REPUBLIC OF CROATIA

MINISTRY OF MARITIME AFFAIRS, TRANSPORT AND INFRASTRUCTURE

NATIONAL FRAMEWORK PROGRAMME for the Development of Broadband Infrastructure in Areas Lacking Sufficient Commercial Interest for Investments

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Summary of the Framework Programme

This document is a Framework Programme for the Development of Next Generation Access in areas lacking sufficient commercial interest for investments by operators and service providers on the market, because of which it is justified to co-finance the development of broadband infrastructure through public finds, that is, through state aid. This Framework Programme is envisaged to cover about 70 % of Croatian population living in the so-called white and grey NGN areas, mostly in rural and suburban areas.

The Framework Programme is an implementing programme focused on achieving national strategic objectives laid down in the *Strategy for Broadband Development in the Republic of Croatia 2012 – 2015*, and the *Digital Agenda for Europe* until 2020, in particular in the part concerning the accessibility of fast broadband access in the entire territory of the Republic of Croatia.

The framework programme is a national umbrella programme, that is, a state aid scheme that will cover a number of individual projects in a narrow local area, after its approval in accordance with state aid rules.

The Framework Programme covers only broadband access networks, while state aid for backhaul networks will be covered by a different state aid programme.

The Framework Programme follows all the provisions of the *Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks*. These provisions have been transferred and specified through structural rules of the Framework programme within this document that will have to comply with by all projects within the Framework Programme. Structural rules comprise the following:

- rules for the determination of eligible areas for the implementation of projects (determination of the colour of the area, or, the so-called mapping);
- rules of step change in relation to the existing situation of the available broadband infrastructure and the state of competitiveness of operators in the area of implementation of the project;
- rules of public consultation preceding the launch of the project;
- rules of public procurement in the projects, including the selection of a private partner – an operator that will be directly involved in the implementation of the project;
- rules for the determination and supervision of wholesale conditions and prices for access to broadband networks developed in the project;
- monitoring and clawback rules;
- rules of transparency and of reporting on project implementation.

The Framework Programme envisages the appointment of one public body as the competent authority for the Framework Programme (CAFP) that will coordinate the implementation of the Framework Programme at the national level and monitor the compliance of individual projects with the Framework Programme, as an approved state aid scheme. Individual projects that will result from the Framework Programme will be implemented by public authorities at the local or regional level (municipalities, cities and counties) as competent authorities for individual programmes (CAP). Furthermore, in addition to CAFP's coordinating role, it is envisaged that HAKOM, as the national regulatory authority in the electronic communications sector, will provide support for the key implementing activities.

In addition to the laid down structural rules, the Framework Programme also provides a formal framework for instructions and guidelines that will enable and facilitate the preparation and implementation of projects. The Framework Programme does not limit the selection of investment and business models or the selection of infrastructural and technological solutions that may be implemented in projects, but the above-mentioned instructions and guidelines guide towards an optimum approach to the specification of projects, in accordance with current opportunities and future development needs at the local level, bearing in mind the fact that projects must be in compliance with the structural rules of the Framework Programme, and that they promote further development of the electronic communications market for the benefit of all end users.

1 Introduction, strategic starting points

This document is a Framework National Programme for the Development of broadband infrastructure in access networks in those parts of the Republic of Croatia that are lacking independent interest of operators and service providers to invest into broadband infrastructure. The lack of commercial interest of operators and service providers for investments is the basic precondition for the implementation of the Framework National Programme (hereinafter the Framework Programme).

Framework programme has been prepared as an umbrella programme or a scheme and it represents a starting point for the launch of individual projects for the promotion of building of broadband infrastructure at the local level of cities and municipalities, that is, at the regional level of counties.

It is envisaged that the source of funds of state aid for the co-financing of projects within the Framework Programme will mostly be EU funds in the 2014 -2020 budget period.

1.1 Most important strategic links of the Framework Programme

1.1.1 Digital Agenda for Europe

The *Digital Agenda for Europe* (DAE)[1] is one of the seven strategic initiatives within the umbrella European strategy Europe 2020 [12]. The time frame for the DAE, and for the umbrella strategy Europe 2020 covers a period of ten years 2011 – 2020. The thematic area of the DAE is the comprehensive field of digital technologies, which includes broadband access, with broadband infrastructure access and broadband services. The framework objective of the DAE is t*he achievement of sustainable economic and social benefits in a single digital market based on fast and ultra-fast internet access and interoperable applications.*

Digital economy is stimulated by three interdependent groups of activities aimed at the development of networks introduction of digital services and contents and increase of demand for services and contents. Successful implementation and removal of barriers within all three groups of activities are a precondition for the introduction and growth of digital economy, which in the end results in the increase of other economic indicators at the national, regional and local level (gross national product - GDP, employment rate, average income level etc.)

One of the key obstacles to the successful development of the digital economy, in the DAE, in an insufficient level of investments into broadband infrastructure, that is, into broadband networks. As a result, the DAE orders the implementation of measures aimed at stimulating private investments into networks that will be accompanied by appropriate public investments. These measures have been formalized under key action 8 of the DAE.

In addition to measures at the EU level (adoption of the relevant recommendations), the spectrum management programme and the development of the financial framework for

the public co-financing of the development of networks, which have for the most part already been fulfilled or are continuously implemented since 2010, key actions 8 in the DAE envisage certain additional measures at the level of EU Member States, which include the following:

DAE_m[1] development and implementation of national broadband development plans, with the fulfilment of DAE objectives in the sense of coverage and use of broadband access, financing through public funds in accordance with the EU rules applicable to competition and state aid;

DAE_m[2] facilitation of investments into broadband access through coordination of construction work on the infrastructure, simplification of the acquisition of the necessary licenses for the development of infrastructure and mapping of the existing infrastructure;

DAE_m[3] maximum use of available funds from the EU structural funds and rural development funds for investments into the ICT infrastructure and services;

DAE_m[4] implementation at the national level of the relevant recommendations and programmes of spectrum management adopted at the EU level.

The Framework Programme is in compliance with the relevant measures within the key activity of the DAE No. 8, in the first place measure DAE_m[1] and DAE_m[3].

Concrete objectives of the DAE related to the availability of broadband access in the period to the end of 2020, may be summarized into two basic segments:

DAE_c[1] to achieve universal broadband coverage with much higher internet speeds of above 30 Mbps (*fast access*);

DAE_c[2] 50% or more of European households subscribe to internet connections above 100 Mbps *(ultra-fast access*).

The objective of the framework programme is the achievement of both of the above-mentioned objectives during its implementation (2014 – 2020) since it encourages the development of next generation access networks, which represent a precondition for the achievement of the mentioned broadband objectives of the DAE.

In this respect it should be mentioned that the initial objective of the DAE, which is related to the universal broadband coverage by the end of 2013, is not mentioned in this document, taking into account the fact that the implementation of the Framework Programme will start in the 2014 and that the above-mentioned initial objective of basic broadband access coverage will be fully covered by the objective DAE_c[1]

1.1.2 Strategy for Broadband Development in the Republic of Croatia for 2012-2015

Strategy for Broadband Development in the Republic of Croatia for 2012-2015 (hereinafter the Broadband Strategy), adopted in late 2011, is the basic national strategic framework for the development of broadband infrastructure and services in the relevant

period [2]. The Strategy follows DAE's objectives from the EU level and transfers them to the national level.

The Broadband Strategy, among other things, guides the necessary actions related to institutional promotion of investments into broadband infrastructure, and its objective is the *improvement of quality and scope of development of broadband access with increased activities aimed at the removal of the defined obstacles and deficiencies, in particular at the level of local and regional self-government that must be allowed to actively participate in the promotion and development of broadband access.*

The purpose and structure of the Framework Programme contribute to the fulfilment of the mentioned general objective of the Broadband Strategy by providing guidelines and prescribing a formal framework of rules for the implementation of all activities of preparation and implementation of programmes for the development of broadband infrastructure at the local level. This enables and facilitates the implementation of such projects by local and regional self-government.

Furthermore, the application of the three basic principles in recommended in the Strategy: principles of service and technological neutrality, network neutrality and the principle of inclusion of broadband internet access in the scope of universal services. The most important from the point of view of the Framework Programme is the application of the principle of service and technology neutrality which is fully supported by the Framework Programme. The following aspects are of particular importance within the principle of service and technology neutrality and are supported by the Framework Programme:

- priority in the allocation of aid is not given to any single type of technology;
- conditions are ensured for balanced development and building of infrastructure for broadband access on the basis of the principle of openness, equality and compliance with the legislative framework,
- conditions are ensured for the continuation of efficient competition in electronic communications.

The Framework Programme also closely follows the main and special objectives of the Broadband Strategy:

SŠP_c[1] the main objective - to create preconditions for accelerated 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 society while ensuring the availability of broadband access services under equivalent conditions in the entire territory of the Republic of Croatia.

SŠP_c[2] special objective – ensuring efficient competition;

SŠP_c[3] special objective – ensuring availability of broadband access.

The purpose and structure of the Framework Programme are aimed at the achievement of the main objective (SŠP_c[1]) through the provision of guidelines and laying down of a formal framework of rules that will enable and facilitate the construction of an advanced broadband infrastructure at the local level in the entire territory of Croatia.

Furthermore, the special objective SŠP_c[2] is achieved in the Framework Programme through the stimulation of development of open-type infrastructure, use of state aid, including EU funds, and promotion infrastructure-based and service-based competition.

By promoting the development of NGA access networks, that is, of fast broadband connections that may achieve maximum speed of 30 Mbit/s through the application of fixed and mobile network solutions, the Framework Programme creates the preconditions for the achievement of a special objective SŠP_c[3] and the achievement of target values of availability of broadband by the end of 2015 (Table1-1). The segment of basic broadband access (minimum speed of 2 Mbits/s), with the associated objectives set until the end of 2013, is not singled out within the Framework Programme since the implementation of the Framework Programme will start in 2014 and it will be aimed at the achievement of the set objectives of fast NGA access, first by the end of 2015, and later by the end of 2020 (which national objectives, in addition to the DAE objectives, will be covered by the new version of the Strategy for Broadband Development for 2016 – 2020.

Table1-1 – Target values of availability of broadband access in late 2015 in Croatia referred to in the Broadband Strategy [2]

Indicator/Target value	2015
Availability of fixed connections for broadband access (share of inhabitants to which the service is available).	35% (≥30 Mbit/s)
Availability of broadband access (share of inhabitants to which the service is available).	50% (≥30 Mbit/s)

1.2 Legislative Framework

What follows is an overview of the most important regulations in the Republic of Croatia and at the level of the EU, relevant for the Framework Programme.

1.2.1 Electronic Communications Act

The Electronic Communications Act (hereinafter ECA) is an umbrella act regulating the electronic communications sector in Croatia [6]. In addition to the ECA, the electronic communications sector is regulated in more detail with a number of Ordinances that will be referred to in this document, were necessary.

1.2.2 State Aid Act

The State Aid Act (hereinafter SAA) regulates the competence of bodies of the Republic of Croatia in the segment of state aid policy, all procedures before the award of the state aid, and the keeping of records and reporting on the granted state aid [7]. The

procedure for the granting of state aid is implemented at the level of the European Commission, and the SAA and the associated subordinate legislation are primarily relevant from the point of view of procedures for the approval of the Framework Programme and subsequent record keeping and reporting on its implementation.

1.2.3 Public Procurement Act

The Public Procurement Act (hereinafter PPA) regulates procedures for the conclusion of contracts for the provision of goods,, works or services [8]. Within the framework of the Framework Programme, the provisions of the PAA apply to all contracts concerning the building, maintenance and management of broadband infrastructure within the projects of the Framework Programme.

1.2.4 Public-Private Partnership Act

The Public-Private Partnership Act (hereinafter PPPA) regulates the conclusion and implementation of public-private partnerships (PPP) in the Republic of Croatia [9]. PPP may be one of the formal investment forms for the implementation of projects for the development of broadband infrastructure within the framework of the Framework Programme.

1.2.5 Guidelines for the application of state aid for broadband networks

Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks (hereinafter: the Guidelines) provide an overview of rules prescribing the compliance of state aid for broadband networks with general state aid rules in the EU [10]. Compliance with rules and recommendations from this document is of particular importance for the Framework Programme.

1.3 Implementation of the Framework Programme

The Republic of Croatia is divided into a total of 556 units of local self-government (cities and municipalities, hereinafter: LSU) and 21 units of regional self-government (counties). A large number of local self-government units, in addition to the need for coordinated implementation of measures for the stimulation of development of broadband infrastructure, seeks the adoption of a national umbrella programme that will simultaneously enable and facilitate the implementation of individual projects at a local level. In that sense, it is envisaged in the Framework Programme that competent authorities (hereinafter CA) will be individual LSUs, whereby it is desirable that individual projects are jointly implemented in several neighbouring LSUs, in which case counties may also be CAs.

The development of framework national programmes is encouraged within the Guidelines and main characteristics of such an approach (in Article 41) *include the ensuring of a coherent use of public funds, the reducing of the administrative burden for smaller aid-granting state administration bodies and the speeding-up of the implementation of individual support measures.*

The national Framework Programme was developed with the aim of uniform and coherent approach to the application of state aid for broadband infrastructure of access networks in the Republic of Croatia in the period 2014 – 2020. The implementation of a single Framework Programme is aimed at the maximum optimization of the broadband infrastructure development process based on state aid in the entire territory of Croatia with the achievement of the strategic objectives set at the level of the EU (DAE) and strategic objectives at the national, regional and local level. The Framework Programme is developed and implemented for the purpose of avoiding the following potential problems and risks that might slow-down or endanger the fulfilment of the set strategic objectives:

- insufficient administrative capacity in the LSUs that may slow down or prevent the development of projects at the local level, in cases where project would be developed at the local level without a set framework, instructions and guidelines;
- lack of particular knowledge of telecommunications technology and market of electronic communications in the LSU, that might prevent correct identification of basic problems of broadband coverage in local areas and disable a quality articulation of technological and market objectives that must be fulfilled by the projects;
- insufficient knowledge of the formal and legal framework of state aid and related procedures within the LSUs, which may result in non-compliance of the proposed projects at the local level with state aid rules, in cases when individual LSUs would implement a procedure for the verification of compliance with state aid rules for each individual project;
- the lack of the necessary knowledge and experience for the implementation and supervision of implementation of projects in the LSUs, that may slow-down and make more difficult the implementation of projects and result in legal and regulatory difficulties and misunderstandings in relations with private partners and operators participating in projects, in cases in which LSUs would independently implement the projects without coordinative support.

In accordance with its main objective of reducing the impact of the mentioned risks, the structure and content of the Framework Programme comprises the following topics relevant for the development and implementation of projects of aided building of broadband infrastructure at the local level:

OK.PR_gl[1] selection of technological options and the necessary level of services for end users, that will represent reliable, sustainable and open solutions in projects, bearing in mind technology neutrality;

OK.PR_gl[2] selection of an appropriate investment model that will enable coordinated activity of public and private partners in projects;

OK.PR_gl[3] mapping of availability of broadband services at the local level, with the associated initial group of available data;

OK.PR_gl[4] use of existing infrastructure in projects;

OK.PR_gl[5] public consultation in the preparation of projects;

OK.PR_gl[6] public procurement in the selection of private partners in the projects;

OK.PR_gl[7] wholesale access to the built infrastructure in projects;

OK.PR_gl[8] supervision of implementation of projects, including clawback;

OK.PR_gl[9] reporting procedures for the implementation of projects;

In addition to the above-mentioned main topics that describe and fulfil the formal state aid framework, the Framework Programme also includes other topics the purpose of which is to facilitate the preparation and implementation of projects at the local level.

OK.PR_ost[1] Guidelines and procedures for the preparation of projects, with support at national level;

OK.PR_ost[2] Guidelines and procedures for the implementation of projects, with support at national level;

1.3.1 Course of activities

The Framework Programme, within the meaning of the SAA, corresponds to a state aid programme, that is, the Framework Programme is an act on the basis of which certain users of state aid will be granted support without the need for additional implementation measures.

The course of activities related to the preparation and implementation of the Framework Programme, and to the preparation and implementation of projects from the Framework Programme at the local level, is illustrated in the following figure (Figure 1.1) and explained below.

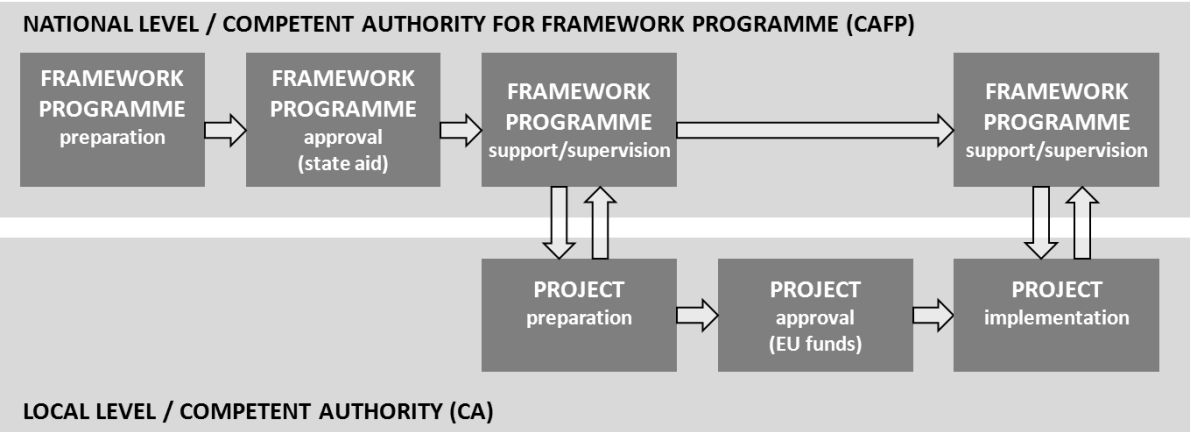

Figure 1.1 – The course of activities within the Framework Programme and projects from the Framework Programme

Following the completion of the Framework Programme, pursuant to the provisions of the SAA, it is necessary to obtain a state aid clearance, which makes the programme final. Activities for obtaining of state aid clearance will be implemented at the national level.

Individual CA-s are responsible for the preparation and implementation of projects at the local level, and it is desirable to connect several neighbouring LSUs (for more detail see Chapters 4.1.1 and 4.1.2). In the preparation of projects, the CAs follow the framework of structural rules, instructions and guidelines from the Framework Programme with the coordination support from the competent authority for the Framework Programme at the national level (hereinafter: CAFP) In addition to coordination, CAFP formally approves project implementation during preparation, and before launching, and confirms its compliance with structural rules of the Framework Programme (see Chapters 4.1.1-0 for a more detailed explanation of the CAFP's role in the implementation of projects). In addition to the support in the preparation of projects, the CAFP also plays a supervisory rule during the implementation of projects (see Chapters 0-4.1.11). Furthermore, the CAs are responsible for submitting an application for co-financing from the EU funds to managing authorities for EU funds pursuant to the implementation rules for the use of the EU funds. It is envisaged that HAKOM, as a regulatory authority for the electronic communications sector, will provide support in the entire process of preparation and implementation of projects from the Framework Programme, which is explained in more detail in Chapter 4.1.

1.4 Links to other programmes and projects at the national level

Other programmes and projects implemented by public bodies at the national level whose implementation is linked to or has an impact on the implementation of the Framework Programme are described in below.

1.4.1 National Programme for Backhaul Broadband Infrastructure

National Programme for Backhaul Broadband Infrastructure (NP-BBI) is the second state aid programme for the development of broadband infrastructure aimed at the backhaul network, a link between the access and core networks in areas lacking sufficient commercial interest of operators for investments into the backhaul network. Thus the Framework Programme and the NP-BBI will make a complementary instrument for ensuring the availability of broadband access in all crucial areas. The completion of the NP-BBI and the beginning of the process of obtaining a state aid clearance are planned for 2014.

1.4.2 e-Croatia

e-Croatia is a comprehensive name for all strategic plans, projects and initiatives for the development of IT infrastructure in the public administration system in Croatia carried out by the department (directorate) with the same name with the Ministry of Public Administration (MA). A large number of applications, inter alia, for the needs of end users or citizens will be introduced under e-Croatia. The use of such services requires national availability of broadband and it is expected that these applications will, inter alia, serve as an additional instigator of demand for broadband connections that will be developed within projects of the Framework Programme.

A more detailed overview of applications that will be developed within e-Croatia is given in Chapter 1.6.1.

1.5 Supply of Broadband Services

This Chapter provides a short overview of the supply of broadband services in the Republic of Croatia and of the related problems and restrictive factors of supply contributing to the development of this Framework Programme.

1.5.1 Development and current state of supply of broadband services

A more significant increase in the number of broadband connections, that is, in the use of broadband services in Croatia began in 2005 when the incumbent, Hrvatske telekomunikacije d.d. started with the provision of basic broadband services based on ADSL technology (known on the market as *MaxADSL*). ADSL services are provided over the existing copper network which covers more than 99% of Croatian population [3].

Following the liberalization of the electronic communications market after 2005, and especially after 2007, when the local loop unbundling (LLU) (or the unbundled local loop (ULL)) became available, alternative operators were able to offer broadband ADSL services over HT's copper network. Later on, the *bitstream* access to HT's network became available, which practically enables replication of HT's ADSL services at the retail level..

Simultaneously with HT's pair access infrastructure, the cable access network was developed based on hybrid fibre coaxial architecture (HFC). The geographical coverage of cable networks is significantly less than that of HT's copper network (around 15% of Croatian population[1], mostly in some parts of the largest urban centres). The dominant market share in the segment of cable access services belongs to B.net Croatia (or B.net[2]), over 90%[3], and there are several other smaller cable operators.

The mobile market in Croatia was liberalized in 1999, when, in addition to HT (or T-Mobile[4]) the second operator VIPnet d.o.o. entered the market (hereinafter: Vipnet). The third operator Tele2 d.o.o. entered the market in 2005 (hereinafter: Tele2). All three operators offer basic broadband services over 2G (GSM, GPRS/EDGE) and 3G (UMTS/HSPA) mobile technologies. While 2G networks cover almost entire Croatia, coverage of 3G networks is limited to wider areas of bigger cities.

The implementation of 4G (LTE) technology started in 2011 by HT and Vipnet, and in the middle of 2013 the coverage was limited to smaller areas in several cities in Croatia. In late 2012 HT and Vipnet received licences for the 800MHz band (the digital dividend)[5], where 4G technology may be implemented with reduced costs (because of better

[1] According to available data published by cable operators.
[2] B.net is owned by the operator VIPnet d.o.o. In 2003 B.net was merged with VIPnet.
[3] According to VIPnet and HAKOM's data from the end of the first quarter of 2013.
[4] T-Mobile as a market brand – refers to HT's business sector in the mobile network.
[5] In late 2013 HT and Vipnet were awarded additional frequency blocks in the 800 MHz band.

characteristics of propagation of radio signal, that is, because of a smaller number of necessary base stations). The 800 MHz band will not be fully exploited for a certain period of time because of possible interferences from eastern countries (Bosnia and Herzegovina and Serbia), which still have not harmonized the use of this frequency band in accordance with international agreements, or, in other words, this band will be reserved for some time for the broadcasting of analogue terrestrial television.

On the basis of results of the Study of Incentive Measures [3] and analysis of data available in the application of the Overview of Geographical Availability of Broadband Services developed by HAKOM, 1.9% of Croatian population does not have access to basic broadband services (basic broadband white areas), and the remaining population has access over one or several parallel infrastructures (72.4% in basic broadband grey and 25.6% in basic broadband black areas).

Investments into, and building of, NGA broadband infrastructure in fixed networks in Croatia were limited until mid-2013 mostly to parts of large cities (Zagreb, Split, Rijeka and Osijek) in which a maximum of 200 000 fiber access connections (FTTH) were built, mostly by HT[6]. In addition to fiber connections, the implementation of VDSL technology also started on the market, to a lesser extent (based on the existing HT's copper network); and of more advanced DOCSIS 3.0 technology in B.net's cable access network. Generally speaking, in early 2013, the number of built NGA broadband connections in fixed networks was still less than 20 % compared to the total number of households in Croatia, which placed Croatia at the bottom of the list of countries according to NGA access coverage and significantly under the EU average (53.8% according to DAE Scoreboard data [4]).

It may be predicted on the basis of analyses from the Study of Incentive Measures [3], and taking into account the technological and business parameters of cost-effectiveness of investments, that operators will independently built NGA networks in areas of Croatia covering a maximum of 30% of the population (bigger cities). Therefore, the Framework Programme will probably cover areas inhabited by up to 70% of Croatian population, and these areas will in practice correspond to white NGA areas during the implementation of the Framework Programme.

