines	Sanctions
Albania: Telecommunications Regulations Entity (TRE)	Independence of TRE is assured by Law on Telecons, No.8618 of June 14, 2000. • Independent legal entity • Board nominated by Government and approved by Parliament for 5 year term, plus at most two additional terms. • Board can only be dismissed by Parliament for reasons defined by law • Board not allowed to own telecoms • Self financed, budget approval by Council of Ministers • Excess revenue goes to state budget	Failure to reach an interconnection agreement.	Law on Telecommunications, Article 43: • NRA involvement after 2 months of failed negotiations • NRA has one month to decide	Law on Telecommunications, Articles 94-96: • fines • penal code provisions
Bosnia & Herzegovina: Communications Regulatory Agency (RAK)	RAK Council is nominated by government and approved by Parliament. Only Parliament can dismiss the Council. General Director (GD) is nominated by Council of RAK and approved by Council of Ministers (CM), for four years. CM has exclusive right to dismiss GD under defined conditions.	NRA decides	No procedures defined at the moment for resolution of commercial conflicts.	• Oral and written warnings; • Fines up to €75,000 or €150,000 if repeated violation • Interrupt broadcasting or the provision of telecommunications services for a period not exceeding 3 months; • Revocation of a licence.
Bulgaria: Communications Regulation Commission (CRC).	Independence is ensured by the Telecoms Act – Articles. 19, 20, 22, 23, 27-29, 31, 33,38 • Separate legal entity • CRC Council: Chairman appointed and dismissed by Council of Ministers • Deputy chairman and 2 members appointed and dismissed by National Assembly • 1 member appointed and dismissed by the President of Bulgaria	No legal ground in Bulgaria for NRA to resolve conflicts: Constitution reserves that kind of activity to the Court. However, the NRA can issue binding instructions where an operator fails to fulfil its obligations. A legal amendment empowering CRC to resolve conflicts is waiting to be adopted by Parliament.	CRC can issue binding instructions where an operator fails to meet its obligations. It must take a decision within 2 months from receiving a complaint.	• Financial penalties • Order an operator to stop its activities.

Country, NRA	How is NRA independence assured?	Type of commercial disputes that can be resolved by NRAs	Conflict resolution procedures and deadlines	Sanctions
Romania: ANRC	<ul style="list-style-type: none"> • Appointment by Prime Minister for a five year term • There are no specific rules or legislation on how the President of the NRA can be dismissed. • Self financed • Transparency and impartiality obligations • Staff not allowed to hold shares or board positions telecom companies • Appeals of NRA decisions in front of the Court of Appeal 	Disputes arising between providers about the obligations imposed on them on the grounds of the legislation in the electronic communications sector and disputes arising between end-users and providers on the enforcement of the provisions of Law no. 304/2003.	<ul style="list-style-type: none"> • Written petition. Two dispute settlement procedures: 1. By mediation • Shall be completed within 30 days 2. Contentious procedure • Can be used directly, or after failed mediation. • Appointment of “Commission” to deal with the case • Preliminary solution in 15 days for parties to comment • NRA decision in 4 months from start of procedure • Decision can be appealed within 15 days to the Court of Appeal without preliminary procedure 	Administrative fines
Serbia & Montenegro –Montenegro: Agency for Telecommunications of the Republic of Montenegro	<ul style="list-style-type: none"> • Defined by Telecoms Law • Appointment by Government (proposal by Council of Ministers, confirmation by National Assembly) • Dismissal by Government (proposal by Council of Ministers, confirmation by National Assembly) only under circumstances defined by the Law. • Conflict of interest forbidden by law • Self-financed • Empowered to adopt regulations without government approval 	NRA decides	Telecommunication Law Deadlines - Article 33, 37 and 60: <ul style="list-style-type: none"> • The parties may call in the NRA after 90 days of unsuccessful negotiations. • The NRA should take a decision within 60 days. 	Telecommunication Law (Sanctions - Article 68, 69 and 70): <ul style="list-style-type: none"> • Fines • Order an operator to stop its activities.
Serbia & Montenegro –Serbia: Telecom Agency of R of Serbia	Established only on 23 May 2005 in accordance with 2003 Law.	To be defined	To be defined	<ul style="list-style-type: none"> • Order an operator to stop its activities.
Serbia & Montenegro –Kosovo: Telecommunications Regulatory Authority (TRA)	<ul style="list-style-type: none"> • Defined by the Telecoms Law (UNMIK/REG 2003/16) • Appointment by Assembly on recommendation by the Minister of Transport and Telecoms. • Board member term is five years, limited to two terms. • Upon a 2/3 vote of the Members, the Board shall remove a Member on the ground of professional incompetence, misconduct or conflict of interest. 	Section 11, paragraph 4 of the Law on Telecommunication UNMIK/REG 2003/16 NRA decides	UNMIK/REG 2003/16 Section 11-4 and 56-7. <ul style="list-style-type: none"> • NRA has six weeks to accept or reject a request for dispute resolution • For interconnection disputes, if it accepts the case, the NRA shall establish procedures and deadlines • Service provider must comply within 30 days 	UNMIK/REG 2003/16 and Administrative Instruction No. 2004/3 issued by the Ministry of Transport and Telecommunication <ul style="list-style-type: none"> • Fines

