

## Croatia

### 1. DIGITAL AGENDA TARGETS AND ECONOMIC INDICATORS

<b>Broadband Indicators (January 2014)<sup>1</sup></b>					
	Speed	Croatia		EU Average	
		Percentage (in %)	Growth (in %)²	Percentage (in %)	Growth (in %)
Fixed broadband coverage³	From 144 Kbps	97,1	4	97,1	2
	NGA⁴	33,3	75	61,8	15
Fixed broadband penetration⁵	From 144 Kbps	21,7	4	29,9	4
	From 30 Mbps	N/A⁶	N/A⁶	6,3	47
	From 100 Mbps	N/A⁶	N/A⁶	1,6	78
Mobile broadband coverage	Basic (HSPA)	94,1	1	97,1	1
	LTE	24,4	N/A⁶	58,9	125
Mobile broadband penetration		65,8	4	61,1	5

There is unequal fixed broadband penetration throughout the country with Požeško-Slavonska county having the lowest fixed broadband penetration rate (with 14.4 %) and the City of Zagreb and Zagrebačka county having the highest. This could be explained by the differences in economic development of the counties. The mobile broadband penetration rate is higher than the EU average, which can be due to the country's typology and numerous islands, which makes fixed broadband penetration more challenging.

### 2. COMPETITIVENESS IN THE SECTOR

<b>Revenues and investment in the electronic communications sector</b>			
	<b>2010</b>	<b>2011</b>	<b>2012</b>
Revenues	N/A⁶	€1,71 billion	€1,70 billion
Growth	N/A⁶	N/A⁶	-0,1%
Investment	N/A⁶	€0,21 billion	€0,30 billion
Growth	N/A⁶	N/A⁶	43,4%

The economic crisis had a significant impact on Croatia's economy including the electronic communications sector. The revenues in 2012 fell, however growth of investments was driven

<sup>1</sup> Source: coverage data: studies by IHS and VVA for 2013, and by Point Topic for 2012; penetration data: figures provided by Croatia to the European Commission via the EU Communications Committee (COCOM) for the Scoreboard of the Digital Agenda for Europe; for more information see <http://ec.europa.eu/digital-agenda/en/scoreboard>.

<sup>2</sup> Increase over the figure of a year earlier, expressed as a percentage. E.g. if there has been an increase from 20% in January 2013 to 30% in January 2014, that would be a 50% growth.

<sup>3</sup> Coverage is the availability of the network for those who want to subscribe to the service, as % of the population. See also the Glossary. Coverage data is from December 2013.

<sup>4</sup> NGA fixed broadband includes FttH, FttB, FttO, VDSL, Cable with Docsis 3.0 or higher, and other NGA. See also the Glossary.

<sup>5</sup> Penetration is the number of subscribed lines per 100 inhabitants. See the Glossary for a more detailed explanation.

<sup>6</sup> Croatia only became a Member State on 1 July 2013 and therefore the figures for Croatia are not available.

by the LTE roll-out and offering of triple play services. The regulatory climate is perceived by some operators as not providing incentives for investments in new infrastructure.

### 3. MARKET DEVELOPMENTS

The market is dominated by the incumbent operator, *Hrvatski Telekom* (HT), especially in fixed and broadband markets and it is showing a trend of consolidation.

In 2006, HT bought *Iskon Internet*, which was at the time the largest internet service provider. This concentration was not subject to EU competition rules since Croatia was not a Member State. Currently, three alternative operators, *Optima Telekom*, *Metronet Telekomunikacije* and *HI Telekom* are undergoing pre-bankruptcy proceedings, with HT as one of their largest creditor. The Croatian Competition Agency cleared concentration by which HT acquires control over *Optima Telekom* subject to strict conditions for a period of four years, in line with Croatian pre-bankruptcy law.