1.5.2 Regulation of broadband networks

Two basic groups of areas must be taken into account when investments are made into NGA infrastructure:

- areas that are suitable for investments by operators, as areas in which it is possible to achieve the desired objectives in terms of investments into NGA broadband infrastructure and offer of services, without the need for state aid measures, provided that the necessary regulatory preconditions are fulfilled and that regulatory networks are implemented;

[6] According to data published by HT.

- areas in which it is not cost effective for operators to invest, as areas in which, regardless of the implementation of regulatory measures, preconditions for independent investments of operators will not be ensured and state aid measures are necessary.

This Framework Programme is focused on the second group of areas and the lack of cost-effectiveness of investments by operators, that is, the non-existence of adequate NGA infrastructure and offer of services, will be proven on the basis of the analysis of availability of existing services (mapping, see Chapter 2.1), and through the procedure of collecting of operator's plans for investments in the following three-year period, that is, through the public consultation procedure (See Chapter 2.5)

In relevant markets No. 4 and 5 susceptible to *ex-ante* regulation, which refer to broadband access (wholesale (physical) network infrastructure access and wholesale broadband access market), HAKOM designated HT as the operator with significant market power – SMP. Consequently, the same operator was imposed a regulatory obligation of access to and use specific network facilities, the obligation of non-discrimination, the obligation of transparency with the publication of the reference offer, the obligation of price control and cost-accounting and the obligation of accounting separation for both relevant markets). Analyses of both markets were carried out in 2009, and again in 2013, and the above-mentioned regulatory obligations were maintained after the second analysis in 2013. [13],[14]. The second analysis expanded the group of wholesale options to ones related to NGA networks (VDSL technology - FTTC *Fiber To The Cabinet*) and FTTN (*Fiber To The Node*) concepts and optical access networks – FTTH).

Although the above-mentioned framework of regulatory measures yielded good results in terms of development of competition in the ADSL traditional broadband access (in the first place in terms of increase of the market share of alternative operators by means of unbundled local loops and, a little less, in terms of *bitstream* wholesale services), the same framework did not result in significant investments in fixed access networks, in particular into the NGA access networks. In relation to NGA access networks, the same conclusion refers to a group of areas where certain profitability of investments is possible, and to a group of areas in which investments are not profitable, that is, target areas of this Framework Programme.

1.6 Demand for Broadband Access Services

1.6.1 Public services over the broadband network (e-administration)

The Government of the Republic of Croatia initiated an ambitious project in 2013, entitled e-citizens, on the basis of, among other things, the *e-Government* initiative at the EU level. The main objective of the e-citizens programme is *access to public information and information about public services in one place, secure access to public data and electronic communications of citizens and the public sector* [15].

Below is a detailed overview of services of e-government in Croatia, together with the foreseen course of further development of the same services.

Central Government portal

The central Government portal is a constituent part of the e-citizens project that will merge all the existing portals of the Government, the Parliament, ministries and other state administration bodies, and serve as a central portal for access to information about public services, and information and documents on the implementation of policies in easily accessible formats.

Personal user mailbox

The personal user mailbox will enable every citizen of Croatia to receive, review, follow and manage all his or her official communication with the public sector, that is, to be informed about important situations and events related to personal legal rights and obligations, and about the use of personal data in the public sector. On the other hand, the user mailbox will allow to public bodies, as providers of services of e-government, to simply, automatically and reliably deliver personal correspondence to its parties, including official correspondence.

E-health

E-health refers to a group of services of e-government in the health sector. The majority of e-health services is currently based on mutual interaction between providers of health services (primarily health care offices, hospitals, laboratories, pharmacies), aimed at providing more efficient services to their parents. These are services of e-referrals, e-prescriptions, e-appointments, e-wait lists and e-records. It is expected that the participation of patients in all interactions included in the provision of e-health services will increase (e.g. reviewing their own e-records, reviewing prescriptions over the internet etc.) [16].

E- education /e-science

E-education and e-science are common names for all services in the education system, that is, in higher education and science, which are provided with the assistance of information and communication technologies, where services may be accessed through broadband connections. Within the above-mentioned group of e-services in Croatia, operative services of e-enrolment to colleges and universities as well as to high-schools (since 2013) already exist. Furthermore, application platforms supporting distance learning have also been developed, and it is expected that these platforms will more often be used in practice, that is, that more contents will be available for distance learning. There is also a database of educational contents that may be accessed by all employees and students in the educational system (electronic databases of required reading e-reading, books – e-library, educational films etc.). In addition to the above-mentioned contents and services targeted at all participants in the educational system, informational systems for administrative support to higher education institutions (Information System of Higher Education Institutions - ISVU),

that is e-registers for elementary schools and high schools [17] have also been developed or are being developed.

e-Justice

e-Justice covers a group of services of e-government that are a part of or are linked to the justice system. e-Justice services are continuously expanded and upgraded. The following types of services were available mid 2013:

- e-Excerpt – access to data from land registries;
- e-Notice Board – access to data from notice boards of municipal and commercial courts;
- e-Case - information about the status of court cases from the database of the Integrated Case Management System (e-File);
- e-Company - a service within the HITRO.HR system enabling faster registration of a company on the basis of electronic submission of all the necessary forms and documents between notary public offices, commercial courts and the Financial Agency (FINA).

e-Taxes

e-Taxes is a system of Tax Administration services enabling tax payers to file their taxes electronically (value added tax, income tax, profit tax) and to examine their tax and accounting records.

e-Agriculture

e-Agriculture includes all e-government services related to the agricultural sector that have been available from the middle of 2013, that is, those services the development and implementation of which are ongoing, and it is expected that they will be available in the target period of time of this Framework Programme:

- ARKOD - a system of electronic records of land parcels and their use, related to direct payments in agriculture;
- argonet - an electronic application intended for agricultural farms and other users to be able to exercise their right to direct payments in agriculture;
- TISUP (Market Information System in Agriculture) - a system for collecting and processing of data on the market of agricultural services;
- GISE (Geoinformation System for Fisheries) - a system enabling the collection, processing and archiving of data from the fisheries sector and their distribution to the end users.

Overall it can be concluded that the above-mentioned services of e-government represent a great potential for development, that is, for the increase of demand for broadband access. This is particularly obvious since services of e-government cover a wide

circle of end users dispersed through all local environments: citizens (private households), economic subjects (crafts and companies), educational institutions (kindergartens, elementary schools and high schools, colleges and universities) and health institutions (primary healthcare institutions, health care centres, hospitals, pharmacies). Development and further expansion of the scope of e-government results in the increased need for quality and faster NGA access, due to access to a larger number of multimedia contents, and due to the realization of multimedia links (e.g. for the purposes of distance learning and telemedicine), and the possibility of end users to send more contents towards the providers of e-government services (upstream communication).

1.6.2 Commercial services

The services of delivery of television and video contents through broadband connections are also very important.

The services of delivery of television and video contents by means of broadband networks play an important role in the stimulation of demand for broadband connections. This was recognised by the European Commission in the document [5], in which it is emphasised that *attractive commercial audiovisual and entertaining content have the greatest impact on the number of broadband connections, and, among other things, the need for the removal of potential obstacles for the development of such contents by establishing a single European digital market* (which is also one of the main objectives of the DAE). Furthermore, it must be stressed that services for delivery of television and video contents progress towards high-definition contents and a larger share of on-demand services, that will be completely adjusted to current needs and desires of end users. This results in the increased need for transfer capacity, that is, for ensuring fast NGA broadband connections that will be able to fulfil the capacity requirements of the service of delivery of television and video contents in the long run.

The previously mentioned services are primarily oriented towards the user segment of citizens or private households. Broadband connections or broadband services for enterprises as a rule, due to business needs, require greater capacity, and the need for capacity increases with the size of the enterprise (from crafts and micro enterprises whose demands in terms of capacity mostly coincide with those of private households, to small, medium and big companies who have significantly greater needs for capacity than the private households). Broadband connections in medium and large enterprises are often used to connect dislocated and remote units, that is, several branches of the same subject, into a logically unique virtual network (so-called *Virtual Private Network* – VPN). For that reason, and for business purposes (e.g. the location of web-servers) the intensity and need for upstream speed are significantly greater than in private companies and smaller enterprises, which causes the establishment of symmetrical broadband connections, that is, connections with the same downstream and upstream speed. In the wider context, such symmetrical broadband connections are usually referred to by their historical names of leased lines or permanent connections.

In the recent years, cloud services have been penetrating the market and enabling users (in the first place business users) to access and use remote computer resources or cloud computing and remote programme and application service provisioning, or *Software as a Service – SaaS*). The purpose of such services is to optimize the costs of enterprises related to the purchase of computer equipment and software, that is, to divide the unusually high initial costs through optimized operative costs of cloud services. Cloud services, due to their nature, as a rule require greater transfer capacity, both downstream and upstream. This makes the fast NGA broadband connections suitable for the application of cloud services. Furthermore, considering the expected future development of cloud services, it is expected that they will require ultra-fast NGA connections.

1.6.3 Indicators of use of broadband access

This Chapter contains the basic indicators of use of broadband access and its primary objective is to describe all the relevant indicators used for the analysis of the existing and for predicting future demand for broadband access and services. These indicators refer to the national and regional (county) level, mostly with values from 2012.

Comparative data on the population penetration of broadband access to fixed network in Croatia and the EU are provided below (Figure 1.2)[7]. Data refer to the end of the year, except for 2012, when they refer to the middle of the year. Croatia has obviously been lagging behind the EU in relation to penetration of broadband access and this trend decreased in the last few years and has now been stagnant at 7-8 percentage points (pp) in the period 2010 – 2020. There is also a noticeable stagnation in penetration, both in the EU, and in Croatia after 2009. Such stagnation can for the most part be attributed to the economic recession and crisis. The overall situation with broadband penetration at the national level is not satisfactory and represents and additional strategic starting point and reason for initiating a wider circle of measures for the stimulation of offer and demand for broadband access, including the implementation of this Framework Programme.

[7] Data on broadband penetration in mobile networks have not been analysed in this document since only 4% of households (according to CBS data for 2012) use broadband in mobile networks as the primary manner of broadband internet access, because of which their impact on overall indicators of use of broadband access is negligible.

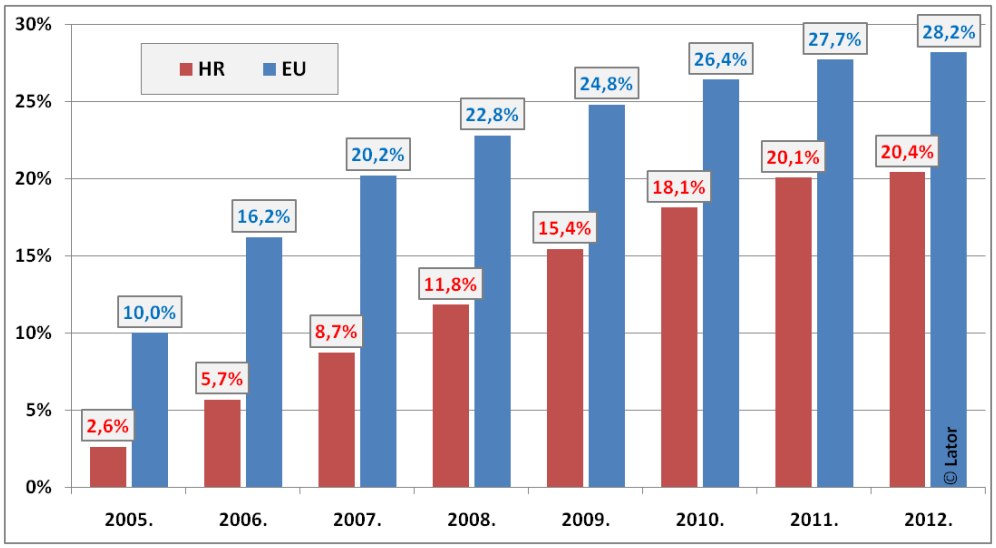

Figure 1.2 – Comparison of development of broadband penetration in Croatia and the EU, 2005-2012 (sources: HAKOM and the European Commission)

Figure 1.3 provides an overview of indicators of broadband population penetration in Croatian counties at the end of the first quarter of 2013. It is noticeable that the penetration in the majority of Croatian counties is below the national average, which indicates an uneven use of broadband among Croatian population and seeks for additional stimulation of Internet use in critical areas of Croatia, which this Framework Programme should actively contribute to.

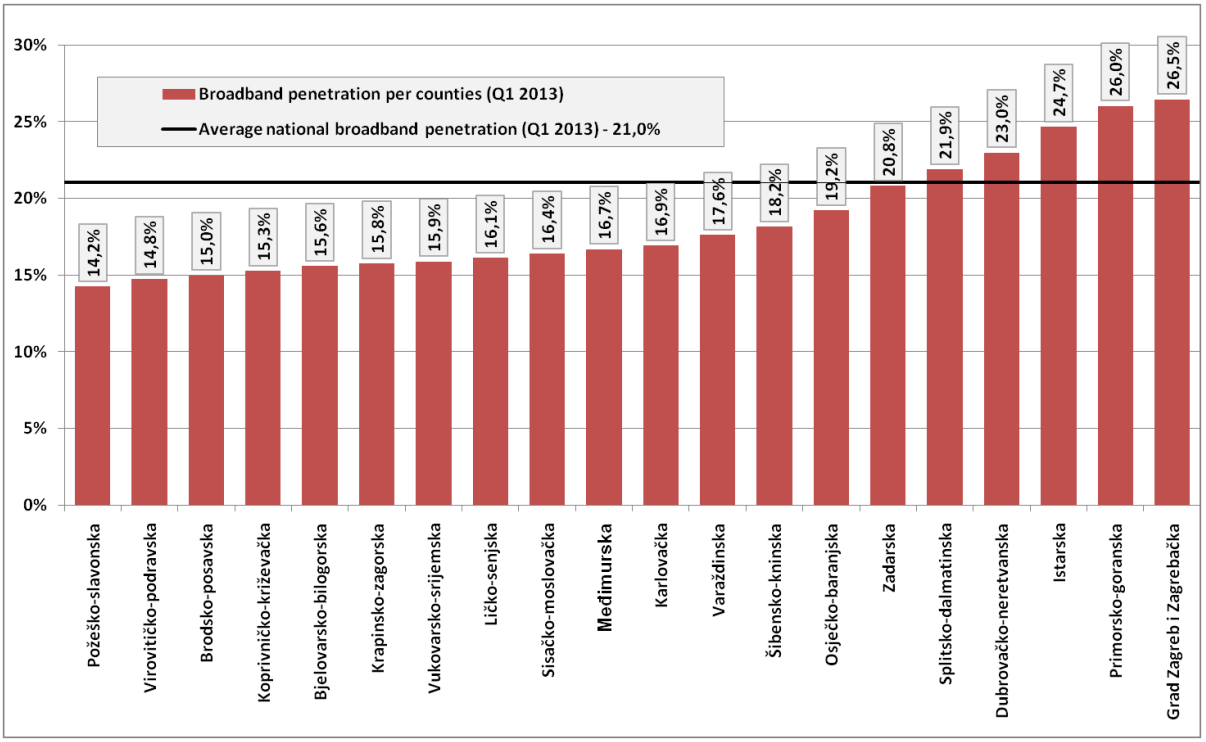

Figure 1.3 – Broadband penetration per counties, Q1 2013

2 Structural Rules of the Framework Programme

This Chapter provides an overview of structural rules of the Framework National Programme for the Development of Broadband Infrastructure. These rules are obligatory for all projects under the Framework Programme. The approval of individual project by the NCA requires compliance with all structural rules given in this Chapter. The approval process in the operational sense is explained in more detail in Chapters 4.1.1-0. In addition to the obligatory structural rules, the Framework Programme contains guidelines and recommendations aimed at facilitating the preparation, implementation and supervision of projects by CAs in the areas described in this chapter.

Structural rules of the Framework Programme refer to all the relevant chapters and articles of Guidelines laying down the conditions for compliance of projects of supported development of broadband infrastructure with the general state aid rules at the EU level. This particularly refers to general provisions on compliance in Chapter 2.5 and to the same provisions that have been elaborated in more detail in Chapters 3.4, 3.5 and 3.6 of the Guidelines. The current practice of projects for the building of broadband infrastructure in EU member states was included through the guidelines and recommendations of the Framework Programme, which is also contained in footnotes of the Guidelines and in formal decisions of the European Commission on the approval of projects in the EU Member States [11].

The description of structural rules of the Framework Programme corresponds to the order of implementation of steps in the phases of preparation, implementation and monitoring of projects. Consequently, this Chapter contains a detailed description of the following parts of the structural rules of the Framework Programme:

a) target areas for the implementation of the Framework Programme (mapping rules);

b) target level of broadband access supported in the projects (step change rule);

c) selection of an appropriate investment model;

d) geographical and administrative scope of the project;

e) public consultation procedure before the implementation of the project, including the use of the existing infrastructure;

f) public procurement procedure in projects, including the rule of technology neutrality;

g) wholesale conditions and control of prices of access to networks built through the projects;

h) clawback.

Structural rules concerning the transparency of implementation of projects and the Framework Programme in general, and all the necessary reports to the NCA and the European Commission are provided in Chapter 4.3.

2.1 Target Areas for the Implementation of the Framework Programme

This chapter contains basic rules and general guidelines of the procedure for the determination of areas in which, bearing in mind the state aid rules, it is justified to implement projects within the Framework Programme. The procedure consists of the definition of *white, grey and black* areas (or, in other words, of the determination of *colours* of areas or *mapping of colours of areas*).

In addition to the description of rules and guidelines in the procedure for the definition of colours of areas, the Framework Programme provides an initial list of areas depending on the basic broadband access at the level of Croatian settlements (Annex E).

2.1.1 Objective and purpose of colour definition

In accordance with the rules from the Guidelines, white areas do not have the appropriate network infrastructure and no operator is planning to build such an infrastructure within three years from the start of programme. Grey areas are those in which the network of one operator exists and were no other operator is planning to build another network in the period of three years. Black areas have at least two network infrastructures belonging to two different operators (or they will be built within the following three years). The use of state aid is justified in white areas, conditionally justified in grey areas while in black areas it is not justified in any case.

Colours for areas are determined in relation to the basic (traditional) broadband networks and NGA networks. In the context of the Framework Programme, the most important colours are those relating to NGA access, although basic colours also have importance, since basic white areas are defined in this manner (which are at the same time the NGA white areas). Furthermore, the degree of competitiveness of operators in basic grey areas (described on the basis of supported wholesale products) determines the minimum degree of competitiveness of operators that must be kept during the implementation of projects of construction of NGA networks in the same areas (which are usually white NGA areas in the same time).

During 2013, HAKOM started gathering data about the availability of the basic and NGA broadband access from all operators that are active on the electronic communications market in Croatia, and its intention was to update these data regularly every three months. The above-mentioned collection of data is available in the processed and structured form through a geoinformational application of the Overview of broadband coverage (hereinafter: *OBC application or just OBC*) [22]. This application allows checking the availability of broadband services in the target area of the project. This approach is in compliance with recommendations from the Guidelines, in the part in which active role of

NRA's in the definition of colours of areas in the projects of development of broadband infrastructure with state aid is encouraged (Article 42 and 78a). In any case, CA's are instructed to consult HAKOM before preparing projects and before launching a public procurement procedure, and to use the available data from OBC for the definition of colours of target areas or for their verification in relation to the initial list prepared in accordance with this Framework Programme.

On the basis of the general objective of optimization of the project preparation process and of the decreased scope of administrative work on the preparation of projects at the CA level, the Framework Programme prepared an initial list of colours of areas in relation to the basic access (Annex E), developed at the level of settlements as the lowest demographic populated areas. Settlements on the list are divided according to the administrative criterion of inclusion among cities and municipalities (LSUs), or counties. In terms of content, the initial list is based on data collected during the Study of Incentive Measures [3] and on the basis of data from the initial version of HAKOM's application OBC, which was available at the moment of completion of this document.

It must be pointed out that the overview of data on network infrastructure in the initial list of colours of areas was prepared at the level of whole settlement, while data collected by HAKOM in the OBC are structured at a lower address level, according to streets and house numbers, which permits greater precision in the definition of the colours of areas. The procedure for the definition of colours at address level will particularly have to be conducted in larger settlements (medium and big cities in Croatia) where colours will probably be heterogeneous, that is, larger cities may at the same time have areas with different colours. This may, among other things, be related to architecture of copper pair networks (a larger number of access nodes in the same settlements) and the availability of alternative access infrastructure (e.g. cable networks), which usually cover parts of cities with large apartment buildings. On the other hand, in rural areas, that is, in smaller settlements, the definition of colour may be unified in the entire settlements and for that purpose the structure of data from the initial list of colours of areas in the Framework Programmes is usually fully applicable.

Considering a longer period of implementation of the Framework Programme (until 2020) and the expected changes in colours of areas in the mentioned period, especially in the part on the NGA access, it will be necessary to conduct a procedure for the verification of accuracy of awarded colours of areas in relation to the initial list from the Framework Programme and HAKOM's available data (hereinafter the procedure for the verification of the colour of areas). This procedure in the first place includes the verification of operator's investment plans for the following three years. The Framework Programme envisages the conclusion of the verification programme after the public consultation process about the project (see Chapter 2.5.), according to which CA's have to, in accordance with rules and guidelines for the definition of colours of areas listed in Chapter 2.1, determine the scope of target areas in which it is justified to carry out state aid projects for the development of broadband infrastructure (Figure 2.1).

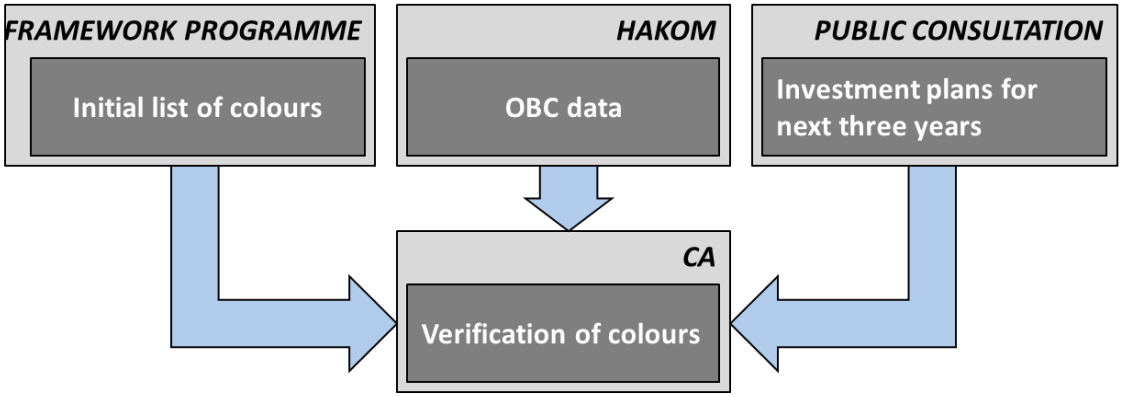

Figure 2.1 – Overview of procedure of verification of colours of areas

2.1.2 Rules for definition of colours

Below is a definition of rules and general guidelines in the process of definition of colours of areas for the basic and NGA broadband access. Those rules have been applied in the development of the initial list of colours of areas as an Annex to the Framework Programme. The same rules need to be applied in the preparation of projects through the procedure of verification of the initial colours in the target area in relation to the available data from the OBC and the collected data about the investment plans of operators for the following three years in the target area. The operational course of the verification of colours of areas, which was envisaged to be concluded with public consultation on the project, has been described in detail in Chapter 2.5, while the focus in this Chapter has been placed on the rules for the definition of colours.

The definition of colours of areas in relation to basic broadband access is important in the context of the new Framework Programme for the following reasons:

- definition of basic white areas lacking adequate basic infrastructure of the PSTN network, including the copper pair network – this fact will indicate the impossibility to use the existing copper pair infrastructure for the implementation of the NGA broadband network in projects, that is, the cost-effectiveness of technological options based on wireless access, including the exceptional possibility for implementation of the basic broadband access instead of the NGA access in very small settlements;
- determination of basic grey areas with adequate competitiveness of market operators in spite of the existence of a single network infrastructure, which is why these areas are non-problematic grey areas (areas in which alternative operators have built collocations for access to local loops) – the level of the achieved competitiveness of operators through available wholesale products must be maintained during implementation of NGA broadband networks in the projects;
- definition of basic black areas with satisfactory (infrastructure) competition of operators, which must be kept in the implementation of NGA broadband

networks within the projects (of course if same areas are at the same time NGA white or problematic NGA grey areas).