Country, NRA	How is NRA independence assured?	Type of commercial disputes that can be resolved by NRAs	Conflict resolution procedures and deadlines	Sanctions
The former Yugoslav Republic of Macedonia: Agency for Electronic Communications	<ul style="list-style-type: none"> • Commission to be approved by the Parliament for 5-year terms, can only be dismissed by Parliament on the basis of conditions defined by law. • Director of Agency is selected by Commission on the basis of a public tender for 5 year term. Director can be dismissed by Commission on the basis of conditions defined by law. 	New Law on Electronic communications prescribes disputes between operators of communications networks and providers of communications services which can be resolved by NRA	<ul style="list-style-type: none"> • Maximum time for NRA to reach a decision is 4 months • Mediation or arbitration • Mediator chosen by the parties or by the NRA within seven days • Arbitrators appointed by NRA Commission, the Minister and other interested parties for 5 years. • Result of arbitration is binding, final and enforceable 	<ul style="list-style-type: none"> • Fines • Temporary or permanent ban on operations

Source: Cullen International Comparative Report Tables 7, 10 (updated for Serbia and Former Yugoslav Republic of Macedonia)

Table 7 **NRA independence and conflict resolution powers**

Country	Authorisation requirements for public fixed networks and services	Authorisation requirements for ISP	ISP right to interconnection	Call origination or termination for ISP
Albania	Individual licences, classified in two categories: • I - national fixed or mobile public telephony. The number of licences is decided by the government • II - public telephony in rural areas, paging, global services of mobile individual communications (and other services that use frequencies). General licences are issued for Internet services, data transmission services, value added services, public services of paid telephones (coins or prepaid cards), and other services not classified in individual licenses (Law No. 8618 of June 14, 2000).	General (class) licence Internet licences issued by TRE classified into: PoP, local, regional, national and backbone.	Yes	Call termination model proposed in the draft Interconnection Agreement that is currently under discussion.
Bosnia & Herzegovina	Individual licence	General authorisation with notification	Yes	Call origination
Bulgaria	Under the Telecoms Act of 2003, there are two types of regimes for data networks and services, depending on the scarce resource use, respectively based on individual or class licences.	General authorisation without notification. Individual licence is required to provide public services with the use of numbers from the National Numbering Plan.	Yes	Both models are applicable, subject to commercial agreement.
Romania	General authorisation with notification	General authorisation with notification	Yes	Neither call termination nor call origination model is used, as there are no interconnection agreements between ISPs and the incumbent.
Serbia & Montenegro - Montenegro	Licensing regime is defined in Article 3 in the Rulebook on issuing and registering general and individual licences (Official Gazette of the Republic of Montenegro, No. 08/2002).	General authorisation Individual licence - in the case of operating own network. The NRA to issue the Rulebook for Internet service providers by end 2005.	Yes (not applied in practice)	Call origination
Serbia & Montenegro - Serbia	Secondary legislation on licensing and authorisations framework still has to be adopted. Individual licence is foreseen under Art. 33 of the Telecom Law if the business activities involve the use of scarce resources (e.g. radio frequencies or numbering).	Individual authorisation	Yes	Call termination

Country	Authorisation requirements for public fixed networks and services	Authorisation requirements for ISP	ISP right to interconnection	Call origination or termination for ISP
Serbia & Montenegro - Kosovo	Secondary legislation on licensing and authorisations framework still has to be adopted. The Law on Telecoms UNMIK/REG 2003/16 of May 12, 2003 states: No person shall provide telecommunications services to the public in Kosovo without obtaining an authorisation from the TRA to provide such services (Section 21). No person shall provide telecommunications services involving a limited resource, including the right to use number of frequency allocation, space on a utility pole, tower or in a conduit, without a license from the TRA to provide such services (Section 22). Construction and maintenance of independent public telecommunications networks shall be performed by licensed service providers to meet needs of public and private legal entities (Section 53(3)).	Individual authorisation	Yes	Call termination
FYR Macedonia	General authorisation with notification	General authorisation with notification foreseen in the Electronic Communications Act, Article 144 should be implemented by Dec. 5, 2005 (previously provided on a concession basis).	Not unless the ISP has its own network. If the ISP has its own network, it is an Internet Services Operator and interconnection between two network operators is obligatory.	Call origination

Source: Cullen International Comparative Report Tables 17, 19

Table 8 **Licensing requirements for public telecoms networks and services and ISPs**