In the broadband market, in Q3 2013, HT together with *Iskon Internet* held a 69 % market share. Its main competitor, *VIPnet* held 14,5 %. In 2011, *VIPnet* bought the largest cable company *B.net Hrvatska*. *VIPnet* is currently offering bundled offers (broadband, TV, fixed and mobile telephony services) over the cable infrastructure and over HT's network via bitstream. In 2013, *VIPnet* bought 3 more local cable companies: *Kabelska televizija Šibenik*, *Optika kabel infrastruktura* and *Istarska kabelska* and a company *Metronet Home* which is a private segment of one operator in fixed network that is mostly business oriented. In terms of technologies, xDSL is dominant with 84.8 %. Cable is present with slightly over 10 %, while fibre only has 1.24%.

In the fixed telephony market, there are 17 operators but it is strongly dominated by HT. The market share of HT together with *Iskon Internet* grew compared to the end of 2011 and in Q3 2013 it was close to 70%.

In mobile telephony market, there are three operators, with the following market share in Q3 2013: HT 46,5 %, *VIPnet* 37.9 % and *Tele2* 15.7 %. While the market share of HT and *VIPnet* fell slightly compared to the end of 2011, *Tele2* proportionally grew within the mobile market.

Cable companies play an important role in competition. Their share of the broadband market amounts to almost 10% and their networks perform better with higher data rates than copper based technologies (xDSL). This could trigger future investment in NGA networks.

The OTT services contribute to an increase in broadband demand, penetration and traffic volume, in particular as a result of video based OTT services. They are one of the main reasons for a decline of outgoing international voice traffic in both fixed and mobile networks as well as terminated SMS messages from international networks. However, the volume of international voice traffic on mobile networks shows a different trend in 2013 and is slightly increasing. Roaming traffic was also in declining trend until 2013, when it increased as an effect of Croatian accession to EU. Bundled services are on the rise, which has an impact on the investment in infrastructure and equipment as operators need to invest in these in order to be competitive.

There is no full MVNO on the market.

#### **4. MARKET REGULATION**

The main recent decisions of HAKOM:

- In March 2012, HAKOM carried out a market analysis of the retail broadband market and found it satisfies the three criteria test and should therefore be regulated. It determined that HT and ISKON are considered as operators with significant market power and are imposed with the following regulatory remedies; prohibition of predatory pricing, giving preferential treatment to certain end-users and prohibition of unjustified bundling of certain services.
- By the end of Q2 2013, HAKOM finished the market analyses of markets 2, 3, 4, 5 and 7.
- In June 2013, HAKOM adopted a decision on the costs of HT's fixed network and also issued a decision on the migration to IP-based Multimedia Services and the dismantling of local exchanges (described under heading 9 Access and Interconnection)
- In June 2013, HAKOM rendered a decision on mobile termination rates. HAKOM defined a glide path for mobile termination rates where MTRs will be based on pure LRIC from 1 January 2015, irrespective of the call origination. The current prices are based on LRIC+.
- In June 2013 HAKOM also conducted market analysis of markets 4 and 5 and defined geographic segmentation of remedies in order to incentivise investment in the areas where there is insufficient commercial interest for investment in the access network.
- The above mentioned decisions were not subject to a notification to the European Commission since Croatia joined the European Union on 1 July 2013.
- In December 2013 HAKOM issued a decision on origination and termination prices in the fixed network and a decision on the LLU monthly fee based on the BU-LRIC+ model. In February 2014, HAKOM further notified a decision on SLU monthly fee. In March 2014, HAKOM notified a draft measure concerning the symmetrical regulation of the fibre distribution network in Croatia (the Ordinance on optical fibre distribution networks).
- HAKOM is obliged to conduct a review of all market analyses within 2 years from 1 July 2013, the date of Croatia's accession to the EU. HAKOM plans to review markets 1, former market 3 and former market 5 until November 2014 and market 6 and former market 14 until December 2014. By February 2015 it plans to review market 7, by March 2015 markets 2 and 3 and by April 2015 markets 4 and 5. Further, it plans to review the regulated retail broadband market by June 2015.

