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Study 20 – Drafting guidelines for the sharing of passive and active network infrastructure, optimising the use of public funds earmarked for supporting network roll-out in selected areas

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Contents

Executive summary

The study **'Drafting guidelines for the sharing of passive and active network infrastructure, optimisation of the use of public funds earmarked for supporting network deployment in selected areas'** forms part of a broader examination of the issue, focusing on certain topics related to 5G technology within the meaning of Reform No. 2, component 1.3 of the National Recovery Plan, through a total of 8 studies under Contract for Work No. 022/2024 concluded between the contractor and the Ministry of Industry and Trade.

The aim of the study is to formulate recommendations for further steps leading to the optimisation and increased efficiency of public spending. To achieve this aim, the study and its conclusions are divided into **three main sections**.

Analysis of options for setting up an evaluation model for projects competing for public funding and a proposal for measures to increase the transparency and accuracy of the evaluation process
The issue of infrastructure sharing, including a description of international experience and options for the Czech Republic Analysis of infrastructure sharing in the grant environment, including cost sharing and the eligibility of costs

The main findings regarding **the evaluation model** are based on a detailed analysis of calls for proposals implemented to date and their evaluation models, as well as an assessment of selected project evaluation methods abroad. This has enabled the identification of key areas for project evaluation, specifically the evaluation of economic efficiency, the evaluation of the quality of technical solutions, the evaluation of coverage rates, the evaluation of other parameters, and the bonus scheme for small and medium-sized enterprises.

Based on these identified areas and the evaluation of methods already used in previous calls, the author of the study outlines possible proposals for project evaluation within the current period. The possible proposals are further analysed, particularly with regard to their application to previous calls, and evaluated on the basis of identified differences and changes. To ensure the model is appropriately configured, the minimum project size (20 points) and the bonus for SMEs (10%) are also analytically verified.

The specific recommendations identified during the preparation of the study are divided into changes implemented by the grant provider and changes proposed by the author of the study. These are the following recommendations.

Changes implemented by the grant provider	Changes proposed by the study author
A1 – adjustment of sub-criteria A to D, taking into account the extent of coverage of previously uncovered locations/municipalities through the relevant technical solution A2 – Objectification of the evaluation process; addition of a table for assigning individual point values according to the extent of identified project inefficiencies B1 – reduction of the weighting of the criterion in favour of other evaluation criteria C1 – balancing the number of address locations within intervention areas to increase the consistency of the evaluation procedure C1 – adjustment of the formula for calculating the total number of points (within the framework of relative coverage, adding a divisor that takes into account the difference in the number of target locations within Activity I and Activity II	A1 – maintaining the weighting of sub-criteria A to C by adjusting the calculation of points for sub-criteria A to C so that the maximum defined number of points can be achieved (multiplying the sum of points for A + B + C by a specified coefficient). C1 – increasing the number of assignable items within the evaluation range C1 – adjustment of the values of assignable items within the evaluation range to improve the balance of the evaluation model in the context of the interaction between sub-criteria, including a response to the adjustment of the sub-criterion relating to the requested grant C1 – adjustment of the formula for calculating the total number of points (removal of rounding to whole numbers, adjustment of the formula, etc.)

C1 – change of the evaluation criterion from the required subsidy for a connection to the required subsidy for coverage of a specific point C2 – introduction of a new evaluation criterion for Activity I C3 – reduction of the criterion's weighting in favour of other evaluation criteria D – adjustment of the SME bonus value	C2 – adjustment of the formula for calculating the total number of points (removal of rounding to whole numbers, adjustment of the formula, etc.) D – justification and verification of the new bonus value for SMEs Total – justification and verification of the new minimum threshold for project selection

The sharing of electronic communications network **infrastructure**, whether fixed or mobile, is becoming increasingly common, particularly within the EU. Over the past fifteen years, network-sharing agreements have been concluded between mobile operators in almost every Member State. In most cases, these are agreements aimed at reducing the costs of infrastructure roll-out, particularly to locations that are less profitable (rural, sparsely populated areas), or where coverage is complicated for other reasons, such as listed heritage sites.

In order to identify the main findings, the author drew on the definition of the possibilities and scope of sharing for both 5G mobile networks and fixed high-speed networks, as well as an international comparison of infrastructure sharing at European Union level, which includes the identification of conditions under Directive 2014/61/EU, as well as the Gigabit Infrastructure Regulation, BEREC guidelines and European Commission recommendations, and the identification of best practice in the regulation of infrastructure construction and sharing.

In the area of fixed high-speed networks, the basic methods of sharing were identified and described, namely the joint venture model, the joint construction model, the mutual access model, the infrastructure access model and the passive infrastructure sharing model. Based on the identified and described practices, the main methods of cost-sharing identified within our context were coordination, purchase agreements and addenda.

As part of an international comparison, examples from three countries – specifically Portugal, Poland and Ireland – were described as examples of good practice.