Country	Legal scope of SMP designation	SMP remedies allowed by legislation	SMP designation in practice
Albania	Law No. 8618, dated 14.6.2000 Definition as Organization with Significant Market Power Art. 2, Para. No. 11* Determination as Organisation with Significant Market Power by TRE. Art. 17* Obligations for Interconnection of Organisation with Significant Market Power Art. 42 *	<ul style="list-style-type: none"> • Non-discrimination • Cost-orientation • Transparency • Meet all reasonable request for access • Respect confidentiality 	Albtelecom AMC Vodafone Albania
Bosnia & Herzegovina	<ul style="list-style-type: none"> • Law on Communications 2003, Art. 14 provides a general provision for designation of SMP based on competition law principles • Leased lines Art. 17 	<ul style="list-style-type: none"> • Non-discrimination • Cost-orientation • Transparency • Meet all reasonable request for access • Respect confidentiality 	During assigning the Licences for public fixed telephony operators, there were appointed three SMP operators: <ul style="list-style-type: none"> • BH Telecom d.d. Sarajevo • Telekom Srpske a.d. Banja Luka • Hrvatske Telekomunikacije d.o.o. Mostar
Bulgaria	Telecommunications Act, Articles 44 and 45, all. 2: <ul style="list-style-type: none"> • Fixed telephone networks and provision of fixed voice telephone services • Provision of service “leased lines” • Mobile telecommunications networks and provision of voice telephone services through them NB The interconnection market is not included in the Bulgarian regime.	<ul style="list-style-type: none"> • Nondiscrimination; • Meet all reasonable request for access • RIO and RUO • Transparency and access to information; • Cost-orientation; • Accounting separation; • Respect confidentiality; • Co-location for Interconnection, • Provision of “leased lines”, special access, local loop unbundling, colocation. 	<ol style="list-style-type: none"> 1. Bulgarian Telecommunication Company EAD (fixed voice telephony network and fixed voice telephone services; leased lines). BTC is designated as SMP operator and all the remedies, set out by virtue of the Telecoms Act are imposed. 2. Mobiltel AD (mobile networks and services) is required to ensure only non-discriminatory conditions for interconnection, transparency and confidentiality.
Romania	Art. 32 par.(1)-(3) of Government Emergency Ordinance No. 79/2002 sets up the legal bases for identification of relevant markets and for designating significant market power providers. Decision of president of ANRC No. 136/2002, with subsequent completions, identifies 11 relevant wholesale and retail markets (see foot of table for details)	<p>Wholesale markets: <ul style="list-style-type: none"> • transparency • non-discrimination, • accounting separation, • access to and use of specific network elements • cost orientation. Retail markets: <ul style="list-style-type: none"> • for all SMP providers of EC services: <ul style="list-style-type: none"> • the interdiction of excessive prices • the interdiction predatory prices • the interdiction of undue preference to specific end-users; • services unbundling - for SMP providers of access to a public telephony network at a fixed location: <ul style="list-style-type: none"> • carrier selection • carrier preselection - for SMP providers of leased lines services: <ul style="list-style-type: none"> • provision of part or all of the minimum set of leased lines, non-discrimination, cost orientation and transparency </p>	Romtelecom Mobifon Orange Romania Telemobil Cosmorum

Country	Legal scope of SMP designation	SMP remedies allowed by legislation	SMP designation in practice
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Serbia & Montenegro Montenegro	Articles 12, 28, 29, 37 in Telecommunications Law (Official Gazette of the Republic of Montenegro, No. 59/2000)	• non-discrimination • cost-orientation • transparency • meet all reasonable requests for access • respect confidentiality	Telecom Montenegro Internet CG
Serbia & Montenegro - Serbia	Not yet	Not yet	Telekom Srbija (100% of fixed network and services market, 53% mobile network and services market) Mobtel (47% of mobile market)
Serbia & Montenegro - Kosovo	Regulation 2003/16 Section 55 Open Access to Networks and Services	• non-discrimination • cost-orientation • transparency • meet all reasonable requests for access • respect confidentiality	PTK
FYR Macedonia	Reference to Law on electronic communications, Art 146 • Fixed telephony network, • Fixed telephony services, • Leased lines	• non-discrimination • cost-orientation • transparency • meet all reasonable request for access • respect confidentiality • interconnection obligation • accounting separation • minimum set of leased lines • retail rate regulation • carrier selection and pre – selection	Makedonski Telekomunikacii A.D.