#### **5. BROADBAND PLANS AND FINANCING**

In 2011, the Croatian Government adopted the Strategy for Broadband Development in the Republic of Croatia for 2012-2015 and the Implementation Programme of the Strategy for Broadband Development in the Republic of Croatia for 2012-2013. The main objective of the Strategy is to create preconditions for fast development of infrastructure for broadband Internet access and of services requiring high access speed, as a basis for further development of information society and knowledge based society, while ensuring availability of broadband access services under equivalent conditions in the entire territory of the Republic of Croatia. The Strategy refers to Digital Agenda main objective as its basis, with some targets being modified in order to reflect existing situation in Croatia. The target for fixed broadband coverage in 2013 is 75% for speed that is 2 Mbit/s or higher and in 2015 35% for speed that is 30 Mbit/s or higher. In terms of total broadband coverage, it is 90% for speed that is 2 Mbit/s

or higher and 50% for speed that is 30 Mbit/s or higher. Furthermore, in 2012, the Ministry of Maritime Affairs, Transport and Infrastructure conducted a Study on the Selection of the Most Favourable Financing Models and Incentive Measures for Investments into Broadband Access Infrastructure. It focused on the analysis of coverage of broadband availability in the Republic of Croatia and focusing on broadband infrastructure investment models covering State Aid measures and funding thus giving a proposal of measures for support of broadband infrastructure investments including estimated level of funding. Furthermore, currently there is ongoing implementation of a government Project on the integration of the optical infrastructure to combine the surplus fibre-optic broadband network capacity of seven majority state-owned companies including energy and transport operators to create a nationwide wholesale aggregation (backhaul) network.

As Croatia became a Member State in 2013, it did not have access to Structural Funds for the current financing period. It is planned that for the coming European Structural and Investment Funds (ESIF) financing period (2014-2020) the funds will be used in the framework of Operational Programme Competitiveness and Cohesion, under thematic objective of enhancing access to and use and quality of information and communication technologies, the coordination of which lies with the Ministry of Economy.

In December 2013, the Ministry of Maritime Affairs, Transport and Infrastructure concluded a public consultation on the draft state aid programme for the financing period 2014-2020 entitled National Framework Programme for the Development of Broadband Infrastructure in Areas Lacking from Sufficient Commercial Interest for Investment (National NGA Plan). In February 2014, the Programme was notified to the Croatian competition authority.

Under the framework of its Programme for the development of the Internet and broadband access in the areas of special state concern, hilly and mountainous areas and on islands, HAKOM grants state aid from its budget based on public competition. HAKOM uses less than 10 % of its overall budget for these projects.

The Ministry of Maritime Affairs, Transport and Infrastructure and HAKOM identify prospective investment models for the development of modern NGA broadband infrastructure in the areas with lack of commercial interest for investments by operators: Model A (Private DBO – direct operator subsidization), Model B (Public DBO – public network build out) and Model C (PPP). Among these three models, local municipalities will choose the most suitable model for their projects, based on demand analysis and results of conducted public consultations. In terms of aggregation network in areas with lack of commercial interest, a public DBO model would be the most suitable.

As regards the development of aggregation (backhaul) network, the Ministry of Maritime Affairs, Transport and Infrastructure is currently developing National Program for Broadband Backhaul Network in Areas Lacking from Sufficient Commercial Interest for Investment (NP-BBI). The public consultations are expected to take place, in Q3 2014.

## 6. INSTITUTIONAL ISSUES

### 6.1. The National Regulatory Authority

HAKOM<sup>7</sup> is responsible for all of the main regulatory tasks under the regulatory framework.

<b>Resources of the national regulatory authority</b>			
	<b>2011</b>	<b>2012</b>	<b>2013</b>
Personnel <sup>8</sup>	175	175	177
Increase	2,9%	0 %	1,1 %
Budget	€ 12,5 Million	€ 12,0 Million	€ 12,4 Million
Increase	-21 %	- 4 %	3 %
Administrative charges <sup>9</sup>	€ 12,1 Million	€ 11,7 Million	€ 12,0 Million
Administrative costs <sup>10</sup>	€ 11,6 Million	€ 11,8 Million	€ 10,4 Million

On the basis of the surplus of funds in 2013 HAKOM rendered a decision on reducing operators' fees in 2014.