In the context of infrastructure sharing, a draft methodology for cost-sharing in the case of infrastructure sharing for the construction of electronic communications networks under grant schemes was developed. Generally, when sharing costs for shared infrastructure, it is necessary to distinguish between the following dimensions:

- Form of sharing – Coordination, access to infrastructure, co-location, purchase and others
- Existence of infrastructure – Whether it involves the coordinated construction of new infrastructure or the sharing of existing infrastructure
- Cost-sharing ratio – A direct ratio based on all installed elements (capacities) or based on effective capacities
- Reasonableness of costs – Given the impossibility of verifying the reasonableness of costs, it is advisable to include a mechanism for verifying these costs
- Cost causality – Correct allocation of costs according to the given allocation keys

Management summary

The study **'Elaboration of draft guidelines for sharing passive and active network infrastructure, optimisation of the use of public resources intended to support the construction of networks in selected areas'** forms part of a broader examination of the issue, focusing on certain topics related to 5G technology within the framework of Reform No. 2 of Component 1.3 of the National Recovery Plan, through a total of 8 studies under Work Contract No. 022/2024 concluded between the contractor and the Ministry of Industry and Trade.

The aim of the study is to formulate recommendations for further steps to optimise and increase the efficiency of public funds spent. To achieve this objective, the study and its conclusions are divided into three main **parts**.

- Analysis of the possibilities for establishing an evaluation model for projects competing for public support and a proposal for measures to increase the transparency and accuracy of the evaluation process.
- Issues relating to infrastructure sharing, including a description of international experiences and possibilities for the Czech Republic
- Analysis of infrastructure sharing in the subsidy environment, including cost sharing and cost deductibility.

The main findings regarding the evaluation model are based on a detailed analysis of previous calls and their evaluation models, as well as an assessment of how selected projects are evaluated abroad. Consequently, the key areas for project evaluation have been identified, namely the evaluation of cost-effectiveness, the evaluation of the quality of the technical solution, the evaluation of the coverage rate, the evaluation of other parameters, and the SME bonus.

On the basis of these identified areas and the evaluation of the methods already applied in previous calls, the study outlines possible proposals for the evaluation of projects in the current period. The possible proposals are further analysed, in particular by applying them to calls already issued and evaluating them in terms of the differences and changes identified. The values of the minimum project size (20 points) and the SME bonus (10%) will also be analysed in order to adjust the model accordingly.

The specific recommendations identified in the study are divided into changes made by the grant provider and changes proposed by the study's author. These recommendations are as follows.

Changes made by the grant provider	Changes proposed by the study author
A1 – Adjustment of sub-criteria A to D by taking into account the extent of coverage of address points/municipalities not yet covered by the relevant technical solution A2 – Objectification of the evaluation process by adding a table to allocate individual point values according to the extent of the identified uneconomic nature of the project B1 – Reduction of the weighting of the criterion in favour of the other evaluation criteria C1 - Alignment of the number of address points within the intervention areas to increase the consistency of the evaluation process C1 - modification of the formula for calculating the total number of points (within the relative coverage, addition of a divisor to take into account the difference in the number of addressable sites under Activity I and Activity II.	A1 – maintaining the weighting of sub-criteria A to C by adjusting the calculation of points for sub-criteria A to C so that the maximum defined number of points can be achieved (multiplying the sum of the points for A + B + C by the specified coefficient). C1 – extension of the number of attributable items within the evaluation interval C1 – adjustment of the values of the attributable items within the evaluation interval to better balance the evaluation model when the sub-evaluation criteria interact with each other, including in response to the adjustment of the sub-evaluation criterion for the requested subsidy C1 – modification of the formula for calculating the total number of points (removal of rounding to whole numbers, modification of the formula, etc.)

C1 – change the evaluation criterion from the required subsidy per connection to the required subsidy per address point coverage C2 - introduction of a new evaluation criterion for Activity I. C3 – reduction of the weighting of the criterion in favour of the other evaluation criteria D - adjustment of the SME bonus value	C2 – modification of the formula for calculating the total number of points (removal of rounding to whole numbers, modification of the formula, etc.) D – justification and verification of the new SME bonus value Total - justification and verification of the new minimum point threshold for project selection

The sharing of electronic communications network infrastructure, whether fixed or mobile, is becoming increasingly common, particularly within the EU. Over the last fifteen years, network sharing agreements have been concluded between mobile operators in almost every Member State. In most cases, these agreements are designed to reduce the cost of infrastructure expansion, particularly to locations that are less profitable (rural areas, sparsely populated areas) or where coverage is difficult to achieve for other reasons, such as conservation areas.

In order to identify the main findings, the author has drawn on the definition of the possibilities and scope of sharing for both mobile 5G networks and fixed high-speed networks, as well as on an international comparison of infrastructure sharing at European Union level, which includes the identification of conditions under Directive 2014/61/EU and the Gigabit Infrastructure Regulation, BEREC guidelines and European Commission recommendations, as well as the identification of best practices in the regulation of infrastructure construction and sharing.

In the area of fixed high-speed networks, the main sharing models have been identified and described, namely the joint venture model, the joint construction model, the mutual access model, the infrastructure access model and the passive infrastructure sharing model. Based on the identified and described practices, coordination, power purchase agreements and adjacency were then identified as the main cost-sharing models in our context.