Relevant markets in Romania: • Access to the fixed public telephone networks for the purpose of call origination, termination and transit • Full or shared unbundled access to the twisted metallic pair local loop, for the purpose of providing broadband electronic communications services and publicly available telephone services at fixed locations • “Bit-stream” access to the twisted metallic pair, optical fibre, or coaxial cable local loop and to the radio local loop, for the purpose of providing broadband electronic communication services • Terminating segments of leased lines • Trunk segments of leased lines • Access to the public mobile telephone networks operated by each Romanian mobile operators for the purpose of call termination and the following relevant retail markets: • Access at a fixed location to a public telephone network for residential customers / for nonresidential customers • Local calls at a fixed location for residential customers / for nonresidential customers • National calls at a fixed location for residential customers / for non-residential customers • Calls at a fixed location to public mobile telephone networks for residential customers / for nonresidential customers • International calls at a fixed location for residential customers / for non-residential customers

Source: Cullen International Comparative Report Table 10

Table 9 SMP regulation

Country	Does legal framework provide for		
	non-discriminatory rights of way?	easy procedures for access to public land	procedures for access to private land
Albania	Law no 8618 dated. 14.6.2000 Article 12: "The right to use public and private property"	Public land is used by public operators upon application to regional authorities	It is not a TRE responsibility
Bosnia & Herzegovina	Yes, under condition to apply for construction permission before Municipal Authority and that telecom infrastructure corridors are planned in Environment Plan for that Municipality.	If construction permission is obtained, the operator may use public land.	The Law prescribed procedure must be applied to access private land. If public interest is established, the expropriation may be applied, otherwise the operator must have permission of the landowner.
Bulgaria	Yes, according to the Telecom Act public operators have right of way through public and private properties and access to private property. This provides a sound legal framework but there is not adequate compliance with the Urban Development Act (UDA)	According to the TA, the concrete parameters for execution of rights of way shall be determined by an order of the regional governor, respectively of the mayor of the municipality.	The Telecom Act does not provide for expropriation. The rights of way must be agreed between the operator and the landowner. If no agreement, the decision is with the mayor of the municipality in compliance with the provisions of the UDA. However, this law only provides rights for landlords, not for operators.
Romania	Yes, for access to public property Art. 26 par.(2) of Government Emergency Ordinance No. 79/2002 includes a non-discrimination clause	Yes. Art. 23 par.(1) of Government Emergency Ordinance No. 79/2002 establishes that public property can be used when certain public interest conditions are met for installing private or public Electronic Communication Networks. Art. 27 of Government Emergency Ordinance No. 79/2002 sets a time limit of four months for negotiations after which the courts will decide.	Yes. Art. 23 par.(2) of Government Emergency Ordinance No. 79/2002 establishes that private land can be used if: <ul style="list-style-type: none"> • there is insignificant impact on the private property, or • there are already installations and an additional installation will have insignificant impact; • the work does not contravene town or county planning; • agreement by the parties or through court decision Art. 27 of Government Emergency Ordinance No. 79/2002 sets a time limit of four months from application to the proprietor after which the courts will decide.
Serbia & Montenegro: Montenegro	Yes. All public network operators have non-discriminatory rights of way established by law (Chapter VI of Telecommunications Law of 2000)	Yes. Public land may be used by public operators upon application to appropriate authorities	No. No expropriation procedure is defined by the Law
Serbia/M' negro: Serbia	The New Telecoms Act specifies that all public network operators have non-discriminatory rights of way	Yes	Yes. Article 87 of the New Telecom Act provides legal support for access to private land.
Serbia/M' negro - Kosovo	Yes. All public network operators have non-discriminatory rights of way established by law	Yes. Public land may be used by public operators upon application to appropriate authorities	Yes. Expropriation procedures may be used

Country	Does legal framework provide for		
	non-discriminatory rights of way?	easy procedures for access to public land	procedures for access to private land
FYR Macedonia	Yes. All public network operators have non-discriminatory rights of way established by law	Yes. State land may be used by public operators upon application to appropriate authorities	Yes. Expropriation procedures may be used

Source: Cullen International Comparative Report Table 38

Table 10 **Rights of way**

Annex IV: Summary of provisions of the EU regulatory framework potentially relevant to research networking

What follows aims to be a simple, plain-language guide to key features of a large volume of legal documents. It does not aim to be comprehensive. Any reader wishing to follow up points in this summary is strongly advised to consult the original documents (some of which may have changed).

Key points are:

- The new package applies to “electronic communications networks and services”. The new term, invented because of convergence, is meant to do away with artificial distinctions between telecommunications and broadcasting. Content regulation is however excluded.
- The package represents an evolution, not a revolution, from the *status quo*. One important aim has been to ‘tidy up’ and simplify the existing large collection of relevant directives and other regulations. All directives allow for transitional arrangements intended to avoid unjustified or unpredictable changes.
- The package retains the existing twin themes of:
 - Fostering open competition on equivalent terms throughout the Union.
 - Harmonisation of national regulations when there is no objective justification for them to differ.
- All regulation must follow the general regulatory principles of being: objective, non-discriminatory, proportionate and transparent.
- *Ex post* regulation (as used in normal competition law) is to be preferred to sector-specific *ex ante* regulation (which typically controls the behaviour of former monopolists). It is recognised that because of the special history of the sector, for the time being some *ex ante* regulation remains justified. However the thrust is towards reducing *ex ante* regulation and eventually eliminating the need for it.
- The new framework provides a logical structure within which national regulatory authorities are meant to decide what *ex ante* regulations continue to be appropriate in each country. Regular market reviews are required to assess the state of competition in each subsector and to identify actors with significant market power. All continuing *ex ante* regulation will require justification.
- The new package was adopted in April 2002 and comes into force on 25 July 2003. All Member States are required to transpose the new package into their national legislation by that date. Thereafter, its implementation and results will be subject to regular review and “fine-tuning”.