HAKOM has a separate budget and the funds are secured from the fees for the use of addresses and numbers, for the use of the radio frequency spectrum and from a percentage of the total annual gross revenue earned by operators. The resolution of disputes between operators of electronic communications networks and/or services and between operators and operators providing value added services as well as resolution of disputes between end- users and operators of public communications services lies within its competence.

HAKOM is governed by a Council consisting of five members, including a President and Deputy President. They are appointed for five years (and dismissed) by the Croatian Parliament on a proposal from the Government with the possibility for re-appointment. These decisions must be reasoned and published in both the Official Gazette and on the website of HAKOM.

The annual financial plan and the annual working programme of HAKOM are subject to prior approval by the Government, which could potentially raise an independence issue. In practice, the approval of an annual financial plan has proved to be problematic as it was delayed by the Ministry of Finance. HAKOM can only pass a yearly ordinance necessary for its financing based upon an approved annual financial plan.

The Ministry may provide guidelines to HAKOM concerning the implementation of established principles and policy objectives for the development of electronic communications, whereby these guidelines, which have to be made publicly available, may

<sup>7</sup> *Hrvatska agencija za poštu i elektroničke komunikacije* (Croatian Post and Electronic Communications Agency), established by the *Zakon o elektroničkim komunikacijama* (Electronic Communications Act).

<sup>8</sup> Number of staff in full time equivalents (fte).

<sup>9</sup> In the sense of Art. 12 of the Authorisation Directive (Directive 2002/20/EC as amended by Directive 2009/140/EC).

<sup>10</sup> *Idem*.

not influence the adoption of decisions by the Croatian Post and Electronic Communications Agency on a case by case basis. However, any requests or instructions to HAKOM while carrying out its regulatory tasks, and any type of influence on HAKOM's work that might jeopardise its autonomy and independence are explicitly prohibited. So far, no guidelines have been issued.

Overall, HAKOM has a good cooperation with the Ministry, mostly in the fields of the EU legislative process and drafting opinions and documents in the national legislative process.

Regulatory decisions including supervision over regulatory obligations of HAKOM can be reviewed judicially by the High Administrative Court. Decisions in consumer disputes and inspection supervision can be reviewed judicially by the Administrative court of first instance. The average duration of court proceedings is 1,5 years. However, due to changes in procedural law introducing a possibility of a public hearing before the High Administrative Court, the average duration of court proceedings is expected to become longer.

The main objections of stakeholders regarding the judicial process relate to the fact that the underlying decision is not suspended during judicial review, and that too much focus of the courts is on procedural aspects rather than on substance. Also, it seems that the High Administrative Court does not use the possibility of public hearings.

HAKOM rendered 3174 decisions (regulatory decisions, spectrum management, inspection supervision, regulatory and consumer disputes) out of which 107 were challenged. 42 decisions were upheld by the court and 11 were annulled, mostly due to procedural mistakes. Number of issued rights of way is 1955.

## **6.2. Authorisation**

Since the Croatia's accession to the EU only one foreign operator applied for the provision of electronic communications services.

## **6.3. Taxation**

The Ordinance on fees for the tasks of the Croatian Post and Electronic Communications Agency<sup>11</sup> obliges operators with a total gross revenue over HRK 1 million<sup>12</sup> in the past calendar year to pay a fee of 0,20 % of their total gross revenue. The operators are required to report their total gross revenue for the previous calendar year to HAKOM by the end of March of the current year.

As part of anti-recession measures, mobile communications services tax of 6 % was introduced in 2011, but it was abolished in 2013.