In the international comparison, examples from three countries – namely Portugal, Poland and Ireland – were cited as examples of good practice.

Within the framework of infrastructure sharing, a proposal for a methodology for cost sharing in the case of sharing infrastructure for the construction of electronic communications networks within the framework of subsidy schemes was developed. In general, when allocating costs to shared costs, it is necessary to distinguish the following dimensions:

- Form of sharing – Coordination, access to infrastructure, buyout and more
- Existence of infrastructure – Whether it involves building new infrastructure in a coordinated manner or sharing existing infrastructure
- Cost allocation ratio – By direct ratio based on all installed elements (capacities) or based on effective capacities
- Reasonableness of costs — Given the impossibility of verifying the reasonableness of costs, it is appropriate to include a mechanism for verifying those costs
- Cost Cause – Correct allocation of costs according to the given allocation keys

Introduction

This study, entitled *"Study 20: Drafting of guidelines for the sharing of passive and active network infrastructure, optimisation of the use of public funds earmarked for supporting network construction in selected* areas", forms part of a broader examination of the issue, focusing on certain topics related to 5G technology within the meaning of Reform No. 2, component 1.3 of the National Recovery Plan, through a total of 8 studies under Contract for Work No. 022/2024 concluded between the contractor and the Ministry of Industry and Trade.

The development of 5G technologies is, among other things, contingent upon the development of fixed broadband networks, which will enable the interconnection of all base stations and associated RF transmission elements via high-capacity networks.

Currently, the development of high-capacity broadband networks across the EU is being financially supported to meet the objectives of the so-called gigabit society. Support is being provided for a number of significant investments directed towards the construction of fixed access and connection networks in areas with insufficient connectivity (so-called white spots).

The situation described presents a unique opportunity to significantly improve the efficiency of investment resources (grants) by combining the objectives of building fixed high-capacity networks and mobile networks. Such a combination can bring the benefit of greater cost-effectiveness of the resources spent by preventing double funding of construction.

The study complies with the conditions set out in the documents "Announcement of a tender for the award of rights to use radio frequencies for the provision of electronic communications networks in the 700 MHz and 3400–3600 MHz frequency bands" (Ref. No.: ČTÚ-38 426/2020-61 dated 7 August 2020) and "National Plan for the Development of VHCN Networks".

The study also addresses not only support for the development of 5G networks, but also potential continued support for mobile telephone communication infrastructure (2G).

The aim of the study is to formulate recommendations for further steps leading to the optimisation and increased efficiency of public expenditure. To achieve this aim, the study and its conclusions are divided into three main sections.

- Analysis of options for setting up an evaluation model for projects competing for public funding and a proposal for measures to increase the transparency and accuracy of the evaluation process
- The issue of infrastructure sharing, including a description of international experience and options for the Czech Republic Analysis of infrastructure sharing in a grant environment, including cost-sharing and the eligibility of costs

The analysis is primarily based on an analysis of primary data and sources through a classical synthesis of findings and logical induction, followed by the formulation of general and specific recommendations and conclusions. In analysing the primary data and sources, both Czech and foreign open sources are utilised, including the contracting authority's internal documents.

1 Approach to the evaluation projects in the Czech Republic

1.1 Past project calls

Support for the expansion of infrastructure enabling high-speed internet access (next-generation access networks) was provided under the Operational Programme Enterprise and Innovation for Competitiveness during the 2014–2020 programming period and subsequently also under the National Recovery Plan.

Calls I, II and IV under the EIPC and subsequently one call under the NR were implemented specifically to support infrastructure. The table below provides an overview of these calls.

Table 1: Calls for proposals to support high-speed internet in the Czech Republic

Programme	Call	Deadline
OPPIK	I.	3 to 9 / 2017
OPPIK	II	2 to 7 / 2019
OPPIK	IV.	3 to 9 / 2020
NPO	I	4 to 9 / 2022

Source: API, MPO

1.2 Key parameters of calls for proposals

Over the years, there has been no significant shift in the key parameters governing the allocation of funds. The table below shows the development of these key parameters.

The range of eligible applicants, also in view of the nature of the projects, includes large enterprises. The potential grant amount ranges from CZK 0.5 million to CZK 200 million, with a total support rate of 75%. Only in the case of the call from the NPO was there a slight increase in the support rate and the maximum grant per project.

Table 2: Key parameters of calls for proposals to support high-speed internet in the Czech Republic

Call	Call allocation	Level of support	Amount of grant	Applicant
OPPIK I	CZK 11.55 billion	75%	CZK 1.0 to 200 million	SMEs and large enterprises
OPPIK II	CZK 1.0 billion	75%	CZK 0.5 to 200 million	SMEs and large enterprises
OPPIK IV	CZK 1.5 billion	75%	CZK 0.5 to 200 million	SMEs and large enterprises
NPO I	CZK 2.85 billion	80%	CZK 0.5 to 230 million	SMEs and large enterprises, SMEs bonus

Source: API, MIT

Whilst only 3 applications were submitted under Call I and no project was approved or reimbursed, subsequent calls following an adjustment of the conditions saw an increase in absorption capacity, which approached the allocation of the announced calls.