Concerning availability of the basic broadband access and definition of colours of areas, it is necessary to define technologies that can be used to offer a technological and cost-effective broadband access for the end users under existing market conditions. In addition to the dominant ADSL technology which is related to HT's access copper network, basic broadband access may also be achieved by means of wireless UMTS/3G and WiMAX technologies, and cable access. While cable access, although available only in limited parts of the biggest Croatian cities, can be compared price-wise with the ADSL access at the retail level and is thus substitutable with ADSL services, UMTS/3G network retail services are more expensive than ADSL services in packages with more traffic[8] which is why they cannot be regarded as substitutable services that may ensure broadband access. It must also be borne in mind that users cannot choose packages of UMTS/3G network access by speed, but the highest speed in practice depends on capacity of the base station and on the supported version of UMTS/HSPA technology in a certain part of the access network. In this manner the availability of UMTS/3G networks does not influence the definition of colours of areas in relation to the basic access. This approach follows from conclusions of HAKOM's broadband market analyses carried out in 2013, according to which broadband services via UMTS/3G networks are not regarded as substitute services for ADSL access [23]. It must be stressed that the increased usage of UMTS/3G network services and possible changes in tariffs on the related retail packages, during the implementation of the Framework Programme, might result that broadband services over UTMS/3G networks become substitutable with ADSL services. The same fact must be taken into account in the verification of colours of areas when projects are initiated, that is, during the review of the Framework Programme. In that process, relevant conclusions must be followed from the future analysis or changes in regulatory measures that will be adopted by HAKOM.

WiMAX technology has not achieved significant market penetration so far, and the number of users of broadband access over WiMAX network in Croatia is negligible [23][9]. Taking into account the possible future significant market penetration of WiMAX technology and operators, CA's have the obligation to assess, in cooperation with NOP and HAKOM, whether broadband services provided over WiMAX technology in the target area of the project, in case of presence of WiMAX operators during verification of colours of areas, are competitive in terms of quality and price to other broadband technologies, in particular those in grey and black areas.

Except in terms of definition of colours for the basic access, the same applies to the possible future services that will be implemented through advanced versions of WiMAX

[8] According to HAKOM's data from mid-2012, the majority of retail users of broadband access (56.4%) are using packages with unlimited access. Packages with unlimited access are not offered over UMTS/3G networks, while packages with large amounts of traffic (20 GB and more), are much more expensive compared to identical packages with ADSL and cable services.

[9] In mid-2013, there was only one WiMAX operator active in Croatia, while several operators in the meantime terminated the provision of services over WiMAX technology and no longer use the allocated radiofrequency licences.

technologies (WiMAX2), that would satisfy conditions for NGA services and would be applicable in the context of the definition of colours in relation to the NGA access.

Previous instructions related to WiMAX technology are applicable to all other technologies of fixed wireless access that may be used by operators for the provision of broadband services in the future period of implementation of the Framework Programme.

2.1.2.1 Rules for the definition of basic access colours

As it was already previously mentioned, the definition of colours in relation to the basic access within the Framework Programme for NGA networks, has an exclusive functions of specification of characteristics of NGA projects in relation to the current situation of basic NGA access in white areas (which at the moment of definition of the Framework Programme cover the majority of population in Croatia). The rules of definition of basic grey and black areas in this document must be observed in this context.

Pursuant to the provisions of the Guidelines (Article 66-72), and taking into account the local situation in Croatia and needs of the Framework Programme, below is an overview of rules for the definition of colours compared to the basic broadband access (Table 2-1).

Table 2-1 – Rules for the definition of basic access colours

Colour of area /designation	Areas included	The smallest area in definition of colours (precision)
White / $B1_{osn}$	- without broadband infrastructure that permits the minimum speed of 2 Mbit/s - operators are not planning the construction of broadband infrastructure in the following three years - areas with less than 50 inhabitants[2]	- address (street and house number) - settlement (in case address data are unavailable or unreliable) – colours of areas are determined depending on the availability of infrastructure for the majority of the settlement area
White / $B2_{osn}$	- without broadband infrastructure that permits the minimum speed of 2 Mbit/s - operators are not planning the construction of broadband infrastructure in the following three years - all other settlements and parts of settlements with more than 50 inhabitants	- address (street and house number) - settlement (in case data at the level of the address are unavailable or unreliable, applicable only to settlements with less than 500 inhabitants[3]) – colour of areas is determined according to the availability of infrastructure for the majority of the settlement
Grey / $S1_{osn}$	- HT provides broadband services at a minimum speed of 2 Mbit/s[1] - no other operator is planning to construct the broadband network in the following three years - no other operator uses unbundled local loops access	- address (street and house number) - settlement (in case data at the level of the address are unavailable or unreliable, applicable only to settlements with less than 500 inhabitants[3]) – colour of areas is determined according to availability of infrastructure for the majority of the settlement

Colour of area /designation	Areas included	The smallest area in definition of colours (precision)
Grey / $S2_{osn}$	- HT provides broadband services at a minimum speed of 2 Mbit/s[1] - no other operator is planning to construct the broadband network in the following three years - at least one other operator uses unbundled local loops access	- address (street and house number) - settlement (in case data at the level of the address are unavailable or unreliable, applicable only to settlements with less than 500 inhabitants[3]) – colour of areas is determined according to availability of infrastructure for the majority of the settlement
Black / C_{osn}	- besides HT, at least one additional operator (with its own infrastructure) provides services at a minimum speed of 2 Mbit/s or the same services will be provided in the following three years	- address (street and house number) - settlement (in case data at the level of the address are unavailable or unreliable, applicable only to settlements with less than 500 inhabitants[3]) – colour of areas is determined according to availability of infrastructure for the majority of the settlement

[1] Currently in practice only ADSL services of HT, as a network operator, correspond to needs of a wide circle of end users in areas with basic copper pair network. Services of operators with wireless technologies (UMTS/3G) at this time are not competitive with HT's ADSL services. In case of future changes in terms of competitiveness of UMTS/3G and other wireless broadband technologies, areas in which HT's ADSL services are available and are covered with wireless broadband access supporting the minimum speed of 2 Mbit/s, might be marked as black – C_{osn}).

[2] The threshold of 50 inhabitants per settlement, which influences the categorization of white areas into $B1_{osn}$ group, determines the upper size of settlements in which it can be, on the basis of framework budgets, expected that the implementation of NGA networks within the Framework Programme will not be cost-effective, and the implementation of the advanced basic access will be exceptionally allowed. If CA's consider that the implementation of NGA networks is not rational in certain settlements with more than 50 inhabitants, those settlements may be classified under $B1_{osn}$, and the economic unviability has to be elaborated in detail by CA's (e.g. lack of basic copper pair infrastructure, geographical and traffic isolation of a settlement, low demand prospects in a settlement).

[3] The threshold of 500 inhabitants per settlement has been determined on the basis of an assumption that data at the address level will be available for all settlements with more than 500 inhabitants. In case that such data will not be available or sufficiently reliable in settlements with more than 500 inhabitants CA's will have to elaborate how they defined the colour of the settlement.

The division of basic white areas in two groups in primarily related to the criterion of the number of inhabitants, where small areas with less than 50 inhabitants have been placed in the group $B1_{osn}$, while all other basic white areas have been classified under group $B2_{osn}$. This kind of division is based on the need for the optimization of costs of implementation of broadband infrastructure in very small settlements within the Framework Programme, that is, to avoid the implementation of economically demanding solutions that would not correspond to the local situation and the potential for demand in the same settlements. In that sense, it is exceptionally permitted by the Framework Programme to implement broadband infrastructure that is not necessarily based on NGA technologies in $B1_{osn}$ areas, but such implementation must ensure basic broadband access at a minimum download speed of 10 Mbit/s. In that sense in areas $B1_{osn}$ it would be possible to implement broadband networks with UMTS/3G or ADSL technologies that require lower investment costs, in particular taking into account the possibility for the upgrade of the existing (inadequate) basic infrastructure related to the above-mentioned technologies (e.g. antennae poles in the target area supporting only 2G access that may be upgraded with UMTS/3G equipment; or the existing access nodes in copper pair network, which, with the necessary upgrades, may

be equipped for support to the ADSL access). In addition to the threshold size of 50 inhabitants per settlement, the classification into group $B1_{osn}$ at the moment of verification of colours of areas, that is, prior to the implementation of the project, depends on the following conditions that must be satisfied by the CAs:

- In the preparatory stage of project development (through the feasibility study, and later through the Broadband Infrastructure Development Plan – BIDP – see Chapters 4.1.1 and 4.1.2), CA must, on the basis of the analysis of costs of implementation of individual technologies in the target are, prove that implementation costs for the basic broadband access at the minimum speed of 10 Mbit/s are several times lower compared to costs of implementation of technologies allowing NGA access;
- the potential for demand for broadband services is exceptionally low, due to restricting factors such as a small number of households or a lack of business or public users, and unfavourable demographic infrastructure of population, which may also be demonstrated by analyses carried out by the CA in the preparatory stage of the project (also through the feasibility study and/or draft BIDP);
- where CA believes that some settlements in the target geographical coverage of the project, which have more than 50 inhabitants, must also be defined as $B1_{osn}$ areas, these settlements must, as a rule, have distinguished geodemographic characteristics (e.g. geographical isolation or unfavourable population structure), with the lack of copper pair access infrastructure and it must also be proven for these areas that the implementation of NGA technologies is not cost-effective and that it has a low potential for demand.

The smallest spatial area when determining the colour should refer to the address level (street and house numbers) since this kind of approach provides the most precise results in the determination of colours of target areas. However, taking into account the possible unavailability or unreliability of data at the address level that are available in HAKOM's OBC (on the basis of data collected by HAKOM from the operators), which can be a case in smaller settlements (with less than 500 inhabitants), the details of spatial coverage in case of such small settlements may be reduced to the level of the entire settlement. In that case, colours should be determined on the basis of criteria applicable to the major part of the settlement. If data at the address level are not available or the CA believes that are not reliable enough for settlements exceeding 500 inhabitants, colours may be determined at the level of entire settlements, and the CA must explain the procedure used to determine the colour of the entire settlement.

2.1.2.2 Rules for the definition of NGA colours

NGA colours of areas, in addition to colours for basic access, represent parallel groups of data for the same areas.

Table 2-2 presents an overview of rules for the definition of NGA colours.

Table 2-2 – Rules for the definition of NGA colours

Colour of areas /designation	Areas included	The smallest area in definition of colours (precision)
White / B_{nga}	- no NGA broadband networks - private operators are not planning to build NGA broadband networks in the next three years	- address (street and house number) - part of settlement (in case data at the level of the address are unavailable or inaccessible, applicable only to settlements with less than 500 inhabitants[3]) – colour of areas is established according to availability of infrastructure for the majority of the settlement
Grey / $S1_{nga}$	- with one NGA network - no other operators is planning to build NGA network in the next three years - unsatisfactory conditions of supply of NGA services (quality, price, competitiveness of operators) – ***problematic NGA grey area***[1]	- address (street and house number) - part of settlement (in case data at the level of the address are unavailable or inaccessible, applicable only to settlement with less than 500 inhabitants[3]) – colour of areas is established according to availability of infrastructure for the majority of the settlement
Grey / $S2_{nga}$	- with one NGA network - no other operators is planning to build NGA network in the next three years - satisfactory conditions of supply of NGA services (quality, price, competitiveness of operators) –) – ***non-problematic NGA grey area***[1]	- address (street and house number) - part of settlement (in case data at the level of the address are unavailable or inaccessible, applicable only to settlement with less than 500 inhabitants[3]) – colour of areas is established according to availability of infrastructure for the majority of the settlement
Grey / C_{onga}	- with at least two NGA networks or at least two NGA networks will be built in the next three years	-- address (street and house number) - part of settlement (in case data at the level of the address are unavailable or inaccessible, applicable only to settlement with less than 500 inhabitants[3]) – colour of areas is established according to availability of infrastructure for the majority of the settlement

[1] Criteria for the definition of the conditions of the supply of NGA services in grey areas and the problematic nature of the NGA grey areas, have been explained in detail in the text of the document.

[2] The threshold of 500 inhabitants per settlement has been determined on the basis of an assumption that data at the address level will be available for all settlements with more than 500 inhabitants. In case that such data will not be available or sufficiently reliable in settlements with more than 500 inhabitants CA's will have to elaborate how they defined the colour of the settlement.

White NGA areas – B_{nga}, as areas without NGA networks or any plans for their development would, during the implementation of this Framework Programme, comprise up to 70% of Croatian population. This is due to the fact that investments into NGA infrastructure and networks under normal market conditions are not profitable [3], [20].

Grey NGA areas are divided into two groups. Group $S1_{nga}$ covers areas with one NGA network (and operators are not planning to build at least one more network in the following

three years), and where the conditions for the supply of NGA services are not satisfactory, which is why $S1_{nga}$ areas are placed among problematic grey areas. On the other hand, in $S2_{nga}$ areas, in which there is also one NGA network and operators are not planning to build at least one more network in the next three years, conditions for supply of NGA services on the market are satisfactory and these NGA grey areas are not problematic, that is, the use of state aid for the development of another NGA network is not justified. Problematic NGA grey areas have been introduced into the Framework Programme in order to take account of possible future cases of unsatisfactory supply of NGA services for the end users (in spite of the fact that the NGA network was built by a private operator), whereby, in accordance with Guidelines rules (in particular Article 70), the application of state aid in NGA grey areas would be justified. The criteria for the definition of an unsatisfactory offer of NGA services are explained below.

CAs are obliged to apply the following criteria for the determination of problematic NGA areas as part of the preparation of projects and verification of colours of areas, that is, of a public consultation that will precede the launching of projects in the target areas:

- retail services offered over the NGA network cannot be compared in terms of scope, quality or prices with equivalent services in areas in which such services are offered under market conditions ($S2_{nga}$ and C_{nga} areas), if such cases exist in Croatia and the comparison is possible;
- retail services offered over NGA networks do not correspond to needs of end users in terms of their scope, quality and prices, whereby needs of all categories of users should be determined (private, business and public) – end user needs, in this case, have to be investigated by means of appropriate surveys during the preparation of projects (e.g. in the feasibility study);
- usage (penetration) of NGA services among end users in the target area is significantly smaller compared to the national average;
- other operators do not offer their services over the NGA network, or their share in the retail market on the target area of the project is significantly smaller compared to the national average for NGA services – in particular if the same area of the project belongs to groups $S2_{osn}$ or C_{osn} compared to the basic access, if the share of other operators on the retail market of NGA services is significantly smaller compared to such share on the retail market of basic broadband services;
- concerning the presence of other operators on the target area of the project, the conditions of wholesale access to the existing NGA network prohibit efficient access at the level of passive infrastructure (e.g. unbundled access to local subloops or loops for FTTH networks);
- existing regulatory measures and all other measures under competition legislation aimed at the NGA network operator have not achieved the satisfactory effect on the market in view of all of the above-mentioned criteria;

- total entry barriers prevent other operators from entering the market and offering NGA services, which may include cases of inability of access to or lack of capacity in the basic infrastructure (e.g. cable ducts), whose capacity was previously used by the NGA network operator for the development of their NGA network in the target area of the project.

If the application of previously mentioned criteria indicates a market failure in a grey NGA area, that area may be characterized as problematic $S1_{nga}$, which justifies the implementation of the project of building an additional NGA network with state aid support. In that process, the final approval for the definition of a NGA grey area as a $S1_{nga}$ is given by the CAFP, on the basis of CA's analysis which must cover the previously mentioned criteria and must be contained in the BIDP. When adopting such a decision, CAFP may consult with HAKOM and/or the NCA. CAFP's approval will be granted as part of the approval of the entire BIDP after the completion of the public consultation (see Chapter 2.5.1 and 4.1.3).

Grey NGAs in which market failure, that is, the unsatisfactory supply of NGA services, cannot be proven by the application of the previously mentioned criteria, must be automatically classified as non-problematic $S2_{nga}$, in which the application of state aid for the development of an additional NGA network is not justified. The same applies to cases in which the CAFP, on the basis of CAs' analysis, did not approve the designation of certain NGA grey areas as problematic NGA grey areas.

Black NGA areas (C_{nga}) comprise all areas with at least two NGA networks or they will, in accordance with operators' plans, be built in the following three years. It must be mentioned that NGA networks must belong to different operators. In black NGA areas, the use of state aid, that is, the building of an additional NGA network, is not justified.

Concerning the smallest spatial area for the determination of the NGA colour of areas, all guidelines applicable to the definition of colours in relation to basic access (see chapter 2.1.2.1) are also valid. Furthermore, in the context of NGA grey areas and definition of an area as a problematic $S1_{nga}$ area, this procedure should be carried out at a detailed address level, since problematic grey areas often can correspond to restricted smaller areas of settlements or refer to certain groups of users (e.g. private users in the part of a settlement where, due to different circumstances, there are no conditions for wholesale access at the level of passive infrastructure, because of which other operators do not offer NGA services for the mentioned users; or, for example, for business and public users in business zones or administrative centres of towns, whose needs for (more demanding) NGA services have not been justified by means of the existing NGA network, in terms of quality and in terms of prices of services)[10].

2.1.3 State aid for projects with ultra-fast NGA access

Pursuant to OBC rules (Article 82-85), the Framework Programme envisages cases in which CAs will propose the implementation of networks that support ultra-fast NGA access

[10] Usual name for this cases of target areas situated within larger nonproblematic areas (grey or black) is *gap filling*.

(speed above 100 Mbit/s). In that case, considering the previously mentioned rules for the definition of NGA colours and the related justification and application of state aid in such areas, only $S2_{nga}$ and C_{nga} areas are relevant as areas with one or more NGA networks and a satisfactory supply of services, in which the aim of the project is to implement an additional network to exclusively support ultra-fast NGA access. In other groups of NGA areas (B_{nga} i $S1_{nga}$), the implementation of networks supporting ultra-fast NGA access is justified by mere justification of the building of the NGA network with state aid.

Below is a definition of justification criteria for the building of NGA networks that support ultra-fast access in the existing $S2_{nga}$ and C_{nga} areas. All of the above criteria must be cumulatively met to justify the granting of state aid for this purpose:

- in the existing or future NGA networks, the building of which is planned for the next three years, optical fibres will not be placed to end users' facilities;
- situation on the market will not aim towards a competitive supply of ultra-fast NGA services in the next three years, which must be proved by operators' investment plans for the market, which have been collected in the public consultation process proceeding the implementation of the project;
- there is a demand for ultra-fast NGA services, which may also be illustrated through the results of appropriate surveys conducted among users or may result from expected needs in the segment of public users due to the introduction of advanced e-services.

Furthermore, if the above-mentioned criteria are fulfilled, ultra-fast networks developed in the Framework Programme project, must satisfy the following criteria:

- in the technological sense of offered services, the developed ultra-fast NGA network must represent a step change in relation to features of the existing NGA networks in the target area of the project (see Chapter 2.2);
- business model of the ultra-fast NGA network built must be exclusively be based on the wholesale model, that is, the network must be based on the open architecture principle;
- building of the ultra-fast NGA network would not significantly disturb the existing market situation or jeopardize business plans of operators who already invested in the NGA networks in the same territory; in relation to the share of users that will migrate from the existing networks due to the construction of the new ultra-fast NGA network or changes in the segment of retail prices of NGA services; that is, in relation to all parameters that may be used to reduce the existing economic indicators of the return on investment of operators who invested into the existing NGA networks.

Concerning the size of target areas for the implementation of ultra-fast NGA networks, and on the basis of the previously mentioned criteria, it is more likely that same areas will cover limited parts of settlements in which certain groups of users who need ultra-fast NGA

connections are located (e.g. public institutions or business zones with a high concentration of business entities).

The approval for the implementation of development projects for ultra-fast networks under the Framework Programme in areas $S2_{nga}$ and C_{nga} is exclusively related to the justification of the previously mentioned criteria, and this approval is officially granted by the CAFP on the basis of preliminary checks and approval of the BIDP during preparatory stages of the project, that is, after completion of public consultation (see Chapters 2.5.1 and 4.1.3). Moreover, similar to the confirmation of problematic grey NGA areas ($S1_{nga}$), when determining the justification of state aid in $S2_{nga}$ and C_{nga} areas, CAFP may, where necessary, consult HAKOM and/or NCA.

2.2 Target level of supported broadband access (step change)

Chapter 2.1 covers rules on the definition of colours of areas, which are a starting point for the definition of areas of coverage of the project in which state aid is justified. Furthermore, colour of areas also contributes to the minimum level of features of broadband access that must be supported in the project. In that sense, the features of broadband access refer to the minimum supported access speed and minimum supported wholesale conditions and the applied business model so that the project may result in step change compared to the existing state of infrastructure and available services and to the planned investments of operators in the following three years (Article 51 of the Guidelines).

Table 2-3 provides an overview of set minimum levels of broadband access that must be fulfilled in projects by groups of areas in relation to certain combinations of colours and the basic NGA access (designations I-V). The mentioned minimum speed of broadband access in the Table refer to downstream or downlink speed. The Framework Programme does not lay down the minimum supported upstream or uplink speed, leaving it to the CAs to define that speed where necessary due to the needs of end users and services (e.g. business or public users).

In addition to the framework description in the table below wholesale access conditions are explained in more detail In Chapter 2.6.

Group of Areas I

In NGA white areas that belong to group $B1_{osn}$ (as a rule settlements with less than 50 inhabitants) the implementation of the basic broadband access at speed of 10 Mbit/s is exceptionally permitted. This allows for a more cost-efficient approach to the building of networks in areas where the building of NGA access networks with limited potential of end users would result in disproportionally high investment costs and, where, for the most part, there is no basic copper pair infrastructure. In this group of areas, due to a lack of interest of other operators for network access, wholesale access must be supported primarily at the level of active network layer (see Chapter 2.6.1).

Table 2-3 – Minimum characteristics of broadband access in projects, in relation to colours of areas

Group of areas	Designation of area (NGA access)	Designation of area (basic access)	Minimum broadband speed[1]	Other conditions (infrastructural, wholesale, business model)
I	**B_{nga}**	**$B1_{osn}$**	10 Mbit/s	-
II	**B_{nga}**	**$B2_{osn}$, $S1_{osn}$**	30 Mbit/s	-
III	**B_{nga}**	**$S2_{osn}$, C_{osn}**	30 Mbit/s	access to passive infrastructure[2], wholesale business model (only for investments in models B and C)[4, 5]
IV	**$S1_{nga}$**	*Not relevant*	30 Mbit/s	FTTH network, access to passive infrastructure[2], wholesale business model[5]
V[3]	**$S2_{nga}$, C_{nga}**	*Not relevant*	100 Mbit/s	FTTH network, access to passive infrastructure[2], wholesale business model[5]

[1] Refers to minimum downstream or downlink speed.

[2] Access to passive infrastructure covers access to unbundled local (sub)loops and access to cable ducts, poles, dark fibre and collocation facilities, including street cabinets.

[3] Implementation of state aid projects in this group of areas ($S2_{nga}$ and C_{nga}) is allowed only exceptionally if criteria in Chapter 2.1.3 have been fulfilled; in all other cases the use of state aid in this areas is not justified.

[4] See following Chapter 2.3 for a detailed explanation of investment models.

[5] Exception from wholesale business model is possible only for public users.

Group of Areas II

This group includes NGA white areas that belong to basic groups $B2_{osn}$ (white settlements with more than 50 inhabitants) and $S1_{osn}$ (settlements in which, in addition to ADSL services of HT, there are no other ADSL services offered by alternative operators by means of unbundled access to local loops). In projects in group II NGA access must be implemented (minimum speed of 30 Mbit/s), since this ensures a significant progress compared to the existing situation in relation to the quality of available services while on the other hand, it is obvious that in order to ensure NGA access, significant investments will be made into broadband network since the NGA level of services may not be ensured over the existing ADSL infrastructure.

Furthermore, in case of group II, like in group I, there are no special conditions in terms of wholesale access or a business model. Since in the group II other operators do not use access to unbundled local loops (in $S1_{osn}$ areas), it is clear that there will be no interest for such access in NGA networks, that is, it is possible to achieve a significant progress in state aid projects only with operator's investments into NGA networks and by ensuring wholesale access points only on the active network layer (see also chapter 2.6.1. for a more detailed overview).

Nevertheless, in case of implementation of FTTH solutions in the group II, it is necessary to take into account the justification of the provisions on open access to FTTH networks related to the obligations of access to the passive network infrastructure in [18].

Group of Areas III

In white NGA areas, which are at the same time $S2_{osn}$ or C_{osn} in relation to the basic access (other operators realize access to unbundled local loops or there are at least two basic networks), under projects within the framework Programme it is necessary to ensure broadband access of minimum speed of 30 Mbit/s while maintaining or improving the achieved level of competitiveness of operators on the market, which means ensuring physical access to the newly built NGA infrastructure. Physical access to NGA infrastructure comprises, depending on the implemented technologies, access to unbundled local (sub)loops, access to cable ducts and poles, and access to dark fibre.