Directive of 16.09.02 on competition in the market for electronic communications networks and services

This “Competition Directive” essentially restates requirements that have been in place since 1990, taking in amendments made since then and using the new language.

Member States must abolish all special or exclusive rights to provide electronic communications networks and services, and must not unnecessarily restrict their provision by anyone. Any decision to prevent such provision must be on objective grounds and subject to appeal. The same applies to directory services.

Licensing is to be replaced by general authorisations, where at most a registration with the authorities is required. Conditions may be attached to general authorisations, but all conditions must conform to the general regulatory principles (and be within the maximum set permitted by the Authorisation Directive, see below). Any required contributions (in cash or in kind) to achieving universal service objectives must be in accordance with the principles and designed to minimise distortion of competition.

Spectrum and satellite space segments are to be allocated in accordance with the general regulatory principles and in conformity with competition law.

Dominant vertically integrated concerns (i.e. normally, incumbents) must be prevented from discriminating in favour of their own operations. Cable television networks run by incumbents must be in legally separate entities, at any rate until there is adequate competition in the provision of local networks.

Directive of 7.03.02 on a common regulatory framework for electronic communications networks and services

The “Framework Directive” starts with a set of important definitions that apply throughout the legislation. The following points are of particular note:

- An “electronic communications service” means a service *normally provided for remuneration* that consists wholly or mainly in the conveyance of signals on electronic communications networks....
- A “public communications network” means an electronic communications network used wholly or mainly for the provision of *publicly available* electronic communications services.
- A “user” means someone using or requesting a publicly available electronic communications service.

The terms in italics are not further defined.

Each Member State must establish a National Regulatory Authority (NRA) that is independent both of the industry and of any branch of government involved in ownership of any industry player. The NRA must be adequately funded to fulfil its role, and there must be an avenue for appeal against its decisions. It must:

- Regulate impartially in accordance with the EU principles and in a technology-neutral way.
- Consult openly on all regulatory decisions.
- Co-operate with its own national competition authority and with its counterparts in other Member States.
- Obtain such information from the industry as is necessary, but without imposing undue burdens, and respect commercial confidentiality where requested.

The overall objective for NRAs is to promote competition and the smooth functioning of the internal market. Supporting objectives include:

- Promoting the interests of users, and especially of disabled users; this includes providing for universal service and consumer protection.
- Encouraging investment and innovation.
- Encouraging efficient use of spectrum and numbering resources.
- Encouraging the establishment and interoperability of trans-European networks.
- Maintaining the security and integrity of public communications networks.

The necessary but limited resources of radio frequencies, numbering, rights of way and co-location and facility sharing are to be made available, within their natural limits, to all applicants on fair and equal terms. The procedures for granting rights of way may however favour public communications networks; co-location and facility sharing are the preferred course where environmental etc considerations preclude new construction.

Radio spectrum must be managed in a harmonised way, under the oversight of the Radio Spectrum Committee (set up by a separate decision of the same date), and as far as possible in co-ordination with the broader European grouping of CEPT.

Historic incumbents must adopt separate accounting and reporting procedures for their electronic communications network and service activities.

NRAs shall identify undertakings with significant market power (SMP) in specific markets. SMP (similar to dominance) means occupying “a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers”. Market definition and market analysis are to be carried out “with utmost regard” for Commission Guidelines. The markets for analysis will be limited to those identified in a Recommendation which will be reviewed regularly. The draft list of markets is:

- Retail level
 - PSTN access and public telephony service at a fixed location
 - The minimum set of leased lines (up to 2 Mb/s)
- Wholesale level
 - PSTN call origination and termination (separate markets)
 - Wholesale local access, including unbundled access to local loops and sub-loops
 - Local or terminating segments of leased lines
 - Mobile call termination

- International mobile roaming
- Broadcasting transmission and distribution
- PSTN transit
- Mobile access and call origination.

Segmentation of some of these markets is permitted, including segmentation by bandwidth of leased-line local or terminating segments.