However, whilst the volume of applications submitted reached almost 1 billion in both cases, the volume of funds approved and subsequently disbursed amounted to only around half the value of the applications submitted under the second call, and Call IV, it was only around a quarter.

The table below provides an overview of the balance of individual calls under the OPPIK.

Table 3: Overview of submitted, approved and paid applications under OPPIK calls

Call	Volume of applications	Number of applications	Approved applications	Funds paid out
OPPIK I	CZK 47 million	3	CZK 0	CZK 0
OPPIK II	CZK 896 million	40	CZK 553 million	CZK 488 million
OPPIK IV	CZK 978 million	46	CZK 238 million	CZK 231 million

Source: API, MIT

1.3 Evaluation models used

Call I of the OPPIK is disregarded in this study, as no projects were contracted under this call and only three applications were submitted. Consequently, only the evaluation models for Calls II and IV of the OPPIK and Call I of the NPO will be compared.

All these calls were announced as rolling calls with continuous receipt of applications and subsequent evaluation of all duly submitted applications. The first step in the evaluation of applications was to assess compliance with formal requirements and eligibility criteria, the vast majority of which allowed for rectification.

The actual substantive evaluation of projects then took place in the second stage for applications that met the formal requirements and eligibility criteria. The evaluated projects were then forwarded to the selection committee, provided they met the conditions (minimum required number of points, a higher number of points in the event of two or more applications within the intervention area, a higher total number of points in the event of the value of suitable projects exceeding the allocation, etc.), which subsequently decided on their selection.

This procedure is entirely standard for this type of project within so-called competitive calls, where projects compete against one another, although in this case the competition between projects primarily took place only where multiple applications had been submitted within a given intervention area. A situation where the aforementioned allocation would not have been sufficient for all submitted projects that met the minimum score threshold and were the best in the given intervention area did not arise.

In view of the requirements of this study, the focus of its assessment is primarily on the second stage of evaluation, i.e. the substantive evaluation itself. This assessment describes the individual sub-procedures and their development, as well as their impact on the evaluation and selection of projects.

The primary source of information for the description and subsequent assessment is the documentation for the individual calls published on the MIT website, or the API, specifically the relevant annex to the call describing the method of evaluating project applications.

1.4 OPPIK Calls II and IV

The evaluation model for both relevant OPPIK calls was identical. Therefore, the evaluation model for both calls is described in this chapter, with the following applying to both calls.

As part of the substantive evaluation of the grant application, compliance with the principles of economy, efficiency and effectiveness was assessed. When checking the economy of the grant application, the grant provider verified the usual prices of both construction works and the machinery and technology (i.e. tangible assets) being procured, as well as intangible assets, service prices and staff remuneration levels. Costs exceeding the usual prices for these categories of expenditure were not recognised as eligible project expenditure.

Two assessments were prepared for the grant application by evaluators, who were employees of the Managing Authority. Where the technical capacity and expertise of the Managing Authority's evaluators were insufficient, it was possible to commission an external independent expert assessment, which served as a basis for the Managing Authority's evaluators in making their decision.

If the assessments of the internal evaluators for a single application for support differed in terms of scores for exclusionary or combined criteria, or in terms of outcome—such that one assessment was favourable and the other unfavourable, or the difference in points awarded was greater than 20 points—the result of the substantive evaluation was decided by a third assessment from an arbitrator, known as an 'arbitration assessment'.

The criteria for the substantive evaluation were divided into three basic categories (A–C)

- A Combined criteria (binary and scored criteria; if 0 points are awarded, the criterion is not met and the project will be excluded from the evaluation, max. 30 points), Binary criteria
- B Applicant's readiness to implement the project (evaluation criterion, max. 8 points)
- C Necessity and relevance of the project (evaluation criterion, max. 62 points)

If a project submitted by an applicant received even a single zero or negative score in Part A, the project was excluded from further evaluation as ineligible. Categories B to C of the substantive evaluation were scored (containing only evaluation criteria) according to the assessor's judgement.

The sum of the points awarded for categories A, B and C constituted the project's total score. **The maximum number of points** a project could achieve **was 100**. **The minimum number of points** required to meet the programme criteria and for the project to be approved **was 40**.

1.4.1 Criterion A

Under this criterion, four binary YES/NO sub-criteria were defined, focusing primarily on the project's compliance with environmental and public health standards, equal opportunities, alignment with the RIS3 strategy, and the completeness and accuracy of the documentation submitted in response to the call.

In addition to these binary sub-criteria, two further scoring sub-criteria were defined, namely the cost-effectiveness of the project and the fulfilment of the call's objectives. The cost-effectiveness of the project was assessed according to the appropriateness and justification of the submitted budget (0 to 10 points) and further according to the fulfilment of the call's objectives, i.e. ensuring the network being built in each white ZSJ at the required speed (0 to 10 points) and, at the same time, covering at least 40% of relevant addressable locations in the ZSJ (0 to 10 points).