Group of Areas IV

In $S1_{nga}$ areas there is or there will be in the following three years a single NGA network which may not ensure satisfactory conditions for the provision of NGA services (due to high retail prices, poorer quality of provided services of lack of competitiveness of the operator, due to no-existence of adequate wholesale points of access to such NGA network). Because of that, and on the basis of a detailed analysis in the procedure of definition and verification of colours of areas, it is justified to implement an additional NGA network in this group. In order for such a project to ensure a step change compared to the existing situation, the new NGA network must be based on FTTH technologies (fibre to home) with a business model of an open network in which the FTTH operator would provide only wholesale access services for other operators who would be providers of retail services to end users. Only this kind of business model may prevent a case in which an operator, who is a direct beneficiary of aid, could achieve a dominant position on the market (through vertical integration of wholesale and retail services), which would not represent a difference compare to the existing situation. Furthermore, technologies based on FTTH network architecture support a large number of wholesale access points, including in the segment of physical access to infrastructure, by which the requested business model can be additionally supported.

Group of Areas V

The implementation of projects in areas of group V (NGA non-problematic grey – $S2_{nga}$ and NGA black areas – C_{nga}), is exclusively related to the need for implementation of ultra-fast access (over 100 Mbit/s), where, in order for the project to be justified, it is necessary to apply all the preconditions previously described in Chapter 2.1.3, which also includes the implementation of FTTH open networks, where operator, that is the direct beneficiary of aid, operates the network in accordance with a wholesale business model.

2.3 Selection of investment models

This Chapter provides a description of three basic groups of investment models whose implementation is envisaged under projects of the Framework Programme. It must be stressed that the above-mentioned descriptions in the first place serve to give information and advice and CAs can freely choose an investment model for an individual project where

only some aspects of application of certain investment models represent structural rules of a Framework Programme, which will be pointed out in the text below.

2.3.1 Model A – private DBO model

In the investment model A, a private operator is responsible for design, building and operation of the network (*design*, *build*, *operate* – DBO) and he is the permanent owner of the developed network. The expression *network design* refers to a procedure of developing detailed technical specifications for building the network in accordance with all the relevant regulations, on the basis of general specifications prepared by CAs, and which include at least the requested level of broadband access which must be ensured and geographical coverage of the area, that is, output of the colour definition procedure.

Investment model A should be chosen in cases in which CAs do not have the possibility and/or sufficient knowledge and capacity for the implementation of the necessary activities of design, building and maintenance of the network, and, from the point of view of investment costs and necessary amount of aid, it is more rational to rely on knowledge and experience and the existing network infrastructure of private operators. It is also necessary that the advantage provided by this investment model to a single private operator does not distort competition between operators on the electronic communications market, which must be ensured through relevant wholesale network access points (see Chapter 2.6.1).

Investment model A will be applicable in groups of areas I and II, which will mostly cover rural areas with smaller local administration units.

2.3.2 Model B – public DBO model

Model B refers to an investment model where, as opposed to model A, public bodies are responsible for the design, building and operation of the network (public DBO model) and the developed network will permanently remain in public ownership.

Model B is particularly appropriate for building new FTTH networks, including the building of cable ducts infrastructure and/or poles for optical cables (in which case the latter may be used as the existing infrastructure if available to CAs and if they have sufficient free capacity).

Although public authorities are, as CAs, responsible for all basic units of implementation of the project in accordance with model B, in some activities specialized private companies may be engaged (due to insufficient administrative capacity and/or expert knowledge in public bodies, which is possible in the activities of network design and building). Furthermore, private companies may be engaged for network maintenance and operation in model B, but it must be ensured that private companies are not entitled to collect fees from end users (since such access would have characteristics of PPP or a concession). If it is necessary to employ private companies for activities in model B, CAs must comply with the relevant public procurement regulations (see also Chapter 2.7).

Concerning the need to ensure the competitiveness of all market operators within this investment model, an operator who operates the public network in model B must operate

exclusively on the basis of a wholesale business model and offer network access services to all interested operators under equal conditions. This is a structural rule of the Framework Programme for the implementation of model B. Therefore, network operator may not provide services to end users at the retail market. A public network operator may, as an exception, provide services to end users, if they are among public users, that is, if they are bodies and institutions of LSUs, RSU or branches of bodies or institutions under the competence of the state since in those cases service provision represents public interest and may be, among other things, one of the reasons for the implementation of the project.

Public authorities, including public companies owned by LSU, JRS or the state, if they bear operational responsibility for the design, building, operation and/or maintenance of the network in model B, all of the above-mentioned activities around broadband networks must have separate accounting from all other activities under the responsibility of public bodies. Business activities concerning broadband networks cannot spread out to other commercially viable areas outside the spatial scope of the project. Furthermore, all business activities concerning the building, management and/or maintenance of the network in model B may not incur profit to public bodies or public companies, that is, all revenues may not exceed the cost of network operation and maintenance. The reason is to achieve financial transparency in terms of cost of state aid in cases when direct beneficiaries of aid are public authorities or state-owned companies.

The above-mentioned obligations of accounting separation and scope of revenue, in cases when network is operated by public companies, also represent structural rules of the Framework Programme for investment model B.

In the first place in relation to requirements imposed on CAs, and then considering the fact that in larger settlements, that is, in suburban and urban models, there are usually more operators present as providers of services to end users, investment model B is particularly appropriate to be used in mid-sized and larger cities, which will in practice correspond to groups of areas III, IV and V.

2.3.3 Investment model C – public-private partnership

Public private partnership (PPP), as an investment model, in general combines individual advantages of investment models A and B. In the context of projects for the building of broadband access infrastructure, a private partner in model PPP usually takes the responsibility for design, building, operation and management of the network, and in practice also partially finances network building (the remaining part of network financing is ensured by a public partner, fully or partially, by state aid). The built network, after the expiry of the PPP contract, and, at the latest after up to 40 years, is returned and is owned by the public. This keeping of the network in public ownership represents an advantage compared to investment model A, and the basic advantages in relation to model B include smaller investment costs (due to participation of a private partner) and the need for smaller operational capacity of CAs included in network design, operation and maintenance, since those parts are usually entrusted to the private partner

The previously mentioned advantages of the PPP model are general and they need to be verified for each individual case in further economic analyses, that is, for each envisaged project in a target area. In the first place it is necessary to check whether, in the long run, costs related to the implementation of the project on the basis of PPP model are lower than costs of project implementation on the basis of model B. Such analysis includes a public service comparator (PSC), as a name for a detailed analysis for verification of application of model PPP compared to the usual public model for building and maintenance

The PPP model, in the same way as the B model, can be applied in groups of areas III, IV and V for the building of new FTTH network infrastructure.

Like in model B, obligations concerning network openness and exclusion from retail market, also apply to model C for the operator – private partner in the PPP project who manages the network since this is the basic precondition for ensuring market competitiveness, that is, the objective is to avoid the case of vertical integration in which a private partner in the PPP would, at the same time, be the provider of services at the retail market. The mentioned obligations represent a structural rule of the Framework Programme for the application of model C.

When applying model C, CAs must comply with all the relevant rules concerning PPP in Croatia, including the PPP Act [9] and the Regulation on the implementation of public-private partnership projects [24]. Those regulations, among other things, include the description of all procedures related to the development of proposals for PPP projects (including the PSC budget), the approval of the PPP project by the Agency for Public Private Partnership (APPP), selection of private partners, conclusion of PPP contracts and further reports on the implementation of PPP projects. This Framework Programme does not lay down any detailed provisions on the type of PPP for building of broadband infrastructure but CAs may adjust PPP models in accordance with needs of the project and local circumstances.

2.3.4 Other investment models

The Framework Model does not preclude the application of other investment models in projects in addition to above-mentioned A, B and C models. In that sense, all projects in which other investment models are planned, will also be analysed through preparatory stages and final approval of the BIDP by the CAFP and all relevant structural rules will be defined depending on the planned investment model (in the first place the obligation to apply the wholesale business model, the application of public procurement to the selection of operators of a private partner in a construction project, network operation and/or management, obligation to apply the clawback procedure and the application of the relevant legislation on PPP domain and/or concessions).

2.4 Optimum spatial coverage of the project

In addition to definition of colours of areas and selection of the investment model, it is also necessary to define the optimum spatial coverage of the project. Spatial coverage of the

project should in practice be linked to the administrative classification to local self-government units (LSU) as competent authorities (CAs). Since Croatia has an exceptionally high number of LSUs (556), the majority of which, especially in NGA white areas, cannot be sustainable in the economic and project sense (because of the number of potential users, and the size of telecommunications network in the LSU territory), projects should comprise several neighbouring smaller LSUs.

Bearing in mind the need to establish sustainable projects that will serve to ensure preconditions for successful implementation of the framework programme and the achievement of the set objectives, the criteria for the definition of the optimal spatial coverage of the project are described below (these criteria also serve as recommendations for CAs and do not represent structural rules of the Framework Programme):

- *Administrative integrity* – the project has to cover the entire territory of an individual LSU since in this manner the spatial coverage coincides with organizational aspects of the projects, that is, with the need to have LSUs as competent authorities for broadband development projects, since it is expected that they will be familiar with the situation and needs in the territory covered by an individual LSU. Furthermore, in the context of co-financing from the EU funds, it is necessary to elaborate in detail on the objectives of the project during preparation and application of the project, which is also linked to local strategic planes and usually supported by an analysis of the relevant statistical data at the level of LSUs. In larger LSUs (medium and big cities with more than 20 000 inhabitants), the criterion of administrative integrity may be more flexibly applied and, due to the different state of broadband infrastructure (e.g. parts of LSU areas have been designated as B_{nga}, and other parts as $S1_{nga}$) and the need for the implementation of projects under different investment models, the target spatial coverage may be divided into several subprojects.
- *Number of potential users in the project* – it is recommended that individual project comprise 10.000 potential users, which in practice corresponds to 25.000 inhabitants in a target area of the project. This approach will allow for the optimization of the project in relation to:
    - necessary amount of state aid – in smaller projects necessary unit amount of aid per potential user would be disproportionally high, lacking the effects of the economies of scale;
    - achievement of a satisfactory interest of operators for the participation in project and thus of the competitiveness of the operator selection process (applies to investment models A and C) – in smaller projects due to a potentially small number of users, operators may show less interest for participation and thus decrease the competitiveness of the operator selection process;

- maximum implementation time for the project, that is, for the completion of building of broadband infrastructure and the beginning of the provision of services, since it would be desirable to complete the construction within 2 years.

It must be stressed that, in case of a significant increase of spatial coverage and potential number of users above the threshold, large market operators, usually referred to as SMP operators, would have additional advantage in the project (due to the effects of the economies of scale and scope). This would result in the discrimination of smaller operators in the competitive operator selection process in the investment models A and C, and in the long run, it might significantly distort overall market competition.

- *Geographical integrity* – in addition to the previously mentioned criteria of administrative integrity and the number of potential users, in the definition of the spatial coverage of the project it must be taken into account that the project has to cover a connected and rounded geographical area (e.g. several neighbouring LSUs in the same county, several neighbouring LSUs gravitating towards the same regional centre, more LSUs on the same island).

Rules for the determination of all potential users in the project are described below (Chapter 2.4.1) as well as for the determination of a location demarcation point according to the aggregate network (Chapter 2.4.2.). Both rules are structural rules of the Framework Programme that must be complied with by all CAs in the definition of the spatial coverage of projects.

2.4.1 Definition of all potential users in the project

The definition of the spatial coverage of the project should include the obligation of network coverage on all locations of potential users, both private and business and public. Any other approach, that would, for example, include the obligation to achieve a certain percentage of coverage of users (e.g. 90%), would in the end result in a situation where a part of users (usually those with highest unit costs for network building) would not be covered, which means that objectives of this Framework Programme or general strategic objectives at the national level and at the EU level would not be fulfilled. Consequently, the criterion of percentage coverage may not be used as one of the criteria in the public tender for the selection of a private partner (in models A and C); and through model B, CAs must ensure complete coverage of all potential users. CAs must also define all potential users (private households, business entities, public users) and their geographical locations during the preparation of the project. A precise definition of all potential users is another important starting point for the calculation of project implementation costs and for ensuring transparent conditions for the selection of private operators in investment models A and C.

2.4.2 Definition of a demarcation point towards the aggregation network

In compliance with availability of capacity and location of aggregation network nodes, and in connection with the dynamics of implementation of state aid programmes for the building of aggregation networks (see Chapter 1.4.1), in the process of definition of the scope of the project it is necessary to also determine the location of the demarcation points between the access and aggregation network, that is, the first node of the aggregation network to which traffic from the access network may be aggregated. This is necessary to precisely define the geographical coverage of access points for the building of the access network, which in models A and C means that it is necessary to ensure transparency of the public procurement procedure for the selection of a private operator in a project (see Chapter 2.7). Depending on the topology of the aggregation network and the target geographical coverage of the project, it is possible to define more than one demarcation point for each individual project. In order to ensure transparency of the demarcation point definition procedure, the location of this point must be verified through public consultation procedure (see Chapter 2.5). In the definition of demarcation points, CAs may, where necessary, consult the CAFP.

2.5 Public consultation

The objective of the public consultation procedure is to collect opinions from all interested parties (in the first place from operators and end users of services), concerning the project of subsidised broadband infrastructure building. Furthermore, the public consultation process is also used to verify the initially defined colours of areas on the basis of objections from operators concerning the situation with their existing network infrastructure and future investment plans. Public consultation is carried out by CAs before the implementation of each project, and it is obligatory for all projects in the Framework Programme pursuant to the provisions of the Guidelines laying down the mitigation of possible negative effects of project implementation on the market (Articles 64 and 78b)).

Public consultation must be initiated when the project description (contained in the official document of the draft Broadband Infrastructure Development Plan, see chapter 4.1.2) is prepared by the CA. Public consultation, that is, a period during which objections from all interested parties are accepted, may not be shorter than 30 days. Objections received during the public consultations must be taken into account in the development of the final version of Broadband Infrastructure Development Plan, that is, in the adoption of the decision on the start of the project (in particular in relation to the situation of the existing infrastructure and operators investment plans, that is, verification of the colours of areas). In order to avoid the situation where too much time would pass between the public consultation and the beginning of project implementation, when the outcome of public consultation had lost its purpose (in particular in the segment of investment plans of operators), CAs must adopt their decision on the implementation of the project at the latest within 90 days from the moment of beginning of public consultation (only in case of model C (PPP), the deadline may be 120 days at the most from the moment of the opening of public

consultation, because it is necessary to obtain an additional approval by the Agency for Public and Private Partnership). The decision on the beginning of implementation of the project must coincide with the beginning of the public procurement procedure for the selection of a private partner, that is, works and services on the project (depending on the applied investment model)[11]. On the contrary, the public consultation procedure must be repeated, in particular in the sense of supplementing the information about investment plans of operators, that is, the verification of colours of areas.

The decision on the opening of public consultation for an individual project must be published on CA's website and at the national level on CAFP's website[12], so that information on public consultation and project can be available to a wide circle of interested participants (in the first place to all operators as potential partners in projects).

CAs must include in their public consultation all relevant aspects of the planned project, including specific project objectives in terms of geographical coverage, the supported level of services, the selected investment model and available sources of finance, and a special emphasis should be placed on the following aspects of the project:

- defined colours in the target area of the project in relation to the basic and NGA access, where operators must notify CAs about investment plans for the following three years so that the colours may, where necessary, be modified and finally verified;
- envisaged structure and level of prices of retail packages of services that must be offered to end users;
- envisaged wholesale conditions for access to network infrastructure built in the project;
- envisaged criteria for public procurement for the selection of private operator in investment models A and C;
- possibility to use the existing infrastructure in the project where operators need to notify CAs of the availability and conditions of access to infrastructure.

The above-mentioned aspects of the project in the context of public consultation procedure are described in more detail in the following text.

2.5.1 Verification of the colours and the target area for the implementation of the project

It is expected that CAs will, during the preparation of project, define the colours in the target coverage area of the project, taking into account the basic and NGA broadband

[11] In other words, the decision on the beginning of implementation of the project is not linked to any formal decision of bodies of CAs connected to the project itself (e.g. acceptance of the final version of the Broadband Infrastructure Development Plan), but only for the beginning of the public procurement procedure.

[12] Web-sites ensure the highest level of transparency of information about the project and about public consultation. Where required by official regulations, relevant decisions on the opening of public consultation will have to be published in (printed) official journals at the local or county level.

access. The procedure for the definition of colours must be based on an initial list of colours of areas attached to the Framework Programme and on the data available in HAKOM's OBC.

In the public consultation procedure, defined colours of areas, that is, target areas of project coverage, must be verified by means of answers and objections of operators. On the basis of that, after the completion of public consultation, a final list of colours of areas is created, that is, areas are defined in which it is justified to carry out the project of construction of broadband infrastructure with state aid. In relation to the initially defined colours of areas, the final list of colours must be corrected in the following cases:

- if an operator during public consultation points to the availability of its own broadband services (and this availability has not been, for any reason, listed in the initial list in the Framework Programme or in HAKOM's OBC), this will result in the change of colour of a certain areas compared to the initially defined colours; where that operator has to provide services to end users under satisfactory conditions (see chapter 2.1.2.1 for a satisfactory level of services of basic access and chapter 2.1.2.2 for services of NGA access);
- if an individual operator announces during public consultation that it will invest in a certain area within the planned spatial coverage of the project in the following three years because of which, due to the features of the planned networks, this area will be defined by a different colour (e.g. planned building of an NGA network that will provide a satisfactory level of services in the initially defined B_{nga} area, will lead to the change of colour of that area in $S2_{nga}$).

In order to objectively verify whether operators that announced investments in a certain area will be able to provide services with a satisfactory quality, those operators must specify in their announcement of the investment plans at least the following:

- planned geographical coverage of the network they are planning to build (if possible at the level of addresses of potential users in a target area, including private, business and public users);
- planned infrastructural and technological solution for a network that will be used to provide services to end users;
- structure and price of planned retail packages that will be offered to end users, if the operator will also offer retail services – this part of the specification must refer to the available retail packages on the market, if operators cannot or are not ready to present data on retail packages during public consultation;
- planned scope and conditions of wholesale network access for other operators.

If the CA is unable to assess whether the announced investments of operators justify the change of colour of a certain area (due to uncertainty whether the planned network infrastructure will ensure a competitive offer of quality and affordable retail services and/or announced wholesale access conditions would limit the competition in the market; or the credibility of the announced investments must be verified), CA must consult the CAFP and

adopt a final decision on the definition and verification of the colour of the area in which it announced its investments. In that case, CA must request from the operator, who announced the investments, to provide detailed information on those investments, which may also include the business plan, the dynamics of coverage of the target area, data on sources of finance and the similar (Article 65 of the Guidelines). If the CA, in cooperation with the CAFP, assesses that the announced operators' investment plan is sustainable or achievable, the CA must transform the announced investment plan into a binding document for the operator (according to operator's possibilities and needs, this binding document may correspond to one-sided statements of operators who announced the investments and may be formalized by means of an agreement between the CA and the operator)[13]. The undertaken obligations must specify the dynamics of network development by means of milestones, and the possibility of the CA to control the dynamics of the implementation of investments in intervals that will not exceed 6 months. If the CA, in cooperation with the CAFP, assessed that the operator does not comply with the obligations, CA may start the implementation of the state aid project even in the part of areas where the operator did not fulfil its planned investments (which means that the colour of the area will be returned into the original colour before the start of public consultation and verification of the colour of the area).

The above-mentioned plan and the relevant data, if requested by the operator, must be subject to confidentiality rules, and, in that case, the CA is not allowed to publish them. The data from the specification will be used only in the part necessary to define and verify colours of the target areas.

Operators must specify all investments they are planning to implement in the following three years, starting from the moment of beginning of public consultation.

In addition to that, during verification of the target coverage of implementation of the project during public consultation, it is necessary to verify and define the location or several locations of demarcation points towards the aggregation network.

2.5.2 Structure and level of retail packages

The purpose of this aspect of public consultation is to inform all operators, as potential private partners in the investment model A, of the expected structure and level of retail packages that will have to be supported on networks built within the framework of the project. In this manner, operators may learn about the expected level of services for end users before the implementation of the project itself, and during public consultation they may express their objections and comments. Therefore, CAs will be able to adjust the specification of the requested retail services before the beginning of the project so that it may reflect, in the first place, the needs of end users, and all justified objections of operators

[13] If CAs do not formally undertake obligations with operators that announced their investments, there is significant risk that operators will not undertake the announced investments or the investments will not be carried out within the following three years.

that may contribute to the increase of the competitiveness of the public procurement process (participation of more operators in the procedure)[14].

Depending on the target level of services (see Chapter 2.2), the requested structure of retail packages should be comparable to the structure of retail packages in non-problematic NGA grey and black areas, that is, to the structure of packages offered by means of network solution that has the greatest penetration on the market, and, in accordance with local situation, it must be adjusted to needs of private, business and public users. Consequently, a public consultation must be used to present to all the operators, as potential participants in public procurement, the requested structure of retail packages that they must adjust their offers to. This is particularly important for operators using wireless technologies since the structure of services provided by wireless technologies (at least on the basis of market situation at the moment of development of this Framework programme) is not comparable to the prevailing ADSL services in the fixed network, and it may be copied in the future to the segment of NGA services.

This aspect of public consultation is applicable to investment models B and C as well, where the application of the wholesale model is requests (open network model). Since the offer of retail services by all operators will depend on the wholesale network access conditions, the open network operator must adjust the structure of wholesale services to specified requirements of the retail services offer.

2.5.3 Wholesale access conditions

The purpose of this aspect of public consultation is to familiarize all operators, as potential partners in the project (in investment models A and C), and as potential users of wholesale network services (in all investment models); with wholesale conditions for access to network infrastructure built during the implementation of the project,. Wholesale access conditions comprise two groups:

- supported group of wholesale services, that is, network access points at the passive infrastructure layer and/or wholesale products at the active network layer;
- principles for the definition of wholesale prices.

A minimum set of wholesale products that must be supported, considering the target level of access and possible infrastructure and technological solutions, is described in Chapter 2.6.1. The purpose of public consultation on wholesale access conditions is the most useful in investment models B and C where it is necessary, on the basis of objections and comments of operators as potential users of open network access, to objectively define a supported set of wholesale products and principles for the definition of wholesale prices and

[14]The purpose of accepting justified objections of operators refers to cases (especially in poorly populated areas) in which the requested structure of retail packages, according to the objections of the majority of all operators is not feasible in practice or would result in disproportionally high investment costs or state aid costs. If objections and changes in the structure of the requested retail packages were not accepted, this would result in lower interest or complete lack of interest of operators in the public procurement procedure, leading to the distortion of competition of the operator selection process, and it would jeopardize the implementation of the project.

conditions of access to such networks. CAs may not reduce the set of obligatory supported wholesale products outside of the minimum set of wholesale products from Chapter 2.6.1.

2.5.4 Public procurement

The purpose of the public procurement aspect is to inform all operators, as potential private partners in investment models A and C, of the envisaged criteria for the selection of the most favourable offer in the public procurement procedure. Since in both models it is requested that public procurement is carried out on the basis of the criterion of the selection of the economically most favourable offer, all operators must be informed during public consultation with the envisaged selection criteria and their relative importance. On the basis of reasonable objections and comments of operators, if these objections may increase the competitiveness of public tender procedure, CAs may modify the proposed criteria and modify their relevant importance without changing the rules of public procurement laid down in Chapter 2.7. of the Framework Programme. Furthermore, in investment model C, it is necessary to comply with all the requirements concerning implementation of the public procurement procedure, which have been set in the relevant legislative framework of the PPP.

2.5.5 Using the existing infrastructure

Unnecessary costs of building the same kind of infrastructure may be avoided by using free capacity of the existing infrastructure. The existing infrastructure may include cable ducts, antennae poles and other facilities that may be used for the installation of network equipment.

In accordance with the Guidelines (Article 78f)), all operators participating in the public consultation will be required to provide data on the available existing infrastructure that may be used for building the network, including conditions and prices for access. This is particularly important in the transitional period in which the electronic version of the cadastre of lines in the National Infrastructure of Spatial Data (NISD) will not be available [19]. In that context, the availability of the existing infrastructure refer to cases in which this infrastructure, in the target area of the coverage of the project, has sufficient capacity for the needs of the project, which may be used under economically more favourable conditions compared to the building of new infrastructure.

The following situations may occur in practice in Croatia that will enable the use of the existing infrastructure owned or managed by an operator in terms of groups of areas and investment models:

- Space in antenna poles in rural areas of groups I and II – investment model A;
- Space in cable dusts in other areas of groups III, IV and V – investment models A, B and C.

The existing infrastructure of cable dusts in Croatia is currently mostly managed by HT, and conditions of access to HT's cable ducts are regulated in the reference offer, within the framework of regulatory measures prescribed by HAKOM [25], which includes the possibility

for all interested operators to access data on available free capacity in HT's cable ducts through a standardized network interface (under *Previous data on paths, capacity and availability of free space in cable dusts).* Since all interested operators may access same HT's data and, where necessary, include those data in the development of their offers in the public procurement procedure, no operators will be put into an unfavourable position[15].