NRAs must encourage or require the adoption of a range of (mainly ETSI) standards, which are separately listed. The draft list covers:

- Compulsory standards:
 - Minimum set of leased lines (64 kb/s and 2 Mb/s).
 - PSTN quality of service parameters.
- Voluntary standards:
 - Higher speed leased lines (up to 155 Mb/s).
 - Access and interconnection.
 - Number portability.
 - Carrier selection and pre-selection.
 - Unbundled local loop access.
 - Various user services.
 - Data protection requirements.
 - Digital broadcasting distribution.

NRAs must put in place procedures for resolving inter-industry disputes in less than four months, and cooperate with each other to resolve cross-border disputes equally promptly.

NRAs will work closely with and supply information to the Commission, which will be supported and advised by a Communications Committee. A Decision of 29.07.02 sets up the European Regulators Group, composed of the heads of all NRAs affected by these Directives, which is to work closely with this Committee.

Directive of 7.03.02 on authorisation of electronic communications networks and services

The “Authorisation Directive” aims to simplify and harmonise the currently varied licensing and authorisation regimes among Member States. Simple, cheap authorisation to provide electronic communications networks and services is the norm, from which any departure must be justified.

Authorisation may require notification to the authority, and the provision of minimal necessary information, but must not entail any delay in activities. It automatically confers the right to provide services to the public and to negotiate interconnection with other authorised providers of public communications services, as well as to set up networks and apply for rights of way. Authorisation also entitles the provider to apply for and where possible be granted numbers (within two weeks) and radio frequencies (within six weeks). These resources may be granted for a limited duration only.

All these rights may be subject to general conditions relating to the following topics:

- Payment of fees and charges to cover administrative costs or to incentivise optimal use of limited resources.
- Entitlement to provide service:
 - Universal service funding contributions and consumer protection rules, including data protection.
 - Interoperability and interconnection, including accessibility of numbers to end-users and the protection of network integrity.
 - Transmission of public broadcasting content and protection of minors from illegal or harmful content.
 - Protection of the environment, public safety and national security.
- Rights of use of limited resources:

- Use for specific identified service and in compliance with undertakings made by the applicant.
- Efficient use of the resource.
- Avoidance of radio interference and compliance with international obligations.
- Number portability and provision of public directory information.

In addition to the general conditions, specific conditions may be imposed on particular (generally, SMP) undertakings under the Access or Universal Service Directives.

NRAs may request information from authorised undertakings to verify compliance with all the conditions. If breaches are found, reasonable and proportionate enforcement measures should be employed, with a right of appeal.

Directive of 07.03.02 on access to, and interconnection of, electronic communications networks and associated facilities

The “Access Directive” defines:

- “Interconnection” as the physical and logical linking of networks to enable users of both networks to communicate with each other, or with services on the other network.
- “Access” as the making available to another undertaking of facilities and services such as network elements, buildings, ducts, masts, or software systems. (End-user access is a different concept.)

Interconnection is therefore a specific sort of access between network operators.

The norm is for all authorised public communication network providers to negotiate and agree on terms for access and interconnection. In case of difficulty, the NRA may intervene at the request of either party or on its own initiative.

In defined markets (see wholesale list under 2 above), following a process of market review and analysis, NRAs may impose access and interconnection obligations on SMP operators. These include:

- Transparency (e.g. publication of a sufficiently unbundled Reference Interconnection Offer).
- Non-discrimination.
- Access to particular network facilities, in a fair, reasonable and timely manner.
- Accounting separation and cost accounting requirements, including publication of internal transfer prices.
- Price controls (which may include a requirement for cost-orientation).

SMP operators can be obliged to provide unbundled access to the local loop and a Reference Unbundling Offer.

A detailed list of required elements and conditions for local loop unbundling and co-location appears as Annex II to the Directive. It includes both full loop and sub-loop access, as well as shared access.

Conditional access systems for digital television must be managed in a way that is fair to all broadcasters.

Directive of 07.03.02 on universal service and users’ rights relating to electronic communications networks and services

The “Universal Service Directive” aims to preserve or improve standards of consumer protection in the sector, and to deal with circumstances where needs are not met by the market.

Member States must ensure throughout their territory the provision of affordable PSTN service, on lines of sufficient quality to permit Internet access and meeting other quality of service targets. Other universal service obligations include a universal directory, directory enquiry service, enough public payphones to meet reasonable needs, special measures for disabled users and “affordability” tariff options and facilities (such as itemised billing, selective call barring and prepayment). At least one operator shall be designated to meet each obligation.

Where the net cost of fulfilling such obligations is shown (by transparent calculations carried out as prescribed in an Annex) to be an unfair burden on the designated operator, it may be reimbursed by government or shared on an equitable basis across the industry.

Retail price regulation on SMP telephony operators shall be maintained (with a view to achieving cost-oriented tariffs) for as long as this is necessary to foster competition and protect consumers. The minimum set of leased

lines (up to 2 Mb/s) must continue to be made available at cost-oriented prices for as long as market conditions make this necessary.