## **7. SPECTRUM MANAGEMENT**

Croatia has completed the analogue switch off in 2010 and since then the 800 MHz band has

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<sup>11</sup> Pravilnik o plaćanju naknada za obavljanje poslova Hrvatske agencije za poštu i elektroničke komunikacije (NN 160/13)

<sup>12</sup> On 1 April 2014, 1 HRK was € 0,13.

been available for mobile communications systems. The 800 MHz band has been assigned to two mobile operators, the incumbent *Hrvatski Telekom* and *VIPnet* on 2 occasions: in October 2012, following a public call for interest, 2 blocks of 2x10 MHz and in November 2013, after an auction, 2 blocks of 2x5 MHz. Currently, there are 30 base stations in commercial operation.

Licences in the 470-790 MHz spectrum were issued for digital terrestrial television that are valid until 2021. Until these licenses expire, it is not expected that re-farming will occur. These networks are heavily deployed and the majority of the population uses primarily terrestrial reception. According to HAKOM, taking into account already assigned spectrum for mobile broadband and also the rest of the available spectrum, the demand for broadband spectrum is not so high that it would require actions in the near future for the 470-790 MHz spectrum.

The frequency band 2,5-2,69 GHz is available for IMT advanced technology (e.g. LTE, WiMAX), but no market demand has been shown. The frequency band 3,4-3,8 GHz is available and 2x14 MHz and 2x21 MHz have been assigned for the whole country to Novi-Net for the purpose of provision of broadband services (WiMAX).

LTE is available in 800, 900 and 1800 MHz, while interest for other bands has not been shown. Currently, LTE is used in the 800 MHz band with 30 base stations and in 1800 MHz band with 80 base stations. There has been no need for refarming of the 900 MHz and 1800 MHz bands.

UMTS is available in the 900, 1800 and 2100 MHz bands, but currently used only in the 900 MHz band.

Existing operators have renewed their licenses in 2009 and they are extended until 2024. All spectrum licenses for public mobile systems (800, 900, 1800, 2100 MHz) are valid until 2024.

Licencing conditions are connected to coverage obligations and for 800 MHz also to the obligation of resolving interference with TV. All licenses are service and technology neutral. Possible technologies as well as technical usage limitations are listed in HAKOM's frequency plan. Spectrum trading is allowed.

## **8. RIGHTS OF WAY AND ACCESS TO PASSIVE INFRASTRUCTURE**

HAKOM issues certificates for rights of way for existing electronic communications infrastructure within 20 days. All certificates issued are published on HAKOM's website. It is possible to partially submit requests electronically. All the data that is printed on the certificate of right of way is submitted electronically as Land plot cadastral number, Cadastre Municipality, Infrastructure Operator, and Length of the route.

Access to passive telecoms infrastructure is mandated on a symmetric basis. At the moment, access to other utilities infrastructure is not provided.

There is no body for the coordination of civil works infrastructure and there is no registry of permits for civil works.

Since 2009, NGA (next generation access) wiring is mandatory for new buildings and renovations of old buildings. Symmetric infrastructure sharing is mandatory for in-house optical fibre installations.

## **9. ACCESS AND INTERCONNECTION**

There are no registered or notified IP interconnection agreements in Croatia. Since there is no IP-IP interconnection in Croatia, HAKOM has imposed on SMP operators at the market for call termination on individual public telephone networks provided at a fixed location, the obligation to respond to every reasonable request for establishing an IP-IP interconnection. Also, SMP operators are obliged to publish conditions for IP-IP interconnection. IP-IP interconnection terms will be applied 30 days after the publishing of the reference offer. The incumbent has a PSTN network. The alternative operators' networks mainly consist of PSTN gateways and soft switches based on the MPLS/IP technology. By using the gateways (converting interface and signalling protocol) different technologies can easily connect.

In a decision from December 2013, HAKOM defined a glide path for interconnection charges where on 1 January 2015 all the interconnection charges will be based on NGN networks – the charges for local, regional and national level will be the same. This price will be applied for all types of interconnection, including IP-IP interconnection.