As opposed to access to cable ducts, access to antennae poles is regulated by HAKOM's Ordinance on the manner and conditions of access and shared use of electronic communications infrastructure and other associated facilities [26], where the procedure for access to the existing antennae poles consists in establishing a contractual relationship for a certain case between a beneficiary operator and an infrastructure operator. If an agreement cannot be reached in this respect, HAKOM is authorised to carry out the procedure and adopt a decision replacing the contract in question. Since this procedure for access to antennae poles infrastructure may not comply with the provisions of Article 78f) of the Guidelines, in particular in groups I and II where wireless network solutions will be implemented, information on the existing antennae poles infrastructure and conditions of access must be requested in advance from all relevant operators during the public consultation. Data on the existing infrastructure of antennae poles that CAs received from operators during public consultation must be regarded as confidential data that may not be published and that may be distributed only to other operators who express interest for participation in the public procurement procedure.

If operators who have antennae poles, for any reason, do not deliver the requested information after the completion of the public consultation or it is suspected that the data do not reflect the actual availability of infrastructure, CAs, together with CAFP and HAKOM, must again request the same data from the target operator. In that case, HAKOM should, in accordance with its powers[16], request the same data from target operators, including the data on access conditions. Data received from operators in that procedure will be distributed by HAKOM to CAs and they may be delivered to the interested operators during the public procurement procedure, taking into account the rules on data availability.

In addition to the existing infrastructure, which is owned by or managed by private operators, CA should provide, during public consultation, data on the existing public infrastructure that might also be used for the development of networks as part of the project. Those data must include conditions and prices for of and access to infrastructure[17]. Public infrastructure will in practice most frequently include cable ducts and indoor facilities where network nodes may be situated.

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[15] If data about existing free capacity in cable ducts was unavailable, other operators would have to plan the building of new cable ducts, in which case the amount of requested aid in their offers would be higher than that of HT and they would be placed in an unfavourable position in the public procurement procedure in investment models A and C.

[16] HAKOM's responsibility in this case, at the moment of development of the Framework Programme, may be formalized through Art.12, par.1 of the ECA. See Decision of the Council of HAKOM Class UP/I-344-03/13-06/01 (No. 376-10-13-01) from 17/06/2013.

[17] The common practice is that CAs, if they own or manage public infrastructure, waive all fees for the access to the public infrastructure (that is, the same fees may be included as part of financing "in-kind" from public bodies), since this additionally supports economic viability of the project, that is, the necessary amounts of state aid are reduced.

On the basis of collected data on the existing infrastructure and conditions of access to this infrastructure, in investment models A and C, it is necessary to leave it to operators, as private partners in the project, to adopt a final decision whether, and in what part, to include the above-mentioned infrastructure into network development plans, that is, into their offers during public procurement procedure[18]. On the other hand, in investment model B, CAs must assess by themselves whether existing operator's infrastructure, and in what part, may fulfil the needs for the building of a public network in the technical and economic sense, or whether it is more cost-effective to build a new infrastructure, which must be elaborated in detail in the final version of the Broadband Infrastructure Development Plan, upon completion of public consultation.

2.6 Wholesale obligations

Since broadband infrastructure development projects in the Framework Programme will be mostly financed from public funds (including EU structural funds), it is necessary to ensure the highest possible level of openness of networks built during the projects, in order to ensure competitiveness of all operators in the market, and, in the end, benefits for end users of services at the retail market. This is particularly important in a case when the operator – who is a direct beneficiary of aid – in addition to building and managing the network, also provides retail services (in investment model A), since in that case negative effects of vertical integration of operators could appear.

The objective of the laying down of wholesale network access conditions, in addition to control of wholesale prices, is to ensure equal competition conditions for all operators in the areas where projects under the Framework Programme are implemented, which is also the case in other areas in which operators provide services under normal market conditions, with possible ex ante regulation carried out by HAKOM.

Pursuant to the provisions of the Guidelines on wholesale access (in particular Articles 78g), 78h) and 80a)), this chapter provides a description of the structural rules of the Framework Programme concerning wholesale conditions of network access and rules for the definition and control of wholesale prices, that will have to be complied with by all projects in the Framework Programme.

The prescribed conditions for wholesale access refer to all new infrastructure built during the implementation of the project, to the existing infrastructure used in the project and to all other network parts related to the newly built or existing infrastructure in the

[18] A decision by the operator to use the existing infrastructure will be based on the need to decrease total costs of investment, that is, to reduce the requested amount of state aid that will, as a public procurement criterion, have the greatest weight in the selection of the most economically advantageous tender. In this manner, the operators will, in order to deliver competitive tenders, strive to achieve the optimum use of the existing infrastructure. .

project, which are functionally necessary for the provision of demanding wholesale services[19].

The requested set of wholesale products and principles for the determination and control of wholesale prices will have to be specified by CAs during project preparation in the Broadband Infrastructure Development Plan (see Chapters 4.1.2 and 4.1.3).

2.6.1 Minimum set of supported wholesale services

The Framework Programme prescribes a minimum set of wholesale services that must be supported by projects under the Framework Programme. The minimum set of wholesale services depends on the inclusion in the group of areas (I-V) and on the applied infrastructural and technological solution. In addition to the supported wholesale access services, all other wholesale services are listed that operators who are using the aid may also support, that is, the support for which may be additionally requested in projects, in accordance with local circumstances[20] (Table 2-4).

A list of mandatory and optional wholesale services has been prepared in accordance with the possible technical solutions that will be applied for groups of areas, taking into account the existing state of competitiveness of the market and interest of other operators for access to newly built networks. The need to achieve step change is also taken into account in terms of market competitiveness, which has also been partially described in Chapter 2.2 in order to ensure a target level of broadband access in projects.

The wholesale services listed in the table are based on the list of wholesale products from the Guidelines (Annex II), and on wholesale services that have been prescribed by HAKOM as part of measures for the regulation of the Croatian electronic communications market. If new wholesale services appear on the market during the implementation of the Framework Programme, as part of regulatory measures on the market of NGA services, whose features are significantly different compared to the services listed in the next table, they must be included in the group of mandatory wholesale services in groups in areas III, IV and V, where it is necessary to ensure the highest degree of network openness.

Wholesale services of unbundled access to optical (sub)loops and copper (sub)loops must also include equipped infrastructural space for the collocation of equipment of other operators that are users of these wholesale services (collocation space). Collocation space must be secured by the network operator.

All mandatory wholesale services must be provided by operators who are direct beneficiaries of aid for at least 7 years from the moment when the network has become operational (Art, 78g) and 80a) of the Guidelines). When the minimum time of 7 years has

[19] E.g. the existing parts of the aggregation and core network of operators in investment model A that are necessary for the provision of *bitstream* services at higher network levels.

[20] The request for the support of wholesale services that have been designated as optional in the Framework Programme may additionally increase the investment costs of operators and result in higher amount of aid. Support for optional wholesale services must be requested by CAs only where justified (e.g. because of the need for services that will be provided to certain categories of users or the envisaged interest of other operators for use of such wholesale services).

passed, the appropriate wholesale access measures may be retained or modified, if the network operator is designated as SMP operator, within the framework of regulatory analyses and measures implemented by HAKOM.

The obligation of wholesale access to passive network infrastructure built in projects (cable ducts, poles, dark fibre and space in street cabinets) must be of unlimited duration for network operators, that is, permanent (Art. 80a) of the Guidelines).

In the investment model A for the implementation of NGA networks, wholesale access services must be available at least 6 months before the network becomes operational, in accordance with the European Commission Recommendation on regulated access to NGA networks [27][21].

Table 2-4 – List of mandatory and optional wholesale services in projects

Technology	Mandatory wholesale access services	Other (optional) wholesale access services
GROUP OF AREAS I		
ADSL	*Bitstream* (Ethernet level) *Bitstream* (regional level) *Bitstream* (national level)	Unbundled access to local loops
VDSL/FTTC	*Bitstream* (Ethernet level) *Bitstream* (regional level) *Bitstream* (national level)	Access to cable ducts/pole network Access to dark fibre Unbundled access to local subloops VULA
UMTS/3G **LTE** **WiMAX**	*Bitstream* (MVNO) See note 3) at the end of table	Access to antennae masts Access to cable ducts/pole network Access to dark fibre See note 11) at the end of table.
Satellite access	*Bitstream* (*resale*) See note 4) at the end of table.	
GROUP OF AREAS II		
VDSL/FTTC	*Bitstream* (Ethernet level) *Bitstream* (regional level) *Bitstream* (national level)	Access to cable ducts/pole network Access to dark fibre Unbundled access to local subloops VULA
LTE **WiMAX**	*Bitstream* (MVNO)	Access to antennae masts Access to cable ducts/pole network Access to dark fibre See note 11) at the end of table.

[21] With a view that the network operator, that is at the same time the provider of services on the retail market, does not acquire advantage on the retail market compared to other operators users of wholesale services over the newly built NGA network.

Technology	Mandatory wholesale access services	Other (optional) wholesale access services
FTTH P2MP	*Bitstream* (Ethernet level) *Bitstream* (regional level) *Bitstream* (national level) See note 9) at the end of table.	Access to cable ducts/pole network Access to dark fibre Unbundled access to local subloops VULA Unbundled access to local subloops (at the level of distribution node, *splitter access*)
FTTH P2P	*Bitstream* (Ethernet level) *Bitstream* (regional level) *Bitstream* (national level) See note 9) at the end of table.	Access to cable ducts/pole network Access to dark fibre Unbundled access to local loops Unbundled access to local subloops (at the level of distribution node)
GROUP OF AREAS III		
VDSL/FTTC	Access to cable ducts/pole network Access to dark fibre Unbundled access to local subloops VULA *Bitstream* (Ethernet level) All other services prescribed by HAKOM for VDSL/FTTC technology	*Bitstream* (regional level) *Bitstream* (national level)
Cable access	Access to cable ducts Access to dark fibre *Bitstream* (*resale*) All other services that may be prescribed by HAKOM for cable access	
FTTH P2P	Access to cable ducts/pole network Access to dark fibre Unbundled access to local loops *Bitstream* (Ethernet level) All other services prescribed by HAKOM for FTTH P2P technology See note 10) at the end of table.	Unbundled access to local subloops (at the level of distribution node) *Bitstream* (regional level) *Bitstream* (national level)
GROUP OF AREAS IV		
FTTH P2P	Access to cable ducts Access to dark fibre Unbundled access to local subloops (at the level of distribution node) Unbundled access to local loops *Bitstream* (Ethernet level) All other services prescribed by HAKOM for FTTH P2P technology See note 10) at the end of table.	*Bitstream* (regional level) *Bitstream* (national level)

Technology	Mandatory wholesale access services	Other (optional) wholesale access services
SKUPINA PODRUČJA V		
FTTH P2P	Access to cable ducts Access to dark fibre Unbundled access to local subloops (at the level of distribution node) Unbundled access to local loops All other services prescribed by HAKOM for FTTH P2P technology	

NOTES:
1) Only those technologies that may fulfil the required characteristics of broadband access in a certain group of areas have been mentioned for groups of areas.
2) The terminology used for bitstream services is terminology used by HAKOM and HT in the regulation of the relevant market no. 5.
3) Bitstream service in wireless networks refers to access to capacity of the access radio network built during project implementation, which coincides with access realized by MVNO operators (Mobile Virtual Network Operator).
4) Bitstream service in satellite access refers to the service of resale of services on the retail market. Considering the international character of providers of services of satellite access, the resale service usually corresponds to services provided by a local representative of an international provider of satellite access.
5) VULA services (Virtual Unbundled Local Access) at VDSL/FTTC and FTTH P2MP technologies technically corresponds to bitstream at DSLAM or OLT level.
6) Services of access to passive infrastructure (space in cable ducts and pole network, dark fibre, and antennae masts in wireless networks) refer to the newly built infrastructure during the project.
7) Services of unbundled access to local loops (and subloops at VDSL/FTTC technology) include a related service of leasing of appropriate space for collocation of network equipment of other operators.
8) Services of unbundled access to local subloops at FTTH P2MP and FTTH P2P technologies refer to access at the level of distribution node (in accordance with the definition in the Ordinance on optical distribution networks [18]). It is possible in practice that access at the level of distribution node will correspond to access by unbundled local loops, if physical location of the distribution node corresponds to the location of the MPoP node.
9) In the group of areas II, in case of projects in which only passive infrastructure of FTTH networks is built, the mentioned obligatory bitstream services must be substituted by the following services: access to cable ducts/pole network, access to dark fibre and unbundled access to local loops, as mandatory services that must be supported.
10) The support for bitstream services at Ethernet level in FTTH networks in groups of areas III and IV is obligatory only if an active layer of FTTH network is also built, that is, if active network equipment is built that may be used to support the mentioned services.
11) Services of access to cable ducts/surface network and dark fibre are applicable only to the building of optical fibres to antennae masts.

Groups of Areas I and II

Since these are NGA white areas (B_{nga}), which are at the same time white in relation to basic access ($B1_{osn}$ and $B2_{osn}$) or problematic grey areas ($S1_{osn}$), it is important to ensure in this areas the availability of broadband access (advanced basic access in group I and NGA access in group II). Since other operators currently do not use wholesale access at the level of passive infrastructure in these areas, it seems that there will not be interest for that even after the construction of networks within projects under the Framework Programme[22]. For that reason, on the basis of reasons of cost effectiveness and avoidance of unnecessary costs that may be related to the obligation to ensure wholesale access at the level of passive infrastructure[23], in groups I and II only support for bitstream access is required[24]. If CAs,

[22] Lack of interest is primarily caused by high unit costs of access at the level of passive infrastructure per users (cost of active network equipment in the collocation and cost of ensuring aggregation link towards network core) and a small user potential (since individual segments of access networks cover one or several small settlements).
[23] For example, costs of ensuring additional infrastructural space for collocation.

during preparatory stage of the project and after the completion of public consultation (e.g. on the basis of expressed interest of operators for individual wholesale access services), assess that it is necessary to request for support of additional wholesale services from the list of optional services, they may include those services in the relevant project specification. In case of doubt, CAs may consult the CAFP.

Wholesale services mentioned under UMTS/3G, LTE and WiMAX technologies refer to other basic technologies to be used in projects. *Bitstream* service refers in all cases of wireless networks to access to capacity of radio access network developed during the project, which coincides with wholesale access achieved by mobile virtual network operators (MVNO).

Due to technical limitations, wholesale service for satellite access are limited to bitstream service of simple resale.

Although, because of a significantly higher investment costs, the implementation of FTTH networks is not likely in the group of areas II, for the purpose of consistency and compliance with the principle of technological neutrality, the table also contains a minimum set of wholesale services for FTTH networks, whereby *bitstream* services, in case only passive part of the FTTH network is built, must be substituted by appropriate services of wholesale access to passive infrastructure, in accordance with detailed specifications in the table. Furthermore, valid subordinate legislation on optical distribution networks must also be taken in account [18].

Group of Areas III

In this group of NGA white areas, there are more operators providing basic broadband services either by accessing the network of other operators at the level of passive infrastructure ($S2_{osn}$), or by having several parallel network infrastructures for basic access (C_{osn}). Consequently, during the implementation of NGA networks, it is necessary to maintain the achieved level of competitiveness of operators on the market and ensure access to NGA networks at the level of passive infrastructure. This includes access to free space in cable ducts or in the surface network of poles, access to dark fibre and access to unbundled local subloops at VDSL/FTTC, that is access to local loops at FTTH networks[25].

The probability of implementation of cable technologies within the framework of the Framework Programme is very low. However, for the purpose of consistency and in order to comply with the principle of technological neutrality, the table also contains wholesale services that must be supported at cable access. Since at the moment of preparation of this Framework Programme cable networks do not support access at the level of passive

[24] *Bitstream* access is achieved at higher levels of network hierarchy, regardless of a technical solution (in aggregation or core nodes) and it can thus cover a significantly larger number of end users than in cases of access at the level of passive infrastructure in individual segments of access networks.

[25] Since these areas have been designated as $S2_{osn}$ (other operators realize local access to loops in the copper network), or C_{osn}, for the purpose of preserving the competitiveness of operators and achieving step change in the project, the same level of access must be required in VDSL/FTTC technological solution, which will enable the existing operators to simply migrate to NGA wholesale services of equivalent quality. This also refers to the case of FTTH technologies in the project.

infrastructure that would be analogous to access over unbundled optical loops or copper subloops, this is an important disadvantage of the cable access and must be taken into account by CAs in the preparation of the project and definition of the public procurement criterion (see Chapter 2.7.1).

Groups of Areas IV and V

In these groups of areas (problematic NGA grey areas - $S1_{nga}$, that is, non-problematic $S2_{nga}$ and C_{nga} areas where ultra fast access is implemented) there is, as a rule, a satisfactory level of competitiveness of operators (only in terms of basic and /or NGA access). In addition to the requested wholesale business model and implementation of FTTH network, competiveness of operators must be maintained by providing mandatory support for all available wholesale services on the FTTH network.

2.6.2 Rules for determination and supervision of wholesale prices

Pursuant to provisions of Article 78h) of the Guidelines, special attention in projects of supporting building of broadband infrastructure must be given to procedures for the determination and supervision of prices for wholesale access to networks built within the framework of projects. This section specifies rules for the determination and ex post control of wholesale prices during implementation of project. All CAs must comply with the mentioned rules, that is, the rules must be adequately incorporated into the legal contracts concluded with operators who will build, manage and maintain the network, regardless of the applied investment model. Compliance with the above-mentioned rules is a precondition for the project to be approved by the CAFP (See Chapters 4.1.2 and 4.1.3).

The procedure for the determination and supervision of wholesale prices also comprises the determination and supervision of conditions for use of all supported wholesale services. Such conditions as a rule include technical specifications of services and interfaces[26], detailed specifications on physical locations and paths of the existing network[27] and all other commercial conditions for the delivery of services[28].

Appropriate level of wholesale prices is important for economic sustainability of the project and for further balanced development of the national electronic communications market. In order for the individual projects to be economically sustainable with a necessary level of state aid, CAs must specify all the relevant rules for the determination and ex post control of wholesale prices in the preparatory stage (through the Broadband Infrastructure Development Plan) and present them to all potential partners during public consultation (see Chapter 2.5). This allows the operators to prepare their business plans in advance and

[26] Technical specifications of wholesale services comprise, for example, supported frequency profiles in DSL technologies, IP/Ethernet interconnection protocols in *bitstream* services, supported protocols in user devices etc.
[27] Detailed specifications of physical locations and paths include, for example, data on paths and capacities of cable ducts and optical cables, data with addresses for collocation spaces and /or street cabinets etc.
[28] Commercial conditions for the delivery of services include procedures for the submission of requests for services, deadlines for delivery of requested services, deadlines for payment of provided services etc.

submit competitive tenders in the public procurement procedure (applies to investment models A and C).

As a rule, wholesale prices and the corresponding conditions for the delivery of services in project should correspond to values and conditions for same or comparable services in areas in which operators operate under normal market conditions, which includes prices and conditions prescribed by HAKOM's regulatory measures. In this manner, equal business conditions are set for all operators in the entire territory of Croatia and a situation of different wholesale conditions in certain areas is avoided, which could, in the end, cause differences in the quality of offer of retail services to end users.

Since the procedure for the determination of an appropriate level of wholesale prices in projects can be very complex and require specific knowledge and experience that CAs in most cases do not have, it is necessary to include HAKOM in the process, as a regulatory authority which, in addition to operators, has the necessary knowledge and experience in the process. In order for the procedure for the determination of prices in project does not represent an excessive administrative burden on HAKOM, the Framework Programme defines the obligation for any operator managing the network built during the implementation of the project to propose prices and access conditions in accordance with the rules set in the Framework Programme and to deliver them, together with a detailed explanation of the process, to HAKOM, that will give its opinion on the proposed prices and conditions. Upon the receipt of HAKOM's opinion, the CA must, where necessary, align the previously proposed wholesale prices and conditions in accordance with HAKOM's objections and issue a final approval of wholesale prices. Approval issued by the CA is a precondition for the networks developed during the project implementation to become operational, that is, to be used for the provision of services.

In accordance with the provisions of Article 78h) of the Guidelines on the obligation to deliver rules for the determination of wholesale prices at least two months prior to the beginning of implementation of the project, it is envisaged that the relevant rules laid down in this document will be delivered to HAKOM at the latest two months before the beginning of the approval process of the Framework Programme in relation to state aid. This will give the opportunity for HAKOM to deliver its opinion on the rules for the determination of wholesale prices. Following this opinion, the wholesale rules will be aligned with HAKOM's opinion and entered in the final version of the Framework Programme that will be submitted for approval to the European Commission.

The procedure for the determination of wholesale prices and associated conditions in projects is described in detail below (Figure 2.2).

The operator that will manage the network and provide wholesale services must, regardless of the selected investment model, propose prices and conditions of access for all wholesale services that will be offered (in addition to supported services, all other services that will be supported must be included – see Chapter 2.6.1). The following methods must be applied to the determination of prices:

- benchmarking applied to identical or comparable services offered in other areas of the Republic of Croatia in which operators operate under normal market conditions, including services provided by SMP operators and those whose prices have been determined through application of HAKOM's regulatory measures;
- if equivalent or comparable services are not provided in Croatia, the benchmarking method must be applied to identical or comparable services in other EU Member States, taking into account all the differences and peculiarities of the Croatian market compared to markets of other EU Member States;
- if prices may not be determined through the application of the benchmarking method to identical or comparable services in Croatia and other EU Member States, prices must be determined on the basis of cost-orientation, which may include all related budgets and analyses in accordance with rules and parameters applied by HAKOM in the calculation of cost-oriented wholesale prices.

The proposed wholesale prices, together with a detailed explanation of the applied methods and procedures, must be delivered by operators to the CA, together with the corresponding conditions for the provision of services, who then forwards them to HAKOM. Within a maximum of 30 days, HAKOM will adopt an opinion on the proposed prices and conditions. If HAKOM believes that the applied method for the determination of prices or the prices themselves and/or the conditions for the provision of services are unsatisfactory and may significantly distort competition, CA must return the proposal to the operator for revision. In that case, HAKOM should suggest to the operator an alternative method, a necessary set of benchmarks or conditions for the provision of services that should be applied by the operator in the revision of the proposal of prices. After the revision, the operator resubmits the proposal to the CA who then forwards it to HAKOM. If HAKOM's opinion on the proposed prices and conditions is once again negative, the CA must consult the CAFP and, taking into account HAKOM's opinion, with the consent of CAFP, adopt a final decision on the amounts of prices and on the conditions for the provision of services. On the basis of that final decision of the CA, the prescribed prices and conditions become obligatory for a certain project and the operator in the project. The entire repeated approval process for the adoption of the obligatory CA's decision on the amount of prices and conditions must be completed within 45 days from the moment when NP receives a revised certain proposal from the operator. HAKOM must adopt a decision within 30 days from the date of receipt of the revised proposal from CA. In all other cases in which the CA receives a positive opinion from HAKOM on the proposed wholesale prices and conditions (after first submission or after revision), the CA is authorised to approve the wholesale prices and conditions. The CA may not approve the wholesale prices and conditions without previously having obtained HAKOM's opinion.

The approved wholesale prices and all associated conditions must be listed into a publicly accessible document which would be equivalent to reference offers adopted by operators in accordance with regulatory measures (see also Chapter 4.1.9).

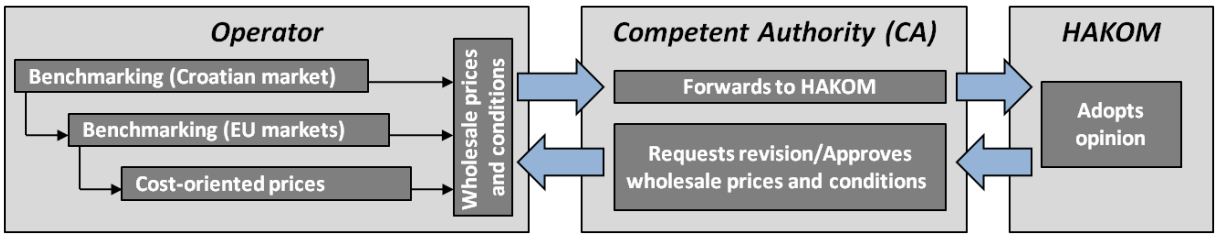

Figure 2.2 – Procedure for the determination of wholesale prices and conditions in projects

After the initial approval of wholesale prices and conditions for the use of services, which is a precondition for the operation of the network, the applicable wholesale prices and conditions must be regularly verified in every project. This is necessary to cover all changes on the market, in particular in relation to changes of wholesale prices and conditions in other areas in which operators operate under normal market conditions, including changes of regulated prices and conditions of SMP operators. Verification of wholesale prices and conditions must be carried out at least once during the period of 12 months, starting from the moment of the initial approval, that is, from the moment of the final check of wholesale prices and conditions. In accordance with the provisions of the Guidelines on the duration of the obligation for the provision of wholesale services, verification must be carried out within 7 years for all wholesale services, except for services of access at the level of passive infrastructure (cable ducts, surface poles, dark fibres, street cabinets) which must be continuously verified since these services must be provided indefinitely. Verifications must be initiated by CAs and they are identical to the process for the initial approval of prices and conditions and it also includes obtaining the opinion by HAKOM, that is, the approval of prices and conditions by CA. Verification must also be carried out in cases when there is no need for changes in prices and access conditions.