1.4.2 Criterion B

Under Criterion B, the applicant's readiness to implement the project in accordance with the business plan was assessed on the basis of their experience with the economic results of operating electronic communications services in a similar location to date, and the feasibility of covering all investment and operating costs, including the repayment of any loans, from operating revenues within 7 years of the signing of the Grant Decision (0 to 8 points).

1.4.3 Criterion C

Under Criterion C, market potential (C2 0 to 6 points) was assessed based on the extent to which the applicant meets the specified requirements regarding the existence of a business strategy, demonstrates knowledge of the market and customer needs, including assumptions regarding development trends, and the feasibility of the project (C3 0 to 6 points) based on the project's feasibility, whether all aspects of the project have been taken into account, and whether an unnecessarily costly solution has been chosen.

The dominant element of the assessment within the overall evaluation was sub-criterion C1: Comprehensive assessment of coverage of the intervention area, the technical level of the proposed solution and the amount of the requested grant. This criterion was scored from 0 to 50 points based on an objective calculation combining the amount of the requested grant per connection, the extent of coverage of white spots in the intervention area and the speed of the proposed solution.

Individual speeds were assigned a weighting coefficient ranging from 0.6 to 1.0 and multiplied by the coverage rate of white spots (the sum of the product of the relative coverage of the intervention area by the relevant speed). This product was then multiplied by a weighting coefficient for the amount of the requested subsidy (range 0.7 to 1.0), resulting in a value from 0 to 100%, with 0 to 50 points awarded for the corresponding coverage in percentage terms.

Table 4: Evaluation model for the 2nd call for proposals under the OPPIK

Criterion	Number of points	Description
A1	20	Fulfilment of the call's objective (extent and quality of coverage)
A2	10	**Cost-effectiveness of the project**

B	8	**Readiness for implementation**
C1	50	**Comprehensive assessment**
C2	6	**Market potential**
C3	6	**Project feasibility**
Total	**100**	

Source: API, MPO

1.5 Evaluation model for Call I of the NPO

As part of the substantive assessment of the grant application, compliance with the principles of economy, efficiency and effectiveness was evaluated. The MA also checked the usual prices of both construction works and purchased machinery and technology (i.e. tangible assets), as well as intangible assets, service prices and staff remuneration levels. Costs exceeding the usual prices for these audited categories of expenditure were not recognised as eligible project expenditure.

Two assessments were prepared for each grant application by evaluators (employees of the Managing Authority, another public administration body under a public-law contract, or another entity). Where the capacity or expertise of the Managing Authority's evaluators was insufficient, it was possible to commission an external independent expert assessment, which served as a basis for the Managing Authority's evaluators in reaching their decision.

If the evaluators' reports on a single application for support differed in terms of scores for exclusionary or combined criteria, or in terms of outcome such that one report was favourable and the other unfavourable, or if the difference in points awarded was greater than 20 points, the outcome of the substantive evaluation was decided by a so-called arbitration evaluation, in which the arbitrator assessed all the criteria of the given evaluation phase and their assessment constituted a third independent opinion.

The criteria for substantive evaluation are divided into four basic categories (A–D)

- A Combined criteria (binary and scored criteria; if 0 points are awarded, the criterion is not met and the project will be excluded from the evaluation, max. 30 points), Binary criteria
- B Applicant's readiness to implement the project (evaluation criterion, max. 8 points)
- C Necessity and relevance of the project (evaluation criterion, max. 62 points)
- D Bonus for SME status (sum of (A to C) * coefficient 0.05 or 0)

If a project submitted by an applicant received even a single zero or negative score in Part A, the project was excluded from further evaluation as ineligible. Categories B to C of the substantive evaluation were then scored, and the number of points awarded fell within the specified range according to the evaluator's assessment.

The project could, without taking into account the bonus for SME status, receive **a maximum of 100 points**. **The minimum number of points** required to meet the programme criteria and for the project to be approved **was 40**. The best projects, based on the number of points, **including the bonus for SME status**, were supported until the call's allocation was exhausted.

1.5.1 Criterion A

Under this criterion, three binary YES/NO sub-criteria were defined, focusing primarily on DNSH, fulfilment of the VHCN's qualitative parameters, and the completeness and comprehensiveness of the supporting documents submitted in response to the call.

In addition to these binary sub-criteria, two further scoring sub-criteria were defined, namely the cost-effectiveness of the project and the fulfilment of the call's objectives. The cost-effectiveness of the project was assessed on the basis of the reasonableness and justification of the submitted budget, whilst setting a maximum grant value for the construction of a single connection (0 to 10 points), and further on the basis of the fulfilment of the call's objectives, i.e. ensuring the required speed of the service provided to households, or to households and socio-economic actors in Category A service areas (0 to 10 points) and in Category B service areas (0 to 10 points).

1.5.2 Criterion B

Under Criterion B, the applicant's readiness to implement the project in accordance with the business plan was assessed on the basis of their experience with the economic performance to date of operating electronic communications services in a similar location, and the feasibility of covering all investment and operating costs from operating revenues, including the repayment of any loans within 7 years of the signing of the Grant Decision (0 to 8 points).