All public telephony users have a right to a clear contract, knowledge of applicable tariffs, published quality of service information, operator assistance and directory enquiry services, ability to use the emergency number 112 free of charge from any phone, and number portability (for both fixed and mobile service). In addition NRAs may require tone dialling and calling-line identification to be provided.

All providers of public telephony service must adopt the standard international dialling prefix 00 and must handle calls to the European Telephony Numbering Space (+3883).

SMP operators must provide carrier selection facilities, both call-by-call and pre-selection. Pricing for number portability and carrier selection must be cost-oriented.

Directive of 12.07.02 concerning the processing of personal data and the protection of privacy in the electronic communications sector

The “Data Protection” Directive aims to restrict the processing and retention of personal data by providers of public communications networks and services, so as to protect personal privacy in a way that is consistent with other EU legislation. The general principle is that the user should be aware of and should consent to any use of his or her personal data. Exceptions are permitted for emergencies, criminal investigations and in the interests of national security.

Special provisions apply to traffic data, location data, itemised billing, calling line identification, automatic call forwarding and directories.

Unsolicited commercial communications, including unsolicited email, are prohibited on either an opt-in or an opt-out basis (the choice being left to each country). Unsolicited email with the sender’s identify disguised is in any case forbidden.

Annex V: Extract from the Authorisation Directive Annex

The conditions listed in this Annex provide the maximum list of conditions which may be attached to general authorisations (Part A), rights to use radio frequencies (Part B) and rights to use numbers (Part C) as referred to in Article 6(1) and Article 11(1)(a).

A. Conditions which may be attached to a general authorisation

1. Financial contributions to the funding of universal service in conformity with Directive 2002/22/EC (Universal Service Directive).
2. Administrative charges in accordance with Article 12 of this Directive.
3. Interoperability of services and interconnection of networks in conformity with Directive 2002/19/EC (Access Directive).
4. Accessibility of numbers from the national numbering plan to end-users including conditions in conformity with Directive 2002/22/EC (Universal Service Directive).
5. Environmental and town and country planning requirements, as well as requirements and conditions linked to the granting of access to or use of public or private land and conditions linked to co-location and facility sharing in conformity with Directive 2002/22/EC (Framework Directive) and including, where applicable, any financial or technical guarantees necessary to ensure the proper execution of infrastructure works.
6. 'Must carry' obligations in conformity with Directive 2002/22/EC (Universal Service Directive).
7. Personal data and privacy protection specific to the electronic communications sector in conformity with Directive 97/66/EC of the European Parliament and of the Council of 15 December 1997 concerning the processing of personal data and the protection of privacy in the telecommunications sector ⁽¹⁾.
8. Consumer protection rules specific to the electronic communications sector including conditions in conformity with Directive 2002/22/EC (Universal Service Directive).
9. Restrictions in relation to the transmission of illegal content, in accordance with Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the internal market ⁽²⁾ and restrictions in relation to the transmission of harmful content in accordance with Article 2a(2) of Council Directive 89/552/EEC of 3 October 1989 on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the pursuit of television broadcasting activities ⁽³⁾.
10. Information to be provided under a notification procedure in accordance with Article 3(3) of this Directive and for other purposes as included in Article 11 of this Directive.
11. Enabling of legal interception by competent national authorities in conformity with Directive 97/66/EC and Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data ⁽⁴⁾.
12. Terms of use during major disasters to ensure communications between emergency services and authorities and broadcasts to the general public.
13. Measures regarding the limitation of exposure of the general public to electromagnetic fields caused by electronic communications networks in accordance with Community law.
14. Access obligations other than those provided for in Article 6(2) of this Directive applying to undertakings providing electronic communications networks or services, in conformity with Directive 2002/19/EC (Access Directive).
15. Maintenance of the integrity of public communications networks in accordance with Directive 2002/19/EC (Access Directive) and Directive 2002/22/EC (Universal Service Directive) including by conditions to prevent electromagnetic interference between electronic communications networks and/or services in accordance with Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility ⁽¹⁾.
16. Security of public networks against unauthorised access according to Directive 97/66/EC.

17. Conditions for the use of radio frequencies, in conformity with Article 7(2) of Directive 1999/5/EC, where such use is not made subject to the granting of individual rights of use in accordance with Article 5(1) of this Directive.
18. Measures designed to ensure compliance with the standards and/or specifications referred to in Article 17 of Directive 2002/21/EC (Framework Directive).