2.7 Public procurement

The implementation of a competitive public procurement procedure in projects supporting the development of broadband infrastructure is vital to the success of project implementation; this guarantees the transparency of the state aid award process and minimises the amounts of state aid awarded to projects from public funds.

In observance of the public procurement provisions of the *Guidelines* (Article 78c, 78d and 80b), the Framework Programme lays down the structural rules of public procurement with which all projects under the Framework Programme must comply. These rules comprise the following:

- public procurement procedures in the framework of specific projects must be carried out in compliance with the Public Procurement Act (PPA) [8] and the associated subordinate legislation – ordinances and regulations referenced by the PPA, which will be in force at the time of project implementation;
- the criterion which must be applied in the selection of the private partner to build the broadband network under Investment Models A and C is the most

economically advantageous offer, whereby one of the criteria, and one with the greatest weigh relative to others, must be the amount of aid requested;

- In the case of Investment Model C, the selection procedure for a private partner in a public-private partnership must also comply with all the provisions of the Public-Private Partnership Act [9] which regulate public procurement procedures for the selection of private partners in public-private partnerships.

It needs to be further specified that, in the case of Investment Model B, compliance with the provisions of the PPA concerns primarily all those public procurement procedures where providers are selected for the services and works related to network design, construction, management and maintenance. The required level of competitiveness of the state aid award procedure under Investment Model B (Article 78c) of the *Guidelines,* footnote (96)) is guaranteed by the general restrictions of Investment Model B, which include the obligation of network operators to pursue a wholesale business model, to limit their activity to areas that exclude commercially attractive areas and to have an accounting separation between the funds used for the operation of the networks and those used for other operations within the public authority's scope of responsibility (see chapter 2.3.2).

When specifying the subject of public procurement in the course of public procurement procedures, CAs have to carefully formalise all requirements that the constructed broadband networks and their operators must meet, with due regard for the herein specified structural rules of the Framework Programme and for the local needs. The same requirements must be set out at a later stage, in the public procurement contracts to be concluded with the selected operators (see chapter 4.2.2 for a detailed list of all operator obligations to be included in the said contract).

CAs must specify details of the public procurement procedure, including the criterion of the most economically advantageous offer, during project preparation stage (through the Broadband Infrastructure Development Plan), and must make them available to all the interested parties through public consultation (see chapter 2.5). When defining the criterion of the most economically advantageous offer, CAs may consult with the CAFP. In any case, CAs shall take their final decision on the award criteria after the completion of the public consultation process, but that decision shall also be subject to CAFP's prior approval. The main purpose of CAFP's prior approval is to ensure qualitative uniformity among the economic criteria applied in the selection of operators under Investment Models A and C, which in turn increases transparency of implementation of the Framework Programme while at the same time leaving CAs some leeway to specify the quantitative character of the criteria in accordance with local circumstances and project needs. In addition, the CAFP's role as a consultant in this process involves, among others, sharing with CAs practical experience gained through earlier implementations of public procurement procedures for projects under the Framework Programme. This experience will increase with the number of projects implemented. Concerning practical experience, no matter the investment model, it is the responsibility of CAs to report to the CAFP on the successfully concluded public procurement procedures, which is laid down and placed in a broader perspective in the

Framework Programme as part of CAs' general reporting obligations concerning project implementation (see chapter 4.1.11).

In addition to the obligation to publish public procurement procedures as regulated by the PPA (publication in the E-journal of public procurement [28], or, in the case of high-value procurement[29] in the Supplement of the Official Journal of the EU [29]), information on the launching of a public procurement procedure must also be published on CAFP's central website.

Where it is prudent in a given target area to break down project implementation into several minor projects or subprojects, it is advisable to split the public procurement procedure into segments so that each segment matches a specific part of the project's target area. Such division is possible where different parts of the target area belong to distinct area types (I-V), which in and of itself requires the implementation of different infrastructural and technological solutions. This means that, in pursuance of the provisions of the PPA, CAs may conclude a public procurement contract with different bidders for each specific segment, or with a single bidder for all segments of the public procurement[30]. Nevertheless, in the event that public procurement is divided into segments, one must make sure that each individual segment, that is, that each corresponding area, represent a sustainable unit with regard to network infrastructure, and that, according to the criterion of the most economically advantageous offer, this does not lead to the public procurement having a less favourable outcome than one would expect if no such division had taken place.

2.7.1 The criterion of the most economically advantageous offer

Table 2-5 lays out the criteria for the selection of the most economically advantageous offer in public procurement procedures for the selection of an operator – private partner under Investment Models A and C. It must be emphasized that CAs have the liberty to select, and decide on the relative weight of, the particular criteria for a given public procurement procedure. The only restriction which holds for any project under the Framework Programme is that the criterion of the amount of requested aid must be included in the final selection and that it must have the greatest weight relative to all other criteria (the relative weight of 50% or more is recommended).

[29] At the time of putting together the Framework Programme (2013) high-value procurement referred to any procurement with an estimated procurement value of more than EUR 200.000 in HRK counter value.

[30] This approach has the advantage of avoiding any discrimination against small operators in favour of big operators (commonly SMPs), being that small operators may own network infrastructure and/or relevant experience with specific technologies particularly suited for parts of target areas (e.g. wireless technologies in scarcely populated areas with no basic copper infrastructure).

Table 2-5 – The list of criteria for the selection of the most economically advantageous offer

Criterion	Description
Requested amount of aid[1]	The absolute amount of state aid requested by the bidder to achieve the network's economic viability.
Amount of co-financing from own resources	Absolute amount of investment funds, above the requested aid, which the bidder will invest from his own resources into network construction.
Amount of pre- financing from own resources[2]	Absolute amount of bidder's resources referring to aid, which the operator may secure for project implementation until aid from EU funds and other sources is paid.
Technical features of the solution proposed	Several technical criteria, may include: - standardisation of the technological solution (ITU-T, IEEE); - supported capacities (e.g. per network segment, per user, in the whole area within the project's scope); - supported capacities in the user-to-network communication path (*upstream*, *uplink*); - additional support for ultra-fast access (or fast access in area type I).
Wholesale business model	A bidder who will exclusively apply a wholesale business model shall be awarded extra points[3].
Supported wholesale services	Wholesale services which will be further supported, in addition to those that are mandatory (see chapter 2.6 - Table 2-4).
Supported retail services	Additional retail services, other than broadband internet access, which will be supported (e.g. TV, voice services).
Bidder's experience	Bidder's experience in the construction of, and provision of services via, broadband networks (e.g. number of active users, number of households covered by the network, length of the constructed network).
Deadlines for network construction	Period within which the bidder undertakes to build the network to completion and to make it operational.

[1] The criterion of requested amount of aid must have the greatest weight relative to any other criteria for the selection of the most economically advantageous offer.
[2] If a private operator is requested to secure the whole amount of pre-financing, this criterion should be formalised within the public procurement procedure as one of the conditions concerning bidder's capacity.
[3] Pursuant to the provisions of Article 80b of the Guidelines, given that this business model further stimulates operators' competitiveness, this is valid for NGA networks in area types II and III (in area types IV and V the wholesale business model is the only model allowed).

As for the remaining criteria set out in the table above, CAs are advised to include them individually into the final set of public procurement criteria, keeping in mind that the content and the associated relative weight of the criteria should be aligned with the local circumstances and project needs, and that they should take into account the remarks and comments received in the course of public consultation. Similarly, according to the provisions of the PPA, NCAs should see to it that the selection criteria are non-discriminatory. As was remarked earlier, the final criteria for the selection of the most economically advantageous offer must receive prior approval from the CAFP.

In Investment Models A and C it is necessary to request the bidders to accompany their bids with framework business plans relating to project implementation. Such business plans ought to include estimates of total investments into the network, the requested amount of aid and the proportion of co-financing of the investment which the operator plans to secure from his own resources. These data will serve as the baseline against which the parameters will be specified in the contracts to be concluded with private operators, and in any subsequent project activities related to the development of detailed financial plans and utilisation of resources from EU funds and clawback mechanisms (for more detail see chapters 2.8, 3.1, and 4.1.7).

2.7.2 Technological neutrality

The provision of Article 78e of the *Guidelines* on the technological neutrality during public procurement procedures, has been duly incorporated into all structural rules laid down in the Framework Programme, which all projects must comply with. This includes public procurement criteria (chapter 2.7.1) and required wholesale services which must be supported (chapter 2.6.1).

Notwithstanding the aforementioned recommendation on the division of public procurement into segments, CAs must allow bidders to propose the use of a technology mix. In that respect, CAs must ensure that the bid selection criteria make provision for this alternative (e.g. by awarding points, under specific criteria, in proportion to the geographical coverage of the target area achieved by individual proposed technological solutions).

2.7.3 Securing resources for pre-financing

In the case of Investment Models A and C, the nature of co-financing from EU funds, which most commonly involves paying aid after the completion of network construction, requires that, in consideration of CAs' financial capacities to secure the financing of the project and the resources for pre-financing, it is requested of bidders, i.e. private investors to secure the resources necessary for pre-financing in addition to securing their own resources for investment into the project. That requirement can be formalized in the public procurement procedure as one of the conditions concerning the bidder's capacity and/or as one of the criteria for the selection of the most economically advantageous offer (the amount of resources secured by the private operator for pre-financing relative to total investments).

2.7.4 Outcome of public procurement procedures

Once the most advantageous offer has been selected, CAs shall, in accordance with the provisions of the PPA, conclude a contract with the successful bidder and shall launch all further activities necessary for project implementation, depending on the selected investment model (see chapter 2.3 for more details).

Here we address in particular two likely scenarios which require CAs' attention during the analysis of the bids received during a public procurement procedure. These scenarios mainly concern Investment Models A and C.

In the first of these scenarios, typically if the number of the bids received is small (i.e. only one bid), it is necessary to undertake an additional analysis of all parameters included in such bids. This concerns especially the requested amount of aid, which, given the reduced competitiveness of the public procurement procedure, may be disproportionally high relative to the proposed infrastructural and technological solution and the proposed service-level. The latter, of course, raises doubts as to whether such state aid would be optimally spent. CAs should consult with the CAFP concerning this additional bid analysis, and, where necessary, take a decision in validating the public procurement procedure, taking into account the provisions of the PPA. Such an outcome may, however, also suggest that the public procurement criteria were not sufficiently coherent, including the specification of the requested service level; or this could suggest that the remarks and comments delivered by operators during public consultation were not given due consideration. The cancellation of public procurement procedures is certainly an undesirable outcome. It slows down significantly the implementation of the projects concerned, since there may be a need to relaunch the procedures involved in project preparation (changing project specifications), public consultation and public procurement.

In the second scenario, CAs must pay particular attention to those of the received bids where operators have proposed technological solutions based on wireless technologies within the frequency bands for which the operators received a licence, whereby under the terms of the licence, and notwithstanding this Framework Programme, those operators must, with no state aid, achieve specific geographical coverage or population penetration over the area for which the licence was received. Given the market conditions at the moment when this Framework Programme was created, this scenario is most likely in operators who received licences for the 800 MHz band (*the digital dividend*), who must meet the 50% geographical coverage within a given period. In these scenarios, CAs should consult with the CAFP and the HAKOM so as to verify whether the obligations under licences granted for the frequency bands are compatible with the envisaged infrastructural and technological solutions, i.e. with the services proposed to be provided in the projects granted under the Framework programme (HAKOM has at its disposal data on the commitments of operators holding radiofrequency licences[31]).

2.8 Clawback

Clawback mechanisms concern the state aid rules formalised under Article 78i of the Guidelines. Since the cost-effectiveness or the viability of broadband projects relate mainly to the preliminary business plans created during project preparation and during the planning of required aid amounts - which lends them a degree of unreliability – the project's relevant financial indicators and the actual amounts of necessary aid must be established in practice;

[31] The same data may include the type, description and area where the operators intend to pursue activities related to electronic communications or the business plan of the operator who received a radiofrequency licence (see e.g. the terms of award of licences in the 800 MHz digital-dividend band set out in HAKOM Council Decision Class: UP/I-344-05/12-03/01, Reg. No.: 376-13/IS-12-1 (IS) of 12 September 2012).

first, on completion of network construction (hereinafter *initial aid verification procedure*) and then after seven years of the network's operation (hereinafter *subsequent aid verification procedure*).

Structural rules of the Framework Programme, i.e. the obligations of network operators related to the subsequent aid verification procedure, as specified in this chapter, must be duly formalised in the contracts which are signed with private partners under Models A and C (for more detail see chapter 4.2.2). In the event of a subsequent aid verification procedure, the contract will also need to specify the appropriate reference values contained in the operator's business plan submitted during the public procurement procedure (see chapter 2.7.1), since those values will serve as a baseline for the implementation of the subsequent aid verification procedure.

2.8.1 Initial aid verification procedure

The initial aid verification procedure must be undertaken on completion of network construction, but before the network becomes operational; the objective is to verify the actual level of investment costs incurred during network construction relative to those planned[32]. The initial aid verification procedure must be carried out for all projects, regardless of the investment model implemented. However, the implementation of the initial aid verification procedure is special in Investment Models A and C, that is, in those models where the construction of networks is performed by private partners, and CAs have no immediate control over the costs of investment (in Model B CAs are also responsible persons for all activities related to network construction and have direct insight into and control over the investment costs incurred).

In Models A and C, after the completion of network construction, private operators must report to CAs all investment costs incurred during its construction. CAs shall compare all such reported costs to the amount of aid requested and to the anticipated amount of own investments which the operators specified during the public procurement procedure[33] (see chapter 2.7). Where total reported investment costs incurred during network construction are less than those specified in the public procurement procedure, CAs will restrict the amount of eligible aid to the value corresponding to the initial specification of aid intensity in total reported investment costs. Alternatively, where the reported costs of investment exceed those initially planned, the maximum amount of eligible aid shall be limited to the absolute amount of aid specified during the public procurement procedure[34]. The amount of eligible aid shall also form the basis for calculating the share of co-financing from EU funds. It must be borne in mind that the amount of eligible aid should only refer to

[32] Costs of investment must be proven using formal documents which provide evidence of the delivery of works, services and equipment (invoices, handover reports etc.), in accordance with the implementing rules of EU Funds.

[33] The sum of the amount of requested aid and operator's own investment funds should correspond to the total reported investment costs.

[34] Alternatively, increasing the amount of eligible aid beyond the initially requested would undermine the principles of competitiveness of public procurement procedures, where the amount of requested aid has the greatest relative weight; therefore, this is not an acceptable option. This means that under Investment Models A and C operators must assume the risk of potentially misjudging the necessary amount of aid when preparing their public procurement bids.

eligible expenditures, in accordance with the general and implementing rules for EU Funds at national level.

2.8.2 Subsequent aid verification procedure

Any departures from the project's originally planned financial indicators over a prolonged period of its implementation are mainly a result of uncertain forecasts of market-related parameters such as the take-up rate and income from network services. Consequently, the subsequent aid verification procedure is carried out so as to establish whether the initial amount of aid awarded exceeded the necessary amount, since in that event any excess aid amounts need to be reclaimed. The subsequent aid verification procedure is mandatory only for projects whose initial aid award exceeded EUR 10 million. However, this procedure is not mandatory (under the rules set out in Article 78i of the Guidelines) for projects whose aid component exceeds the said amount, but are implemented in accordance with Model B, where a public authority is also responsible for the management of the constructed public network (according to the definition of Model B in chapter 2.3.2)

Private operators must implement the principle of accounting separation, i.e. keep separate accounts for the business operations related to the construction and management of the network, in order to facilitate the ex post aid verification procedure for all projects to which this procedure is applicable. The Framework Programme stipulates that network operators must, while implementing their projects, deliver to CAs at least once a year such separate accounting reports. The reports must include data on the number of active network users, user structure by category (private, corporate, public), average income per user according to user category and financial net profit or loss indicators. The potential presence of excess aid is verified in the subsequent procedure by comparing the indicators concerning the take-up rate and average income per network user, using the same reference indicators as were used by the operators in their framework business plans submitted during the public procurement procedure. The subsequent aid verification procedure should be carried out at the end of the seven-year period of network operation. If, at the end of the seven-year period, the number of users is higher than the originally anticipated reference number by more than 10%[35], and no corresponding decrease in retail prices has occurred[36] on account of which such an increase in the number of users by more than 10% would compensate, financially, for the decrease in anticipated income, it is necessary to perform an analysis of the calculation of excess aid to be reclaimed. That amount must correspond to the share in the operator's profit which was made on account of that portion of the user base which exceeds the 10% threshold of user-base increase relative to that originally planned for the end of the seven-year period[37]. From the portion of the profit thus calculated it is necessary to identify, with regard to the aid intensity defined during public procurement, the

[35] The said threshold of a 10% increase in user-base has been introduced so as to avoid the subsequent aid verification procedure in cases of minimal, but acceptable, departures from the user levels originally anticipated in the operators' plans.
[36] According to official European Commission reports (e.g. *Digital agenda Scoreboard*).
[37] This refers to the cumulative profit over the seven-year period.

proportional share in profits which corresponds to the amounts to be reclaimed. The amounts to be reclaimed must not exceed the absolute amount of aid awarded under the project.

The subsequent aid verification procedure, including the calculation of excess aid, may be complex and may involve additional administrative burden on CAs. Therefore, the Framework Programme foresees that the responsibility for establishing the need for clawback should lie with network operators, whereby HAKOM and CAFP step in as entities with a monitoring and corrective function. Thus, at the end of the seven-year period, or during the subsequent aid verification procedure, where one is necessary (given the amount of aid granted), each operator must prepare a draft analysis indicating whether there is a need for the clawback of excess aid; in case it is, the operator must calculate the amount of aid to be reclaimed. HAKOM shall, in cooperation with the CAFP, deliver an opinion on this proposal, but shall also take into account the operator's accounting reports. Figure 2.3 illustrates the activity flowchart. In case HAKOM delivers a positive opinion on the operator's proposal, the CA is authorised to immediately accept the operator's proposal, i.e. the CA is authorised to define, if necessary, the aid amount to be reclaimed. In the event that HAKOM delivers a negative opinion on the operator's original proposal, that proposal shall be returned to the operator, accompanied with HAKOM's comments, for amendment. The amended proposal shall be resubmitted for HAKOM's assessment, and, in the case HAKOM again delivers a negative opinion, CAs shall be authorised, upon prior consent from the CAFP and taking into account both of HAKOM's opinions, to take a final decision regarding the need for clawback, and, if relevant, regarding the amounts to be thus reclaimed.

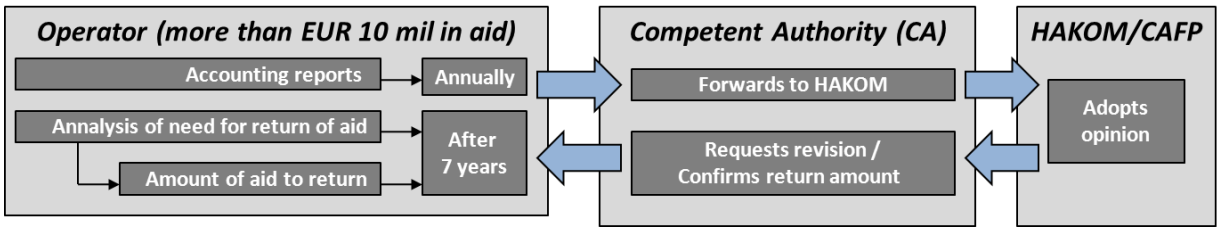

Figure 2.3 – Activity flowchart in the subsequent aid verification procedure

Although the Framework Programme stipulates that the subsequent aid verification procedure should be implemented after the seven-year period since the launch of network operations, CAs may, in accordance with the specific demands of each individual project, request of private operators to undertake additional, multiple subsequent aid verification procedures, during the initial seven-year period, or after its expiry (e.g. in projects by public-private partnerships which may have a longer period of implementation).

2.9 Overview of structural rules under the Framework Programme

This final chapter lays out a summary of the structural rules set out in the Framework Programme, in other words, a summary of the implementing state aid rules defined under the Framework Programme as a national state aid scheme. All CAs must follow these

structural rules when preparing and implementing their projects, so as to ensure that each project complies with the Framework Programme.

Table 2-6 is a summary of the structural rules classified into basic categories; it also includes a short description and references to the relevant chapters and tables in this document where each rule is described in more detail.

Table 2-6 – Overview of structural rules under the Framework Programme

Basic rule	Unit	Description/comment	Reference
Mapping rules	Basic access		Chapter 2.1.2.1, Table 2-1
	NGA access	Also includes rules for determining problematic grey NGA areas	Chapter 2.1.2.2, Table 2-2
	Eligibility of aid for ultra-fast NGA access	Refers to non-problematic grey and black NGA areas	Chapter 2.1.3
Target level of access (Step change)	Achievement of step change according to area type		Chapter 2.2, Table 2-3
Business model restrictions under specific investment models	Restriction to wholesale business models under Investment Models B and C	In order to minimise distortions of competition	Chapters 2.3.2, 2.3.3
	Other restrictions under Investment Model B	Network construction, management and maintenance by publicly owned companies	Chapter 2.3.2
	Adoption of other investment models	Other than the models compatible with Models A, B and C	Chapter 2.3.4
Determining project scope	Determining all potential beneficiaries covered by the project	Identifying the location of all potential network users	Chapter 2.4.1
	Determining the demarcation point	Locating the demarcation point between the access and the aggregation network	Chapter 2.4.2
Implementation of public consultation	Timeframe for the completion of public consultation		Chapter 2.5
	Verification of area colour		Chapter 2.5.1
	Structure and level of retail packages		Chapter 2.5.2
	Wholesale access		Chapter 2.5.3
	Public procurement		Chapter 2.5.4
	Utilisation of existing infrastructure		Chapter 2.5.5

Basic rule	Unit	Description/comment	Reference
Wholesale conditions	Determining a minimum set of supported wholesale services	Per area type	Chapter 2.6.1, Table 2-4
	Determining and supervising wholesale conditions and access prices		Chapter 2.6.2, Figure 2.2
Implementation of public procurement procedure		Compliance with the Public Procurement Act; Selection of the most economically advantageous offer under Investment Models A and C	Chapter 2.7
Clawback	Initial aid verification procedure		Chapter 2.8.1
	Subsequent aid verification procedure	Applicability of the subsequent aid verification procedure, in reference to the amount of aid granted for the project	Chapter 2.8.2, Figure 2.3
Monitoring and reporting on the implementation of projects and the Framework Programme		CA's and CAFP's monitoring and reporting obligations concerning the implementation of projects and the Framework Programme	Chapter 4.1.11, Chapter 4.3

3 Financial aspects of implementation of the Framework Programme

Initial observation concerning this chapter:

For the purposes of implementing the preliminary notification procedure with regard to the Framework Programme as a state aid scheme, this chapter presents an overview of the financial aspects of the implementation of the Framework Programme. As mentioned above, EU Funds have been foreseen as the primary source of state aid in the 2014-2020 period. The programming process concerning EU Funds in the 2014-2020 budget period is still ongoing in Croatia. Therefore, it is impossible, at this stage, to specify in detail the sources and level of funding available in the EU Funds for the implementation of projects under the Framework Programme. One of the indisputable investment priorities of the Operational Programme of Structural Funds (specifically ERDF) for the 2014-2020 budget period is stimulating the development of broadband networks, which then also includes the implementation of this Framework Programme. Moreover, it is also certain that the national level public authority which will function as the CAFP (as the state aid granting authority), will also be the Intermediate Body for the said investment priority. It is expected that the programming process concerning EU Funds for the 2014-2020 period will be completed within six months at the latest. Therefore, the preliminary notification procedure for the Framework Programme is now instigated, with a view to accelerating the future formal notification procedure, and ultimately enabling the implementation of projects under the Framework Programme after all the formal requirements have been fulfilled for Croatia's access to the EU Funds in the 2014-2020 budget period.