The decision on IMS migration and dismantling of local exchanges was issued in June 2013. In this decision, HAKOM defined that the incumbent must inform the operators one year in advance about the dismantling of the local exchange (PSTN exchange dismantling). This period can be reduced to 6 months if the incumbent is prepared to reimburse the operators the cost of replacement of terminal equipment of WLR ISDN BRA users as the migration process has the most significant impact (cost of terminal equipment replacement) on ISDN BRA users if they want to keep using more lines (POTS users are migrated to MSAN POTS port and they mostly do not feel the migration process).

Regarding the interconnection charges, after dismantling a specific local exchange the traffic from this specific local exchange is redirected to a parent regional level. The incumbent is financing the implementation of passive interconnection capacity at regional level for this purpose (recouping the one-off costs). The incumbent must charge the redirected traffic, taken over at the regional level after the dismantling, at the price of a local interconnection charge for at least one year after the dismantling.

After the decision on IMS migration was issued, 10 local exchanges were dismantled by the end of 2013. The next 35 local exchanges will be dismantled in 2014. In 2015, the incumbent is planning to finish the IMS migration and dismantling of 25 remaining local exchanges.

It should be noted that the incumbent is planning to implement an IP interconnection after dismantling all local exchanges (but this will not be done automatically as regional exchanges will not be dismantled for some time after the last local exchange is dismantled).

## **10. CONSUMERS ISSUES**

### **10.1. The European emergency number 112**

The 112 number was introduced in Croatia on 11 February 2005 and twenty 112 county centres are managing calls 24 hours a day. The calls are free of charge from public payphones and from mobile and fixed networks. In 2013 there were 2 904 298 calls out of which 6 021 were in languages other than Croatian. The competent authority for 112 number is the National protection and rescue directorate.

According to the Electronic Communications Act, operators of public communications networks and publicly available telephone services must deliver, free of charge, all available data on calls made to the 112 number to a central authority competent for receiving calls to emergency services in accordance with a specific law, immediately after having forwarded the call made to the 112 number to the competent central authority. This data should include in particular, information on the name and surname, or company name, of the caller, the calling number, time and duration of the call and location from which the call was made.

Caller ID from a mobile network is based on a Cell ID locating system and depends on the level of service provided by the mobile operators. In a fixed network it is not possible to automatically locate the caller location, only by using comprehensive public address book.

112 is not accessible to citizens with speech or hearing problems. There are plans to introduce in the near future alternative means for disabled end-users, such as SMS.

Public awareness of 112 is above the European average with 65 % of citizens familiarised with the fact that 112 is available throughout the EU. The National protection and rescue directorate continuously work on raising awareness on the importance of 112 by the distribution of leaflets for the 112 day and the implementation of a National educational programme for children in kindergartens and elementary schools.

### **10.2. Number portability**

Number portability in fixed networks began in June 2005 and in mobile networks in October 2006 upon setting up central administrative database of ported numbers by HAKOM. The legal framework for number portability in Croatia is determined by the Electronic Communications Act and by the Ordinance on number portability, which entered into force in September 2012.

The whole number portability procedure in the fixed electronic communications network may not exceed 5 working days from the date of receipt of the Number Porting Request by the donor operator, or 3 working days in the mobile electronic communications network. The switching period from one network to another in process of number portability should not be longer than three hours and that is the maximum time in which a user can be without service. The number porting procedure is free for the end-user. The end-user, who has submitted a request for number portability, is entitled to compensation in the event of untimely porting, of HRK 10 (approximately € 1,33) for every hour overdue at the required number portability issue. On HAKOM's web-site end-users can check on-line the status of their request for number portability, and they can learn which network is used by a certain number. They can

also download and try for free a mobile application for iOS and Android devices – m-Portability.

### **10.3. Contractual obligations**

The mandatory duration of the contract may not exceed two years and operators of public communications services must also offer one-year contracts. Operators offer tariffs with no commitment period, one year, eighteen months or a maximum of two years. There are special benefits for subscribers committing to different periods other than no commitment (cheaper or free equipment, services etc.).