1.5.3 Criterion C

Under Criterion C, market potential (C2 0 to 6 points) was assessed based on the extent to which the applicant meets the specified requirements regarding the existence of a business strategy, demonstrates knowledge of the market and customer needs, including assumptions regarding development trends, and the feasibility of the project (C3 0 to 6 points) based on the project's feasibility, whether all aspects of the project have been taken into account, and whether an unnecessarily costly solution has been chosen.

The dominant element of the assessment within the overall evaluation was sub-criterion C1: Comprehensive assessment of coverage of the intervention area, the technical level of the proposed solution and the amount of the requested grant. This criterion was scored from 0 to 50 points based on an objective calculation combining the amount of the requested grant per connection, the extent of coverage of white spots in the intervention area and the speed of the proposed solution.

Individual speeds were assigned a weighting coefficient ranging from 0.7 to 1.0 and multiplied by the coverage rate of white spots (the sum of the product of the relative coverage of the intervention area by the relevant speed). This product was then multiplied by a weighting coefficient for the amount of the required subsidy (ranging from 0.6 to 1.0), yielding a result in the form of the so-called effective coverage value as a percentage.

The result of the scoring was then equal to the integer part of a number which was 25 times the decimal logarithm of the effective coverage value in % multiplied by 100. If the effective coverage was < 1%, the result of the scoring was 0. If the effective coverage was = 1%, the result of the scoring was 1. If the effective coverage value reached or exceeded 100%, the project *was* awarded 50 points for this criterion.

1.5.4 Criterion D

Criterion D was a bonus criterion, whereby small and medium-sized enterprises as defined by the EU could receive a bonus of 5% of the total points scored for criteria A to C, and the total number of points awarded to these entities was increased by this bonus.

Table 5: Evaluation model for the 1st NPO call.

Criterion	Number of points	Description
A1	20	Fulfilment of the call objective (quality of coverage)
A2	10	Cost-effectiveness of the project
B	8	Readiness for implementation
C1	50	Comprehensive assessment
C2	6	Market potential
C3	6	Project feasibility
Total	**100**	
D	5	SME bonus (5% of total)

Source: API, MPO

1.6 Differences in the evaluation models used

Whilst no significant differences can be identified between calls under the OPPIK, a slight modification to the evaluation model was made in the call implemented under the NPO.

Changes in the weighting ranges assigned to the required subsidy amount per connection and the quality (speed) of the connection are only very slight and primarily due to the setting of a maximum permissible subsidy amount per connection, as well as an increase in the quality (speed) requirements for the connection.

Nor has the method of calculating the key criterion C1 changed; the scoring table has merely been replaced by a logarithmic formula, which, however, has not significantly altered the number of points awarded.

The only significant change, therefore, is the introduction of a scoring criterion for small and medium-sized enterprises (SMEs) amounting to 5% of the project's total score, which has increased the overall score of applications from SMEs and, within the evaluation process, has given them an advantage over applications from other (large) enterprises as applicants in this call.

2 Approach to project evaluation abroad

Support for the roll-out of high-speed internet has become one of the key activities in the digitalisation process across most European Union countries over the past decade. Individual Member States implement this support through specific approaches, which include both support at national level and the use of funds from cohesion policy instruments.

These approaches differ both in the scope of the activities supported and, of course, in the way in which the support is implemented, or rather in how individual projects and the implementation of the entire expenditure framework are evaluated.

To provide a better understanding of possible alternative approaches, this chapter presents several specific examples from other EU Member States, illustrating how these countries implement their support for the development of high-speed internet infrastructure and related activities.

2.1 Austria

Austria implements its support through the Broadband Austria 2030 programme, which supports the construction of passive infrastructure for 1 Gbps download/upload speeds with active elements for 100 Mbps download/upload speeds.

Support may therefore be directed towards both fixed networks and, potentially, wireless networks, exclusively in the form of support for passive elements.

A distinctive feature of the Austrian model is the possibility for federal governments (the Czech equivalent being regions) to support the construction of this infrastructure by increasing the subsidy rate from the national level of 50% (65% in the case of 95% coverage of target properties) up to 75% or 90%. The programme thus contains a significant incentive for regional authorities, which, through their budgets, can substantially increase interest in infrastructure development even in less economically advantageous areas.

The subsidy is paid through the RRF, with a total budget of up to EUR 2 billion. Support may be provided to regions that are not covered or where there are no plans for the construction of infrastructure with a minimum download speed of 30 Mbps, or regions with a maximum of one provider offering transmission speeds of up to 100 Mbps.

Projects are assessed by three independent evaluators nominated from a pool of experts. The parameters assessed are availability and technology, socio-economic significance, the economic viability of the project, and the services and products offered. A key condition is that support must be provided for new networks ensuring at least a doubling of the transmission parameters of the existing network.