3.1 Aid intensities

Table 3-1 sets out indicative ranges of anticipated aid intensity for projects to be implemented under the Framework Programme, according to area types (see Chapter 2.2 for the explanation of the division into these types). The values stated are based on the technological and economic analyses of various infrastructural and technological solutions used in the Study of Incentive Measures [3]. It must be emphasized that any references to aid intensity in this document should be construed as approximate and serving informative purposes only; their purpose is to indicate the likely intensity ranges since this is necessary for project preparation. The actual aid intensities will be defined during project implementation, i.e. after the public procurement procedure under Investment Models A and C. Also, the aid intensity ranges indicated in the table should not be regarded as limiting. For instance, some projects in all area types will be allowed to depart from those ranges, after giving due consideration to the local circumstances and the need to select the optimum infrastructural and technological solution for a given project.

Clearly, the aid intensity is greater in more scarcely populated area types I and II, while lower intensities are generally possible where is possible to make reasonably extensive use

of the existing capacities of the telecommunications infrastructure (antenna masts and copper network in area types I and II, and the system of cable ducts in area types III, IV and V).

Table 3-1 – Indicative aid intensity per area type

Area type	Aid intensity	Comment
I	90-100%	The intensity varies depending on the exploitability of existing infrastructure (antenna masts, copper network).
II	40-90%	The intensity varies depending on the population and geographical size of the settlement, the state of the existing pair infrastructure, land configuration, etc.
III	30-100%	The intensity varies depending on the implemented infrastructural solution, the highest intensity is planned for FTTH networks where a new cable duct system must be constructed. Generally, there is higher aid intensity in smaller settlements. The 100% intensity level applies to Investment Model B.
IV	20-100%	Lower aid intensity where there are available capacities for the construction of the FTTH network in the existing cable duct network. The 100% intensity level applies to Investment Model B.[1]
V	20-100%	Lower aid intensity where there are available capacities for the construction of the FTTH network in the existing cable duct network. The 100% intensity level applies to Investment Model B.[1]

[1] Although the maximum aid intensity in the case of Investment Model B may be construed as suggesting that the application of Model B is inappropriate, i.e. that it means reliance on a disproportionately high amount of aid, it should be borne in mind that the implementation of the Framework Programme in area types IV and V (grey and black NGA areas) may be justified in some cases, providing certain conditions have been fulfilled (see chapters 2.1.2.2 and 2.1.3). This will commonly be limited to smaller geographical areas or certain user groups (so-called gap filling), meaning that the absolute intensity of aid will remain proportional to the goals of such projects.

As mentioned above, the ultimate aid intensity and the absolute aid amount in Investment Models A and C will only be determined after the completion of the public procurement procedure, on the basis of the value of requested aid and the value of own resources which operators will invest into the project – parameters considered to be crucial assessment criteria in the selection of the most economically advantageous offer (see chapter 2.7.1). The Framework Programme requires that the aid amounts determined in this manner be fixed for the whole duration of the project, and that they must be formally specified in the contract signed with the selected operator in the case of Model A and in the Public-Private Partnership contracts in Model C. This *ex-ante* approach is consistent with the rules and recommendations laid down in Article 78i of the Guidelines, encouraging operators to carefully prepare their public procurement bids and to assume any risks concerning the assessment of the requested aid amount. On the other hand, this also ensures predictability of state aid expenditure from the perspective of CAs and CAFPs, including procedures related to the application for and disbursement of resources from EU Funds.

The Framework Programme makes provision for subsequent amendments of the amounts of state aid only where it can be demonstrated in practice that the resources awarded were excessive (a case of state aid reduction). This is verified indirectly through a claw-back mechanism – for more detail see chapter 2.8. Pursuant to the rules set out in

Article 78i of the Guidelines, clawback is not necessary in case of the Investment Model B where the public authority is also responsible for the management of the constructed network.

3.2 Overview of the financial requirements of the Framework Programme

We present below an indicative assessment of the amount of state aid necessary for co-financing projects under the Framework Programme in 2014-2020 (Table 3-2). The aid amounts listed comprise resources obtained from EU Funds and the national component of co-financing, whereby the assumed participation of EU funds is 85%. These estimates serve primarily for the purposes of enabling the Framework Programme to undergo the approval procedure, as required under state aid rules (as an indication of the total amount of aid required).

The indicative assessment is based on the ranges of unit costs involved in implementing specific technologies ([3],[20],[21]), and on assumed shares of particular technologies foreseen in different projects under the overall Framework Programme, as follows:

- Implementation of FTTH networks for no more than 25% of the Croatian population (in area types III, IV and V[38]), through Investment Models B or C;
- Implementation of VDSL/FTTC and LTE/4G networks for 44.9% of the Croatian population (in area type II), mainly through the Investment Model A;
- Implementation of wireless UMTS/3G networks or satellite access for 0.2% of the Croatian population (in area type I).

The resources foreseen in the above indicative assessment allow the DAE targets to be met by the end of 2020, concerning the availability of fast access and the deployment of ultra-fast access (DAE_c[1], i.e. DAE_c[2]). It must be emphasized that this is solely an indicative assessment which in no way limits the use of specific technologies and investment models falling outside the scenarios assumed for purposes of the assessment, in accordance with specific local needs and circumstances, and the amount of state aid (including the resources from EU Funds) which will actually be at the disposal for co-financing projects under the Framework Programme in the 2014-2020 period.

[38] It is assumed that area types IV and V (non-problematic grey and black NGA areas) will comprise around 30% of Croatia's population and that within those areas there will be no need or justification to implement projects under the Framework Programme, since market operators will make their own investments into NGA networks (or such networks will be constructed with the help of measures or projects which will not include state aid). See also footnote 4) in Table 3-2.

Table 3-2 – Indicative assessment of state aid required for the implementation of the Framework Programme, according to sources of funds (2014-2020)

Area type (ch. 2.2)	Share of population (relative to Croatia's total population size)	Total investment funds[1] (in million EUR)	Average aid intensity[2]	EU funds[3] (in million EUR)	National component of co-financing (in million EUR)
I	0.2%	11.2	100%	9.5	1.7
II	44.9%	151.7	55%	72.1	12.7
III	54.9%[4]	486.3	35%	144.7	25.5
IV		41.6	50%	17.7	3.1
V		21.4	50%	9.1	1.6
TOTAL	**100%**	**712.2**	**42%**	**253.1**	**44.6**

[1] Refers to total investment funds required for the implementation of projects under the Framework Programme, comprising both state aid and resources from private operators.

[2] Refers to the expected average aid intensity. The actual values of aid may vary from project to project depending on a number of factors (see chapter 3.1) and shall be defined directly during the project preparation stage in accordance with the rules laid down in the Framework Programme.

[3] Here the maximum possible value of co-financing from EU funds is foreseen, i.e. 85%, relative to total state aid required. The remainder should be supplied from the national component of co-financing (assumed value being 15%).

[4] The stated percentage of the population refers to all areas belonging to types $S2_{osn}$ and C_{osn} (concerning basic access), which will be classified in almost all cases into area types III, IV and V , or will not be covered by the Framework Programme at all (areas where operators make their own investments into appropriate network).

Concerning the data in the foregoing table, the following facts must be emphasised:

- it is estimated that EUR 712.2 million will be invested in the next seven-year period (2014-2020) through all the projects implemented under the Framework Programme; the goal is to meet the national strategic targets and the DAE targets, which include the accomplishment of universal broadband coverage with fast access[39], with 50% of households using ultra-fast access;
- of the estimated EUR 712.2 million of investment funds, it is expected that an average of 58% of the funds will be provided by the operators who will participate as partners in projects implemented under the Framework Programme;
- the remaining 42% of the investment funds (EUR 297.8 million) refers to state aid, which must be secured so as to ensure sustainability of the projects for the construction of broadband infrastructure;
- within state aid resources, providing the largest share of co-financing from the EU funds can be accomplished (85%), EUR 253.1 million must be allocated from the EU funds for co-financing broadband infrastructure projects;

[39] With the exception of at most 0.2% of Croatia's population in area type I, who will be provided with advanced basic broadband access.

- the remaining portion of state aid (at least 15%, i.e. EUR 44.7 million) must be secured from the national component of co-financing (at national, county and/or LSU level);
- as for the allocation of aid according to area type, area types I and II account for 32.3% of state aid, while the remaining 67.7% of aid refers to types III, IV and V[40];
- since at the time of finalising this document it was not possible to verify in detail area colours concerning NGA access, this document also cannot give any specific indication as to what proportions of the population within the stated 54.9% of Croatia's population will be included in types III, IV and V, although it is possible to predict with a high degree of certainty that at least 25% of Croatia's population will fall under area type III. In area types IV and V (grey and black NGA areas), projects under the Framework Programme will presumably only cover a minor section of the population in the majority of cases, i.e. certain groups of end users (so-called gap filling principle). In the remaining cases, in area types IV and V operators shall build NGA networks independently or they will be constructed under other investment models which do not include state aid, i.e. which are not subject to the Framework Programme.

3.3 State aid beneficiaries

In the state aid terminology, state aid beneficiaries are all entities receiving aid. Under the Framework Programme CAs are foreseen as state aid beneficiaries, i.e. public authorities at local and regional level (LSUs and RSUs). Where operators participate in project implementation as private partners (in Investment Models A and C), aid shall be awarded to the operators in accordance with the structural rules of the Framework Programme as defined in this document (especially the structural rules concerning public procurement – see chapter 2.7, and claw-back– see chapter 2.8).

[40] This allocation results mainly from the assumption that in most cases FTTH solutions will be implemented in area types III, IV and V; those technological solutions, in turn, which entail lower investment costs (FTTC/VDSL, LTE) will be implemented in area types I and II. This assumption squares well with the need to achieve DAE strategic targets concerning the use of ultra-fast broadband access, since this can only be achieved using FTTH solutions.

4 Implementation of the Framework Programme and of projects under the Framework Programme

This chapter lays out the final overview of all activities and measures related to the implementation of the Framework Programme at national level, and of individual projects under the Framework Programme at lower, local levels, including all coordination activities between the CAFP and CAs and formal approvals issued by the CAFP to CAs at specific stages in the preparation and implementation of projects.

4.1 Project preparation and implementation timeline

Project activities may be divided into two basic stages:

- Project preparation, which includes drawing up the feasibility study, preparing draft designs and pertaining specifications, public consultations, finalising design specifications and adopting the decision to launch the project;
- Project implementation, which includes the public procurement procedure, development of detailed design specifications and acquisition of requisite licences and approvals, finalising the overall financial framework, submitting an application for project co-financing from EU funds, construction of the network and bringing it into a fully operational state, definition and approval of wholesale access conditions, and all monitoring and reporting activities related to project implementation, including claw-back.

The scope and sequence of activities during the initial stages of project implementation may vary depending on the selected investment model, as duly emphasised below. It must also be stressed that the proposed scope and sequence of the stages described below is mainly defined by the state aid rules (laid down in the Guidelines, i.e. incorporated into the Framework Programme through the structural rules), and by the anticipated implementing rules of co-financing from EU Funds for the 2014 – 2020 budget period.

4.1.1 Preliminary activities

In the context of preliminary activities, LSUs, RSUs (counties) and other bodies of public authority are expected to prepare preliminary analyses to establish whether there is potential in a given target area for the implementation of projects under the Framework Programme (area of a particular LSU, or several neighbouring LSUs). This preliminary analysis should be drawn up as a feasibility study[41], and it is recommended that it includes at least the following units:

[41] Sometimes, in addition to the feasibility study, a prefeasibility study is specifically prepared, which may predate the former as an additional preparatory step. Compared to a feasibility study, a prefeasibility study is commonly prepared at a slightly coarser level of detail and availability of the necessary input data.

- analysis of the demographic, social and economic situation in the target area (based on the available statistical data and the data accessible via bodies LSUs and/or RSUs);
- preliminary analysis of the state of the existing broadband infrastructure and networks, and of the services provided by the operators (based on the initial data from Annex E to this document and data from HAKOM's OBC application – for more detailed descriptions and explanations see chapters 1.5 and 1.6);
- correlation between the strategic objectives at local and regional (county) level and the benefits of constructing the appropriate broadband infrastructure;
- preliminary analysis of the infrastructural and technological options in the construction of a broadband infrastructure, including the analysis of the potential exploitability of existing infrastructure;
- preliminary analysis of the financial aspects of implementing specific infrastructural and technological solutions and the investment model options;
- status analysis of the relevant strategic development documents and physical planning documents at local levels, and identifying any amendments that may become necessary in view of the projects of broadband infrastructure development.

The feasibility study is intended to provide a first glimpse into the feasibility of implementing projects under the Framework Programme in a specific area, i.e. to define the baseline, the alternatives and/or the options which will enable a more detailed specification of project parameters during following stages of preparation.

The Framework Programme does not feature the CAFP as an entity with an official capacity with respect to LSUs or other bodies of public authority carrying out preliminary activities; in other words, the CAFP will not be approving feasibility studies as the formal documents resulting from these preliminary activities. However, if desirable that – providing it has sufficient administrative and professional capacities, CAFP provides support in the form of informal consultations, which mainly includes giving LSUs advice and guidance, in accordance with the structural rules laid down in the Framework Programme and experience with earlier projects implemented under its auspices.

In addition, LSUs are advised to consult with operators during preliminary activities concerning the latters' plans for the construction of broadband infrastructure in the LSUs' territory. Such informal consultations must not be construed as part of the public consultation procedure which takes place at a later stage, or as a part of the verification of area colour (chapter 4.1.3). This is purely an initial step which may in some cases facilitate or accelerate further preparatory project activities (e.g. selection of the investment model), mainly where there is correspondence between LSUs' strategic objectives and operators' plans in the areas concerned. Notwithstanding these informal consultations with operators, LSUs must still comply with all the structural rules set out in the Framework Programme

which concern subsequent stages in the preparation and implementation of projects (mapping, public consultation, public procurement etc.).

4.1.2 Preparing a draft Broadband Infrastructure Development Plan

The Broadband Infrastructure Development Plan (hereinafter BIDP) is a formal document within the Framework Programme which lays out details of a specific project under the Framework Programme. As a rule, BIDP is defined on the basis of results of one or more feasibility studies (including prefeasibility studies) where the appropriate solution is selected for the construction of broadband infrastructure. Concerning the structural rules of the Framework Programme and the need to have the final draft of the BIDP approved by the CAFP, BIDP must include at least the following data and analyses, i.e. units:

- definition of the body of public authority which will act as the competent authority for the project (CA);
- definition of the project's geographical scope in terms of the administrative and/or statistical units included (counties, cities or municipalities, settlements), regardless of the ultimate target areas in which broadband infrastructure will be implemented;
- status analysis of the existing broadband infrastructure, the availability and services offered for specific categories of end users;
- the results of the initial colour determination procedure (mapping) with regard to basic and NGA access, based on the list in Annex E, and the data available in HAKOM's OBC application at the level of street addresses and settlements (for more detailed explanations and instructions see chapter 2.1);
- the target areas designated for project implementation, that is, for the construction of broadband infrastructure, sorted into area types according to the need for a step change (for explanations and instructions see chapter 2.2), together will the locations of all potential users that must be covered by the network;
- the specification of the location of one or more demarcation points towards an aggregation network (for more detail see chapter 2.3.4);
- information on existing infrastructure that can be used in the project;
- detailed analysis of the demographic, social and economic benefits the project would bring to the target areas (according to the feasibility study);
- a reasoned selection of the investment model, accompanied by a suitable business analysis in the case of Models B or C;
- analysis of user potential in the project's target area, sorted by user category (private, corporate, and public), which can be accompanied by the results of an appropriate user survey, if one was conducted;

- specification of the minimal required level of retail services, concerning their quality (access speed per user category) and price (which can be referenced according to the market values or average values) - this must also be included in the case of Investment Models B and C, which are based on the wholesale business model, since the planning of a network's technical properties and capacities on the wholesale level must be in accordance with the services that will be provided on the retail level;
- the specification of the minimal set of wholesale services supported and the rules for determining and controlling wholesale prices and conditions of access to the constructed network (for more detailed explanations and instructions see chapter 2.6);
- the specification of the procedure and criteria of public procurement that shall be implemented in the selection of an operator - private partner on the project (applicable for Investment Models A and C) – for more detailed explanations see chapter 2.7), including the draft contract to be concluded with the selected operator;
- the specification of the clawback mechanism – for a more detailed explanation and instructions see chapter 2.8;
- analysis of the costs of implementation of specific infrastructural and technological solutions, and, for Models B and C, a detailed analysis of the project's cost-effectiveness;
- preliminary financial plan of project implementation, which must specify the modality of co-financing from EU funds, the sources of funds for the national co-financing component and the sources of the funds necessary for project pre-financing purposes, including, where necessary, aid ceilings (in total, or per unit, i.e. potential user, or household covered by the broadband network) and anticipated funds from private operators which must be secured for co-financing investment expenses and/or covering pre-financing costs;
- plan of organisation of project implementation, including allocation of responsibilities between CAs and private operators, depending on the selected investment model;
- preliminary analysis of all risks which may have a bearing on the success of project implementation;
- preliminary timeline for project implementation.

The initial project specifications are defined in the draft BIDP. Those specifications will then serve as the baseline for the public consultations in the following stage and, after that, as a baseline for finalising the BIDP. Compared with the final BIDP document, its draft should include all the data and units as listed above, however, the data concerning the project's target area will be verified through public consultations, while the data on existing

infrastructure may be supplemented with any data which operators deliver during public consultations. Similarly, CAs are free to amend the BIDP following the public consultation stage to give credit to any reasonable and justified opinions and comments supplied by operators, if it is considered that those amendments may improve project implementation. One must, however, make ensure that the project's final specifications in the BIDP remain compatible with the structural rules set out in the Framework Programme, which will eventually be verified during the formal procedure of BIDP approval by the CAFP following public consultations (see next chapter 4.1.3).

To accelerate BIDP's final approval by the CAFP after public consultations, or to avoid potential incompatibilities between the BIDP and the structural rules under the Framework Programme after public consultations, CAs shall deliver the draft BIDP to the CAFP before submitting it for public consultations, so that preliminary verification can be made of its compatibility with the rules of the Framework Programme. The CAFP shall carry out this preliminary verification within 30 days at most and shall communicate all its observations to the CAs, so that they can be properly addressed through amendments to the BIDP prior to its submission for public consultations.

When preparing the draft BIDP, and prior to its submission for preliminary verification, CAs are advised to consult with the CAFP regarding the definition of the project's target areas where such areas belong to area types I, IV and V, since these constitute special cases with regard to project feasibility (in area type I it is necessary to justify the feasibility of implementing basic broadband access, due to high costs of implementing NGA access, in accordance with the instructions laid down in chapter 2.1.2.1; in area types IV and V the project planned comprises grey and/or black NGA areas, and additional analyses must be performed to establish the justification of projects implementation, in accordance with the instructions specified in chapters 2.1.2.2 and 2.1.3).

4.1.3 Public consultations procedure

CAs must refer the draft BIDP to public consultations procedure which is explained in detail in Chapter 2.5. The consultations must take place for a period of no less than 30 days.

CAs must inform the CAFP on the launching of the public consultations procedure, and the CAFP shall in turn publish this information on its website along with the BIDP draft document, i.e. the link thereto, in order to render the public consultations procedure transparent, i.e. visible and available to all interested parties (primarily to operators and end users).

Throughout the public consultations procedure which is aimed at all units covered by the draft BIDP, special attention should be placed on the acquisition of operators' investment plans with a view to verifying the colours of areas, i.e. determining the final coverage of the targeted project implementation areas (for more details see chapter 2.5.1), and acquiring the data on existing operators' infrastructure which can be used in the construction of the project broadband infrastructure (for more details see Chapter 2.5.5).

Any objections and comments submitted during the consultations procedure are to be considered by the CAs, and, if necessary, included in the BIDP through amendments thereto.

The final version of the BIDP is referred to the CAFP for approval. If the project described in the BIDP meets all the structural requirements of the Framework Programme, the CAFP shall issue the project approval document in the period of no more than 30 days. Only after the project has been approved by the CAFP, CAs can adopt the decision on the launching of the project.

In the case of projects covering the types of areas IV and V, and with regard to the procedure of the colour of the area verification which has been carried out, when approving the final version of the BIDP, the CAFP must pay special attention to objections and comments submitted by operators, as well as to their investment plans. In other words, it is necessary to ascertain whether, after the public consultations procedure has been concluded, the circumstances which have brought about the preliminary approval of the draft BIDP with regard to envisaged targeted areas of the project coverage in the types of areas IV and V have changed and whether such changed circumstances have been adequately included in the final version of the BIDP [42].

When it comes to Investment Model C projects (PPP), CAFP shall issue the project approval only after the Public-Private Partnership Agency has issued the corresponding approval in line with the procedures laid down in the PPPA [9]. Given that this procedure for obtaining the necessary approvals with regard to PPP can require a certain additional time period (of 30 days and more), when it comes to the C model it is exceptionally allowed to apply a longer period of 120 days between the date of the launching of the public consultations to the adoption of the decision on the launching of the project.

It is necessary to emphasise that the role of the CAFP, after the closure of the public consultations, also consists of providing support to CAs in cases where CAs cannot assess by themselves whether the planned operators' investments justify amendments to initially determined colours, which is explained in more detail in chapter 2.5.1. This support by the CAFP should in any case be provided before the final version of the BIDP has been defined, i.e. before it is referred to the CAFP for approval.

4.1.4 Decision on launching the project

After the BIDP has been approved by the CAFP, the CA can launch the implementation of the project. This can also be institutionalised by a corresponding decision, i.e. an act at the level of representative and/or operative bodies of LSU, RSU, or at the level of state administration bodies, if the project is managed at the national level. The decision on the launching of the project is followed by the signing of the contract between the CAFP and the

[42] In the types of areas IV and V (grey and black NGA areas), the implementation of the projects within the Framework Programme can significantly influence the market competitiveness and therefore is rather sensitive. It is therefore necessary to extremely carefully consider whether the implementation of projects in such cases is justified, which also includes taking into consideration of operators' objections, and a detailed analysis of whether the operators' investment plans are credible (see chapter2.5.1).

CA. The integral part of the contract is the BIDP document (for more details see Chapter 4.2.1).

4.1.5 Public procurement

The public procurement procedure with regard to Investment Models A and C consists of the selection of the operator - private partner who will design, build and manage the broadband infrastructure. In addition to general public procurement regulations [8], when it comes to the Investment Model C, it is also necessary to meet specific public procurement rules pertaining to the PPP [9].

Model B public procurement procedures are related to the procurement of necessary services, works and equipment in the activities of network design and construction (and, if necessary, afterwards, the services of network maintenance and management). This means that such public procurement procedures can be repeated on several occasions within the framework of subsequent project phases implementation (in line with the CA's plan). In this respect this type of approach is different than the one-time initial public procurement procedure used in the case of Models A and C. In the case of public procurement procedures in the Model B, as a rule, it is necessary to comply with general public procurement regulations. In the remainder of the document all structural rules for public procurement from the Framework Programme which apply to Model B as well will be stated explicitly.

All CAs must announce all public procurement procedures to the CAFP, immediately prior to their publication in relevant electronic public procurement journals (at the level of Croatia) [28], i.e., as appropriate, at the level of the EU [29]), so that the CAFP could publish that information, along with the corresponding links, on its website. The same applies to all Model B public procurement procedures.

With regard to the date of the public procurement launch, it is necessary to comply with the longest deadlines in relation to the public consultations procedure, which are defined under the Framework Programme (see chapter 2.5, for Models A and B - 90 days at the most, for model C - 120 days at the most).

The public procurement procedure has been elaborated on in chapter 2.7. This description also includes the rule of the economically most advantageous offer and potential cases of unsatisfactory or problematic outcomes of public procurement procedures with regard to the quality of submitted offers and required amounts of aid (see chapter 2.7.3), which must be dealt with by CAs in consultations with the CAFP and, if necessary, HAKOM.

After the tender procedure has been closed, the CA must sign the public procurement contract with the selected operator. The contents of the public procurement contract has been elaborated on in chapter 4.2.2. When concluding the Model C contract it is also necessary to comply with the relevant PPPA provisions.

The conclusion of the public procurement contract should be reported to the CAFP, and the CAFP should in turn publish the relevant public procurement procedure information

on its website (the information on the selected operator, infrastructural and technological solutions and required amount of aid).

4.1.6 Network design and obtaining of necessary licences and authorisations

After the public procurement procedure for Investment Models A and C has been completed, the preparation of a detailed broadband network construction design plan can begin, and all the necessary licences and authorisations can be obtained in line with the regulations in the field of construction and physical planning. As in the case of the Model A, in the case of the Model C (PPP) the responsibility for the preparation of a detailed design plan in line with the project specifications within the BIDP rests with the private operator The CAs should provide administrative assistance in the processes of obtaining of necessary licences and authorisations since public administration bodies, the CA being one of them, in most cases carry out the tasks pertaining to the issuance of licences in the field of physical planning and construction, and the authorisations, in most cases, are related to the use of the state-owned infrastructure and facilities, which also includes the infrastructure that can be used in the project[43].