### **10.4. Other consumer issues**

The Electronic Communications Act establishes an out-of-court procedure. There are three stages in which a consumer can resolve a dispute with his operator. Stage 1: Complaint to the operator; Stage 2: Complaint to the Consumer Complaints Commission at the operator; Stage 3: Motion for dispute resolution at HAKOM. The cost is minimal or nothing (postal fees or nothing if the motion is done electronically). However, consumers complain that the duration of 90 days is often too long. The main sources of complaints concern the operators' billing and business procedures, which include advertising and breach of contracts, including general terms of contract, terms of use and pricing.

## **11. UNIVERSAL SERVICE**

The scope of universal service obligations is determined in the Electronic Communications Act. HAKOM designated HT on 27 October 2010 for the period of five years for the following services:

- access to public telephone network and publicly available telephone services at a fixed location allowing end-users to make and receive local, national and international telephone calls, facsimile communications and data communications at data rates that are sufficient to permit functional Internet access, taking into account prevailing technologies used by the majority of subscribers, as well as their technological feasibility;
- access of end-users, including users of public pay telephones, to a telephone directory enquiry service;
- installation of public pay telephones at public and always accessible places in accordance with reasonable needs of end-users in terms of the geographical coverage, disabled users; special measures for disabled users including access to emergency services, directory enquiry services and directories, equivalent to that enjoyed by other end-users, and an adequate choice of operators available to the majority of end-users;

special tariff systems adjusted to the groups of end-users with special social needs. As of 6 March 2013, according to the provision of the Ordinance on Universal Services in Electronic Communications universal service broadband is included in the universal service obligations. Operators are obliged to ensure that subscribers' access lines in their electronic communications networks allow data transfer speed of at least 144 Kbps. As of 1 January 2015 the speed should be of at least 1 Mbps.

HAKOM designated *Imenik d.o.o.* for access of end-users to at least one comprehensive directory of all subscribers of publicly available telephone services, in a form approved by the NRA, whether printed or electronic, which must be updated on a regular basis.

A special fund for covering net expenses for the provision of universal services should be established by HAKOM which would be financed by all operators of publicly available telephone services with share in total revenue on national retail markets for publicly available telephone services exceeding 2%. However, since the current universal service operator HT d.d exceeds the threshold of a 70 % share in total revenues realized on the market, it cannot request the compensation of net expenses and such a fund has not been established.

## **12. NET NEUTRALITY**

### **12.1. Legislative situation**

There is neither a net neutrality law in place nor a proposal for a net neutrality law. There are neither any specific initiatives nor self-regulatory initiatives envisaged in the net neutrality field. Croatia is awaiting the outcome of the legislative procedure of the TSM proposal.

### **12.2. Quality of service**

An Ordinance on conditions for the provision of electronic communications networks and services adopted by HAKOM stipulates minimum standards for the quality of service. Operators must define the minimum broadband speed for all of their packages which contain the broadband access service up to (above) 10Mbit/s in such a manner that it represents at least 50% (70%) of the maximum (advertised) broadband speed or the maximum speed of the closest lower retail package, depending on what is more favourable for the end user. Operators and infrastructure operators are responsible for ensuring the quality of the electronic communications network and public communications services provided. Operators whose income exceeds 2% of total revenue on the relevant market of electronic communications services or who are requested to do so by HAKOM, must, at their own cost, deliver specified QoS parameters.

HAKOMetar is a web tool developed by HAKOM, which allows users to examine the quality of broadband services (ping, delay, jitter, packet loss, packet error) and to measure the speed of transmission of useful data to their computers. Thanks to this application, the end users have become more aware whether the speed prescribed in the contract is actually delivered and they use it as basis for complaints. However, internet speed represents a rather small portion of complaints. Users mostly complained about getting access to internet or problems with IPTV services because of various technical issues.