Local authorities play a key role at the local level in the development of projects. Within the framework of a planned project, the local authority acts as a mediator between the project implementer and existing local internet service providers. A representative of the local authority (usually the mayor) initiates joint discussions between the project implementer and existing local providers, with the aim of reaching agreement on the final form of the project, particularly with regard to the possibility of connecting (the location of the connection point) local providers to the project implementer’s newly built network.

These meetings are held with the aim of reaching the best possible agreement between the individual participants so that, in particular, the location of the connection point is implemented in such a way as to enable existing local providers, to the greatest extent possible, to connect to the newly built network at reasonable cost and under transparent conditions. Existing local providers may then, in justified cases, express their disagreement with the proposed form of the project under preparation, and the relevant part of the project in the municipality or part thereof cannot subsequently be implemented.

On the other hand, however, it is necessary to consider the justification for such cases, i.e. realistic and objective arguments against the proposed solution. Mere ad hoc blocking of the project's implementation by local providers is not taken into account and does not constitute an obstacle to the project's implementation.

2.2 Croatia

Croatia delivers its support through the National Broadband Plan, via which support will be provided both through the RRF (1 Gbit/s) and the ERDF (40/5 Mbit/s).

Support for access networks is separate from support for backhaul, which is funded differently. Support is primarily for passive infrastructure via fixed networks.

The total support rate varies by region from 20 to 100%, with an average support rate of around 40%. The grant will be paid in the form of direct support from the RRF and ERDF in areas with connection speeds lower than 40/5 Mbit/s.

Evaluation is carried out in a specific manner, as responsibility for the implementation of individual projects is delegated to local (municipalities) and/or regional authorities (counties). These entities must define the size of the target areas, provided that each individual project must always relate to at least one overall area administered by a single CA, which corresponds to a municipality or region. Municipalities and regions must therefore define their projects of interest on the basis of mutual agreement.

The main criterion applied when selecting a private partner for the construction of a broadband network is the most economically advantageous tender, followed by the required level of support. Consequently, the issues of readiness, feasibility or higher quality of the technical solution are not directly taken into account. Support is primarily provided for the implementation of only the required technical standard at the lowest possible cost.

2.3 Eastern Germany

Support within Germany is implemented through the federal states and is directed to a greater extent towards less economically developed regions, i.e. primarily the federal states in the former East Germany. Here, however, the development of mobile communications is primarily supported.

Under this support, it is possible to finance the construction of the passive part of the infrastructure with specified minimum technical requirements. The required speed is 50 Mbps, and the quality must allow for the operation of at least a 4G network.

The level of support reaches up to 100% of eligible costs, with these expenditure frameworks being funded from state budgets, whilst cohesion policy funds may also be involved in the financing.

There is no project selection in the traditional sense, as the support is allocated to a company owned by the regional government, which subsequently implements the relevant projects. This model is not feasible in the Czech Republic due to the existence of a competitive environment not only among service providers but also among infrastructure operators.

2.4 Spain

Support in Spain is implemented through two interlinked expenditure schemes, with the current one being funded from the RRF. The projects support the construction of passive infrastructure with a transmission speed of at least 300 Mbps symmetrically, with the possibility of upgrading to 1 Gbps symmetrically.

The level of support under these instruments reaches up to 100% of eligible costs, with coverage provided for both completely white areas (no coverage in the next 3 years) and grey areas (no more than one network with speeds up to 100 Mbps planned in the next 3 years).

Support is provided through competitive tendering within individual regions, with the selection process taking into account the cost of the solution, feasibility and the quality of the technical solution.

2.5 General assessment of project evaluation approaches

The status of implementation of support for high-speed internet infrastructure varies significantly across the European Union. Most of the planned support is funded from the RRF or the ERDF. For programmes funded from the RRF, higher requirements regarding the quality of the technical solution are evident.

In less developed countries, it is also used to address issues of basic coverage in key areas, whilst ERDF funding is often used to cover supplementary areas. Conversely, in more developed countries, the aim of these funding programmes is to achieve full coverage or a state approaching full coverage, with speeds of between 100 and 300 Mbps expected on average for full coverage.

Funding is provided exclusively for passive infrastructure, and the majority of support is directed towards fixed connections. The level of support ranges from approximately 40% to 100% of eligible expenditure; however, the average range is 40% to 70% of eligible expenditure.

Approaches to project evaluation and selection vary, with some countries placing significant emphasis on the role of local authorities at regional or municipal level, which are responsible for the general design of the project and the selection of a potential contractor, including the proposal for the overall solution. This approach can be considered interesting; however, given the significant fragmentation of local authorities in the Czech Republic and the lower degree of their interconnection and existing models of cooperation (CLLD), it is very difficult to apply.

The main parameters used for project selection primarily emphasise the technical quality of the solution (minimum standards, or with bonus points for better parameters), cost-effectiveness (the most efficient projects), and furthermore feasibility or general economic efficiency.

In these parameters, therefore, evaluation models within the European Union do not differ significantly from those used in the Czech Republic. The models used in the Czech Republic under the OPPIK and NPO programmes can be assessed, in comparison with commonly used models in the European Union, as relatively robust, comprehensive and very well-integrated, though also as somewhat more complex.