In the Model B the responsibility for the preparation of a detailed broadband network design plan rests with the CA itself. As a rule, specialised external experts are commissioned through the public procurement procedure for the purpose of preparing the detailed design plan. In the case of this model too, the CA, as a public administration body, can have a significant role in the process of obtaining necessary licenses and authorisations.

A detailed design plan in this sub-chapter includes two related units:

- the construction plan for the broadband network as a whole, along with the corresponding technical specifications and descriptions which enable the construction of the network and the setting up of the technical and operative network integrity necessary for its work;
- preliminary designs, working drawings and construction plans for the telecommunications infrastructure facilities, i.e. all formal project documents necessary for obtaining the licences in the field of physical planning and construction, which are also a condition which must be met before one can start with the construction of the telecommunications infrastructure facilities.

4.1.7 Project budget, application for the co-financing from the EU funds

After the broadband network construction plan has been completed it is possible to determine the project budget, i.e. based on detailed construction specifications it is possible to draw up a detailed financial plan with all envisaged expenditures. As a rule, the drawing up of the financial plan follows after the broadband network construction plan from the previous phase has been completed. In the case of Models A and C, the financial plan is

[43] When preparing a detailed project it is also necessary, as appropriate, to take into consideration the potential public works on the construction of the municipal infrastructure within which it is possible to construct a part of the infrastructure which could be used for the purposes of the project broadband network (integrated construction principle).

drawn up by private partners, whereas in the case of Model B the responsibility for the drafting of the financial plan rests with the CA, i.e. external experts and /or consultants (usually the same ones commissioned for the preparation of the construction plan).

In the process of the drafting of a detailed financial plan total investment expenditures are determined. This enables the project financial construction to be closed, i.e. one can start dealing with the provision of funding sources (pre-financing) for the further project implementation, i.e. project construction. This step can be particularly critical in the case of Model B, since the entire responsibility for the provision of pre-financing funds lies with the CA. At the same time, in the case of Models A and C, it is obvious that the responsibility in this step will entirely or for the most part lie with private operators.

For the purpose of ensuring the co-financing of the network construction through the EU funds, in this phase it is necessary to apply to managing bodies competent for the EU funds, in line with the detailed implementation procedures which will be defined for the purpose at hand and which, at the moment of the closing of this document, were not known.

4.1.8 Network construction

Activities related to the network construction can begin once all the necessary licences in the field of physical planning and construction have been obtained (in the case of new infrastructural facilities), and once the financial construction has been closed, which includes the provision of funds for the construction financing (pre-financing and/or co-financing), i.e. obtaining of the approval for the co-financing from the managing body competent for the EU funds.

Once the network construction activities have been completed, it is necessary to carry out the initial clawback, which is in practice conducted along with the procedure of payment from the EU funds which is carried out by the managing body competent for the EU funds[44] (for more details see chapter 2.8.1). In the case of all investment models CAs must submit the data on aid payments within projects to the CAFP.

In line with the current rules on the acquisition of data with regard to the built electronic communications infrastructure, it is necessary to forward the relevant data on the infrastructure built within the project to state administration bodies which will collect data and manage a database on the electronic communications infrastructure.

4.1.9 Approval of wholesale conditions and prices

In order for the network to become operative it is necessary, in line with the procedure laid down under the Framework Programme, to obtain the approval of wholesale conditions and prices. Following the opinion from the HAKOM, the approval is issued by the

[44] If the payment from EU funds is carried out in several instalments throughout the project implementation (including the advance payment), the initial clawback must be carried out upon the final calculation of the EU funding, after the network construction activities have been completed.

CA, where necessary, with the prior consent of the CAFP (for more details see chapter 2.6.2). The approval of wholesale conditions and prices is a condition which must be met for the network to become operative, i.e. to start providing services (on the wholesale market, or on the retail market as well).

According to the Framework Programme structural rules it is necessary to carry out checks of wholesale conditions and prices once in every twelve months starting from the date of initial approval of wholesale conditions and prices.

CAs must submit the data on the network access wholesale conditions to the CAFP which publishes these data on its website (as a document which in its structure and purpose equals the referent offers published within the framework of regulatory measures). The same applies to any change of network access wholesale conditions.

4.1.10 Clawback

In addition to the initial clawback procedure, for all projects in which the amount of allocated aid exceeds 10 million EUR, it is also necessary to carry out a subsequent clawback procedure. The subsequent clawback procedure is described in chapter 2.8.2.

4.1.11 Monitoring and reporting on the progress in the implementation of the project

Activities related to monitoring and reporting on the project implementation include all necessary interactions between CAs and CAFPs (and where necessary, HAKOM), and between the CAFP and the European Commission with regard to the approved state aid scheme in order to render the project implementation and the state aid allocation transparent in line with the general state aid rules and the rules laid down in the Guidelines.

In Investment Models A and C CAs are responsible for the monitoring of private operators as aid beneficiaries, who are responsible for the activities of the broadband network design, construction and management. All activities and obligations of operators related to project monitoring need to be adequately defined in contracts concluded with private operators (i.e. in PPP contracts in the case of the Investment Model C). It is particularly important that private operators are monitored by CAs in the following activities (this, however, does not imply that CAs are not to monitor the project implementation in all other phases as well):

- Preparation of the network construction and financial plans, obtaining of all necessary licences and authorisations, application to managing bodies competent for the EU funds, and the closing of the financial construction along with the provision of funding for the network construction activities;
- Network construction, initial clawback procedure and the final payment from the EU funds;
- Initial procedure for the approval of wholesale conditions and prices, and any other such subsequent procedure in yearly intervals;

- Subsequent clawback procedure after the period of 7 years (where the initial amount of aid exceeds 10 million EUR);
- General monitoring of basic indicators related to the network operation (number of users covered[45], number of wholesale users per wholesale services provided in the network, number of retail users, types of retail services with corresponding prices [46]).

CAs must also inform the CAFP, on a regular basis, of all preparatory and implementing activities related to the project in order for the CAFP to be able, in line with the transparency and reporting rules laid down in Articles 78j) and 78k) of the Guidelines, to monitor the implementation of the overall Framework Programme and report to the European Commission on all necessary details of the Framework Programme as the approved national state aid scheme (see also chapter 4.3).

Regular reporting by CAs to the CAFP must include at least the key information and data in the following activities related to the project implementation:

- Information on the completion of the draft BIDP document and the carrying out of the public consultations procedure so that the CAFP could publish that information, along with the draft BIDP document, on its website;
- information on the project implementation start, i.e. the implementation of the public procurement procedure so that the CAFP could publish that information on its website;
- Information that the public procurement procedure has been completed along with the information on the selected operator, planned infrastructural and technological solutions and required amount of aid and aid intensity (this relates only to Investment Models A and C).
- Information on the completion of the broadband network construction and financial plans, and obtaining of all necessary licences and authorisations (if they are required);
- Information that the project financial construction has been closed, i. e. that the management bodies competent for the EU funds have approved the project to be co-financed from the EU funds;
- Information on the completion of the broadband network construction and payments from the EU funds (in particular, data on the total amount of aid payments, total investment expenditures and the final project aid intensity);

[45] It relates to all end users covered by the constructed network infrastructure who can receive network services, regardless of whether they are actually provided (e.g. in the case of the FTTH networks, it relates to the number of users who have the fiber connection).

[46] In the case of Investment Models B and C which must apply the wholesale business model, data on the number of retail users, services and prices offered will not necessarily be available to the CA, i.e. network operators, since network operators in such cases need not have a full insight into the retail services offered by other operators.

- Information on the approved wholesale conditions and prices, so that the CAFP could publish them on its website - this applies to the initial procedure and any subsequent procedures carried out in yearly intervals;
- Information on basic indicators related to the network operation (number of users covered, number of wholesale users, types of wholesale services, number of retail users, types of retail services with corresponding prices);
- Information on the subsequent clawback procedure, and any amount of aid recovered.

In addition to the above mentioned, CAs must render the key data on the constructed network available to all interested operators since they are potential wholesale users (through the specification and/or annexes to network access wholesale conditions, see also chapter 2.6), i.e. in line with the Guidelines this key data must be delivered to HAKOM and state administration bodies responsible for the collection and management of the data base on the constructed electronic communications infrastructure in line with the rules in force and obligations that will be in force at the time of network construction and project implementation.

The CAFP's obligations related to the reporting of the European Commission bodies are described in chapter 4.3.

4.1.12 Tabular presentation of activities related to the project preparation and implementation

This chapter brings a short description of all activities in projects' preparatory and implementing phases (Table 4-1), in line with the specification provided in previous chapters. The following has been stated for each phase: key activities, relevant timescales with regard to the implementation of a phase, i.e. dependency on the previous and later phases, formal outgoing documents drafted or approved within that phase, and the responsibilities of the CAFP and HAKOM in each of the phases. In addition to that, references to key chapters of this document have been included. These key chapters contain detailed descriptions of activities for each phase, including the Framework Programme structural rules which must be complied with during the implementation of a certain phase.

Table 4-1 – Phases and activities in the preparation and implementation of projects within the Framework Programme

No.	Project phase	Main references within the document	Relevant activity timescales	Description of main activities within the phase	Formal outgoing document(s) related to the phase	Role of CAFP	Role of HAKOM
1	**Preliminary activities**	4.1.1		- framework analysis of needs and of capacities to implement broadband infrastructure construction projects in the area of the LSU	Feasibility study	- advisory informal support to the holder of activity	
2	**Drafting of the Broadband Infrastructure Development Plan**	4.1.2; 2; 2.2; 2.3; 2.4	- the CAFP carries out a preliminary check of the draft BIDP within a period of maximum of 30 days from the submission of the BIDP	- drafting of the Broadband Infrastructure Development Plan (BIDP) in line with the specification in chapter 4.1.2. The draft BIDP determines the following relevant key elements of the project: - competent authority responsible for the project (CA), - areas covered by the project (covered LSUs), - project Investment Model; - initial colour determination (initial mapping), classification of targeted project implementation areas into types (I-V); - framework financial and organisational plan with regard to project implementation	Draft Broadband Infrastructure Development Plan (BIDP)	- advisory support; - special support in the defining of area types I, IV and V; - preliminary check of compliance of the draft BIDP with the Framework Programme rules	- support to the CA as the user of the application Overview of Broadband Coverage(OBC)

No.	Project phase	Main references within the document	Relevant activity timescales	Description of main activities within the phase	Formal outgoing document(s) related to the phase	Role of CAFP	Role of HAKOM
3	**Public consultations**	4.1.3; 2.5	- public consultations must be open for a minimum of 30 days; - the CA approves the final version of the BIDP in the period of no more than 30 days from the date of the BIDP submission	- verification of area colour, i.e. determination of the targeted area covered by the project, based on comments of operators and their investment plans; - preparation of the final version of the BIDP	Final version of the BIDP	- advisory support; - in particular, support in the process of checking whether the announced operators' investment plans are credible; - approval of the final version of the BIDP	
4	**Decision on launching the project**	4.1.4; 4.2		- formal decision on launching the project; - signing of the contract between the CA and the CAFP; - setting up of the project management structure in the CA bodies	The contract between the CA and the CAFP	- it prepares and signs the contract with the CA	

No.	Project phase	Main references within the document	Relevant activity timescales	Description of main activities within the phase	Formal outgoing document(s) related to the phase	Role of CAFP	Role of HAKOM
5	**Public procurement**	4.1.5; 4.2; 2.7	- the public procurement procedure must be opened no later than 90 days after the opening of the public consultations (in the case of Models A and B), i.e. no later than 120 days in the case of the Model C	- selection of private partners - operators and conclusion of the contract with the selected operator (Models A and C); - procurement of the network design, construction, management and maintenance services (Model B) – procurement can be divided in separate successive public procurement procedures for the said services in later projects phases	Decision on the selection; Public procurement contract (Models A and B); PPP contract (Model C)	- support in the process of verification of the required amount of aid (Model A)	- verification with a view to ascertain whether the implementation of the wireless networks for which the operator seeks aid overlaps with the operators' obligations with regard to allocated radio frequency licences
6	**Network design and obtaining of necessary licences and authorisations**	4.1.6		- drafting of the broadband network construction plan; - preparation of preliminary designs, working drawings and construction plans for the telecommunications infrastructure facilities, and obtaining of necessary authorisations and licences	- broadband network construction plan with necessary authorisations and licences		

No.	Project phase	Main references within the document	Relevant activity timescales	Description of main activities within the phase	Formal outgoing document(s) related to the phase	Role of CAFP	Role of HAKOM
7	**Project budget, application for the co-financing from the EU funds**	4.1.7		- preparation of a detailed financial plan for the purpose of preparing the funding for the network construction; - application for co-financing from the EU funds to national managing bodies competent for the EU funds	- Financial plan - all other documents necessary to apply for the co-financing from the EU funds		
8	**Network construction, initial clawback procedure**	4.1.8; 4.1.10; 2.8.1		- construction of the network and rendering it operative; - obtaining of necessary licences for infrastructural facilities; - initial clawback procedure; - final aid payment, including the payment of aid from the EU funds			

No.	Project phase	Main references within the document	Relevant activity timescales	Description of main activities within the phase	Formal outgoing document(s) related to the phase	Role of CAFP	Role of HAKOM
9	**Approval of wholesale conditions and prices**	4.1.9; 2.6	- initial approval must be obtained before the network has become operative, and no later than 75 days from the initial proposal of the operator; - each subsequent procedure must be carried out in yearly intervals	- network operator prepares a proposal of wholesale conditions and prices; - CA features as an intermediary in the communication between the operator and HAKOM, and, where the HAKOM has repeated its negative opinion with regard to the operator's proposal, it prepares the final version of wholesale conditions and prices which must be authorised by the CAFP	Wholesale conditions and network access prices	- at the proposal of the CA it authorises wholesale conditions and prices, where the HAKOM has repeated its negative opinion with regard to the operator's proposal	- gives opinions on the proposal of wholesale conditions and prices prepared by the network operator
10	**Subsequent clawback procedure** (only for projects whose amount of allocated aid exceeds 10 million EUR	4.1.10; 2.8.2	- must be carried out after a period of 7 years in which the network has been operative	- network operator prepares the aid recovery analysis which reveals whether it is necessary to recover the excess aid, and, in the case that it is necessary to do so, prepares the calculation of excess aid to be recovered; - CA features as an intermediary in the communication between the operator and HAKOM, and, where the HAKOM has repeated its negative opinion with regard to the operator's proposal, it prepares the final version of the aid recovery analysis which must be authorised by the CAFP	Aid recovery analysis	- at the proposal of the CA it authorises aid recovery analysis, where the HAKOM has repeated its negative opinion with regard to the operator's proposal	- in cooperation with the CAFP gives opinions on the aid recovery analysis prepared by the network operator

No.	Project phase	Main references within the document	Relevant activity timescales	Description of main activities within the phase	Formal outgoing document(s) related to the phase	Role of CAFP	Role of HAKOM
11	**Monitoring and reporting on the progress in the implementation of the project**	4.1.11; 4.3	- continuous carrying out of necessary activities in the process of the project implementation	- regular monitoring of the project implementation, depending on the investment model applied and the specification of the key activities in chapter 4.1.11; - regular reporting of the CAFP on the key activities, phases and documents in the course of the project preparation and implementation, in line with the specification in chapter 4.1.11		- collects CAs' reports, compiles them and sends them to the European Commission (in line with the specification in chapter 4.3)	

4.2 Contractual obligations in the Framework Programme

For the purpose of achieving legal security and compliance with the state aid rules, the Framework Programme provides for the conclusion of the following contracts:

- the contract between the CAFP and the CA for every individual project within the Framework Programme;
- the contract between the CA and the operator partner in the case of Investment Models A and C;
- the contract between the CAFP and HAKOM with regard to expert and advisory support to be provided by HAKOM throughout the implementation of the Framework Programme.

The remainder of the document provides a short description of every contract to be concluded under the Framework Programme.

4.2.1 Contract between the CAFP and the CA

The contract between the CAFP and the CA is concluded after the final version of the BIDP has been approved by the CAFP, within the phase in which the decision on the launching of the project is taken. The integral part of the contract between the CAFP and the CA is the BIDP document. The contract should lay down the following obligations of the CA in the project:

- carrying out of the public procurement procedure in line with the Framework Programme structural rules (chapter 2.7), i.e. in line with the public procurement specifications within the BIDP;
- comply with Framework programme structural rules related to the approval and monitoring of wholesale conditions and network access prices (chapter 2.6.2);
- clawback implementation in line with the Framework Programme structural rules (chapter 2.8)
- obligation to monitor the project implementation and report to the CAFP, particularly with regard to amount of state aid spent (see chapter 4.3).

4.2.2 Contract between the CA and the operator

The contract between the CA and the operator in the Investment Model A is concluded after the public procurement procedure has been completed and, in formal terms, it is the equivalent of the public procurement contract. The contract between the CA and the operator in the Investment Model C is also concluded after the public procurement procedure for the selection of the private partner within the PPP has been concluded and, in formal terms, it is the equivalent of the PPP contract.

The contracts concluded within the framework of both Models, A and C, among others, must provide for the following operator's obligations with regard to the project implementation:

- the obligation to prepare the broadband network construction plan, including the obligation to prepare all necessary drawings and obtain all necessary authorisations and licences in the case of the construction of infrastructural facilities, in line with the laws in force in the field of construction[47];
- the obligation to close the project financial construction with the highest amount of aid specified in the public procurement procedure, which means that the rest of the funding necessary to close the financial construction must be provided by the operator from its own sources;
- the obligation to provide necessary funds for the funding of the project implementation until the date of the state aid payment (where this is required in the project, i.e. where this is specified as a requirement in the public procurement procedure);
- the obligation to cooperate with the CA in all processes related to the exploitation of the EU funds in their relations with the EU funds managing bodies (application, project approval, aid payments, monitoring), including the preparation of all necessary formal documentation in line with the implementing rules of the EU funds[48];
- the obligation to construct, maintain and manage the network, including the obligation to obtain all necessary inspection certificates for infrastructural facilities, under the regulations in force in the field of construction, and to submit all necessary information on the newly built network under the OBC to the HAKOM and other state administration bodies which will manage the data base on the built electronic communications infrastructure, in line with the regulations and rules in force;
- the obligation to obtain the approval for wholesale conditions and network access prices, in line with the Framework Programme structural rules, initially - before the network has become operative, and subsequently - once a year;
- the obligation to provide specified wholesale network access services, at least in the period of 7 years from the date on which the network has become operative, or permanently in the case of access to the passive parts of the network;

[47] In the case of the Model C (PPP) this obligation does not necessarily need to be carried over to the private partner, although in practice it is more common to carry over this obligation to a private operator.
[48] Depending on administrative and expert capacities of CAs.

- the obligation to carry out the initial clawback procedure, and subsequent clawback procedures, after the network has been operative for a period of 7 years, in the cases where the amount of aid exceeded the amount of 10 million EUR[49];
- the obligation to regularly report to the CA on the project implementation and relevant network operation parameters (in line with the list of parameters to be reported on by the CA to the CAFP - see chapter 4.3).

4.2.3 Contract between the CAFP and the HAKOM

For the purpose of providing the expert support by the HAKOM in the implementation of projects within the Framework Programme, the conclusion of the contract between the CAFP and the HAKOM is envisaged. The contract defines the role of the HAKOM. The role of the HAKOM includes the following activities related to the implementation of the Framework Programme

- the support to CAs as the users of the HAKOM's application the Overview of broadband coverage (OBC application) in the course of the determination of colours in the preliminary phases of the project;
- if necessary, checking whether the obligations under the radio frequency licences granted to operators overlap with the planned operator's investments in the projects for which the state aid is required (during the public procurement phase – see chapters 2.7.4 and 0);
- giving opinions on proposals for the wholesale conditions and access prices to networks built under the projects (during the phase in which approvals of wholesale conditions and prices are granted, and subsequently, every 12 months – see chapters 2.6.2 and 4.1.9);
- giving opinions on aid recovery analyses in the subsequent clawback procedure (during the phase of the subsequent clawback procedure – see chapters 2.8.2 and 4.1.10).

4.3 Transparency in the implementation of the Framework Programme and the European Commission reporting requirements

With a view to ensuring the transparency in the implementation of the Framework Programme and individual programmes under the rules of Article 78j) of Guidelines, the CAFP is to set up a corresponding website which will be maintained on a regular basis and which will offer the recent information and data related to the implementation of all projects within the Framework Programme. The necessary project information and data will be compiled by the CAFP by way of its inclusion in all formal procedures in which the CAFP verifies the compliance of projects with the structural rules of the Framework Programme,

[49] Also, in the case of aids exceeding the amount of 10 million EUR, the obligation of accounting separation also applies.

and through required information and reports which CAs must submit to the CAFP in the key activities of the project preparation and implementation (see chapter 4.1.11).

The information and data on the CAFP's website must include at least the following[50]:

- basic project data: competent authority for the project (CA), covered LSUs, investment models, private operators partners in the project (only in the case of Models A and C, as of the moment when the operators have been selected after the public procurement procedure) and the implemented infrastructural, i.e. technological solution (also once they have been agreed upon);
- data on the project status (preliminary phase, design and construction, operation), with the information and links to key project activities which require full transparency (public consultations and public procurement);
- all key documents related to the project (i.e. links thereto), depending on the project status: feasibility study/studies, draft BIDP, final approved version of the BIDP;
- available financial data on the project, depending on the project status: planned absolute amount of aid and relative aid share, aid amounts paid, total invested amounts, i.e. the value of the project and potential subsequent amounts of aid recovered;
- data and links to approved wholesale conditions and access prices to networks built within the projects;
- basic data on the project network operation (number of users covered, number of wholesale users, number of retail users).

Article 78k) of the Guidelines also lays down the obligations related to the reporting by the CAFP to the European Commission. The CAFP must compile all necessary data from individual projects within the Framework Programme and report to the Commission on the implementation of the Framework Programme at least biannually. Such reports must include at least the following data[51]:

- amount of allocated aid and aid intensity;
- aid beneficiaries and technologies implemented in projects;
- data on the number of households covered, number of operative networks, available wholesale services, number of operators providing retail services through the networks and the take-up ratio).

[50] In line with practical needs and the rules on the confidentiality of data, the CAFP may decide which data will be publicly available and to what extent, and which data will be available only to the public administration bodies, the HAKOM, and operators on the electronic communications market. However, the data on the CA, operator partner in the project (in the case of the Models A and C), amount of allocated aid, aid intensity and the technology implemented must be publicly available without any restrictions (under the provisions of Article 78j) of the Guidelines).

[51] With regard to the approval of the Framework Programme by the European Commission, it is possible that the contents and/or the reporting frequency will be specified in more details.

Abbreviations

ADSL	Asymmetric Digital Subscriber Line
BIDP	Broadband infrastructure development plan (basic planning document of an individual project within the Framework Programme)
CA	Competent Authority for Project (competent authority for individual projects within the Framework Programme)
CAFP	Competent Authority for Framework Programme
CBS	Croatian Bureau of Statistics
CCA	Croatian Competition Agency
DAE	Digital agenda for Europe
DBO	Design, Build and Operate
DOCSIS	Data Over Cable Service Interface Specification
DSLAM	DSL Access Multiplexer
DSL	Digital Subscriber Loop
ECA	Electronic Communications Act
EDGE	Enhanced Data Rates for GSM Evolution
ERDF	European Regional Development Fund, the same as EFRR
FTTC	Fiber To The Curb/Cabinet
FTTH	Fiber To The Home
FTTN	Fiber To The Node
GDP	Gross Domestic Product
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
Guidelines	Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks
HAKOM	Croatian Post and Electronic Communications Agency, see also NRA
HFC	Hybrid Fiber-Coaxial
HSPA	High Speed Packet Access (also called 3.5 G)
HT	Hrvatske telekomunikacije, former incumbent operator
ICT	Information and Communication Technology
IEEE	Institute of Electrical and Electronics Engineers
ITU	International Telecommunication Union
LLU	Local Loop Unbundling, the same as ULL
LSU	Local Self-Government Unit (town or municipality)
LTE	Long Term Evolution
NGA	Next Generation Access networks
NRA	National Regulatory Authority
OBC	Overview of broadband coverage (HAKOM's application)
OLT	Optical Line Termination
P2MP	Point To Multi-Point in FTTH access networks
P2P	Point To Point in FTTH access networks
PPA	Public Procurement Act
PPP	Public-Private Partnership
PPPA	Public-Private Partnership Act
RSU	Regional Self-Government Unit (county)
SAA	State Aid Act
SMP	Significant Market Power
ULL	Unbundled Local Loop
UMTS	Universal Mobile Telecommunications System
VDSL	Very high bit rate DSL

VPN	Virtual Private Network
WiMAX	Worldwide Interoperability for Microwave Access

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