B. Conditions which may be attached to rights of use for radio frequencies

1. Designation of service or type of network or technology for which the rights of use for the frequency has been granted, including, where applicable, the exclusive use of a frequency for the transmission of specific content or specific audiovisual services.
2. Effective and efficient use of frequencies in conformity with Directive 2002/21/EC (Framework Directive), including, where appropriate, coverage requirements.
3. Technical and operational conditions necessary for the avoidance of harmful interference and for the limitation of exposure of the general public to electromagnetic fields, where such conditions are different from those included in the general authorisation.
4. Maximum duration in conformity with Article 5 of this Directive, subject to any changes in the national frequency plan.
5. Transfer of rights at the initiative of the right holder and conditions for such transfer in conformity with Directive 2002/21/EC (Framework Directive).
6. Usage fees in accordance with Article 13 of this Directive.
7. Any commitments which the undertaking obtaining the usage right has made in the course of a competitive or comparative selection procedure.
8. Obligations under relevant international agreements relating to the use of frequencies.

C. Conditions which may be attached to rights of use for numbers

1. Designation of service for which the number shall be used, including any requirements linked to the provision of that service.
2. Effective and efficient use of numbers in conformity with Directive 2002/21/EC (Framework Directive).
3. Number portability requirements in conformity with Directive 2002/22/EC (Universal Service Directive).
4. Obligation to provide public directory subscriber information for the purposes of Articles 5 and 25 of Directive 2002/22/EC (Universal Service Directive).
5. Maximum duration in conformity with Article 5 of this Directive, subject to any changes in the national numbering plan.
6. Transfer of rights at the initiative of the right holder and conditions for such transfer in conformity with Directive 2002/21/EC (Framework Directive).
7. Usage fees in accordance with Article 13 of this Directive.
8. Any commitments which the undertaking obtaining the usage right has made in the course of a competitive or comparative selection procedure.

Obligations under relevant international agreements relating to the use of numbers.

Annex VI: Article 12 of the Access Directive

Obligations of access to, and use of, specific network facilities

1. A national regulatory authority may, in accordance with the provisions of Article 8, impose obligations on operators to meet reasonable requests for access to, and use of, specific network elements and associated facilities, inter alia in situations where the national regulatory authority considers that denial of access or unreasonable terms and conditions having a similar effect would hinder the emergence of a sustainable competitive market at the retail level, or would not be in the end-user's interest.

Operators may be required inter alia:

- (a) to give third parties access to specified network elements and/or facilities, including unbundled access to the local loop;
- (b) to negotiate in good faith with undertakings requesting access;
- (c) not to withdraw access to facilities already granted;
- (d) to provide specified services on a wholesale basis for resale by third parties;
- (e) to grant open access to technical interfaces, protocols or other key technologies that are indispensable for the interoperability of services or virtual network services;
- (f) to provide co-location or other forms of facility sharing, including duct, building or mast sharing;
- (g) to provide specified services needed to ensure interoperability of end-to-end services to users, including facilities for intelligent network services or roaming on mobile networks;
- (h) to provide access to operational support systems or similar software systems necessary to ensure fair competition in the provision of services;
- (i) to interconnect networks or network facilities.

National regulatory authorities may attach to those obligations conditions covering fairness, reasonableness and timeliness.

2. When national regulatory authorities are considering whether to impose the obligations referred in paragraph 1, and in particular when assessing whether such obligations would be proportionate to the objectives set out in Article 8 of Directive 2002/21/EC (Framework Directive), they shall take account in particular of the following factors:

- (a) the technical and economic viability of using or installing competing facilities, in the light of the rate of market development, taking into account the nature and type of interconnection and access involved;
- (b) the feasibility of providing the access proposed, in relation to the capacity available;
- (c) the initial investment by the facility owner, bearing in mind the risks involved in making the investment;
- (d) the need to safeguard competition in the long term;
- (e) where appropriate, any relevant intellectual property rights;
- (f) the provision of pan-European services.

Acronyms

ANRC	National Authority for Communications Regulation (Romania)
AUP	Acceptable Use Policy
BTC	Bulgarian Telecoms Corporation
CEPT	Council of European Posts and Telecoms
CI	Cullen International
CPI	Corruption Perceptions Index
CRC	Communications Regulatory Commission (Bulgaria)
DECT	Digital European Cordless Telephony
DGIS	Directorate General Information Society
ETSI	European Telecoms Standards Institute
FCC	Federal Communications Commission
FSO	Free Space Optics
GSM	Global System for Mobile Communications
IFC	International Finance Corporation
IP	Internet Protocol
ISP	Internet Service Provider
LLU	Local Loop Unbundling
NRA	National Regulatory Authority
NREN	National Research and Education Network
NRF	New Regulatory Framework
ONP	Open Network Provision
PoP	Point of Presence
PSTN	Public Switched Telephone Network
PTK	Posts and Telecommunications Enterprise of Kosovo
RAK	Bosnia & Herzegovina Regulatory Agency
RIO	Reference Interconnection Offer
RUO	Reference Unbundling Offer
SMP	Significant Market Power
TRA	Telecoms Regulatory Authority (Kosovo)
TRE	Telecoms Regulatory Entity (Albania)
UWB	Ultra Wide Band
VAT	Value Added Tax
VoIP	Voice over Internet Protocol