The Czech model, in its current form, undoubtedly allows for a very comprehensive approach to evaluation, combining evaluation parameters that may appear to be in conflict with one another, whereas the standard models used elsewhere are significantly simpler, which facilitates project evaluation but also reduces the complexity of the assessment and does not lead to an optimal balance between the individual variables.

At the same time, it can be confirmed that the planned call for proposals by the Ministry of Industry and Trade is designed to respect equivalent frameworks in other EU Member States. Furthermore, the selection criteria strike a balance between large and small enterprises, the high number of which is specific to the Czech electronic telecommunications market, as is the significant presence of wireless technologies.

3 Identification of key areas for project evaluation

The previous two chapters provided a description based on a sample of selected expenditure programmes abroad and in previous calls within the Czech Republic. From the above, the following main areas, which are most frequently used, can be identified.

3.1 Assessment of economic efficiency

The assessment of economic efficiency can be identified as the most common and most frequently used criterion. This criterion is used both absolutely, in the form of selecting the cheapest project with otherwise identical or similar parameters, and relatively, through a ratio indicator (cost per connected location).

Whilst the first option can be used in cases where other project parameters are the same (particularly the quality of the technical solution) or are not considered, in cases of concurrent evaluation of multiple parameters, the relative indicator of cost per connection point, or an equivalent indicator, is the appropriate tool.

3.2 Assessment of the quality of the technical solution

This criterion is used only in cases where the grant provider sets minimum technical requirements across the board and has no further interest in a higher quality of the technical solution. In such cases, decisions are most often made on the basis of cost.

However, if the grant provider uses a multi-criteria evaluation, the quality of the technical solution is one of the key parameters, with the minimum required technical standard serving as the benchmark against which any exceeding of this standard is then rewarded.

The most commonly used parameter for the quality of the technical solution is the guaranteed connection speed.

3.3 Coverage assessment

As with the previous criterion, this criterion is also used only within the framework of a multi-criteria evaluation. In such cases, a higher coverage rate (a higher number of target locations covered) is either rewarded with a higher level of support, or the relative coverage rate is one of the sub-criteria within the overall project evaluation.

3.4 Assessment of other parameters

The consideration of other parameters such as project cost-effectiveness (price level in the budget), project readiness, market potential, etc., is among the less frequently used parameters in the evaluation. It is used only in cases of comprehensive, robust evaluations such as the Czech one.

The disadvantage of this parameter is often only a minimal difference between the evaluated projects; however, the advantage of such a parameter is that it increases the comprehensiveness of the evaluation and reduces the risks associated with project implementation.

3.5 Bonus points for small and medium-sized enterprises

The principle of preferential treatment for small and medium-sized enterprises is a parameter not commonly used within the European Union. However, this parameter is based on the specific characteristics of the Czech market, which has a relatively high proportion of local providers who, compared to nationwide providers, are at a disadvantage due to the absence of economies of scale, etc.

It is precisely in a situation where there is a market with a low number of nationwide entities and, at the same time, a higher number of local providers that allowing these local providers access to project implementation is desirable, particularly in view of the general European approach of prioritising support for small and medium-sized enterprises.

A reasonable level of bonus can offset existing disparities and disadvantages faced by small and medium-sized enterprises, and its justified use can significantly improve the overall results of the expenditure programme’s implementation without a significant impact on quality, but with a significant impact on diversity.

4 Proposal section for project evaluation

4.1 Proposal for an evaluation model within the OP TAK

The evaluation model under the OP TAK is based on the previous evaluation model under the NPO, but takes into account both the adjustment of the scope of support (inclusion of support for backhaul) and experience from previous calls.

After checking the formal requirements and eligibility, the application for support will proceed to the substantive evaluation. At this stage, two independent expert assessments will be prepared for the application for support. The total number of points awarded to the project will be calculated as the arithmetic mean of both assessments.

If the assessors' reports on a single application differ in terms of exclusion or scoring criteria, or in their overall outcome such that one report recommends the application and the other does not, or if the difference in points awarded is greater than 20 points, the outcome of the substantive assessment will be decided by a third report from an arbitrator, known as an arbitration assessment. The arbitrator's assessment constitutes the overall result of the project evaluation.

The criteria for substantive evaluation are divided into 4 basic categories

- A Combined criteria – if the minimum number of points for a given criterion is not met, the project is excluded from the approval process (max. 30 points) and exclusion criteria (YES/NO)
- B Applicant's readiness to implement the project (evaluation criterion, max. 5 points)
- C Necessity and relevance of the project (evaluation criterion, max. 65 points)
- D Bonus for SME status (evaluation criterion, sum (A to C) * coefficient 0.1 or 0)

Category A contains combined criteria (both scoring and exclusion criteria) and exclusion criteria with the option of evaluation (YES x NO), whilst criteria B, C and D are scoring criteria.

To successfully meet the substantive evaluation criteria, i.e. for the grant application to proceed to the next stage of administration, all criteria in Category A must be met; within the combined criteria, the applicant must also achieve the minimum required number of points for the given criterion, and the total points for Categories A to C must be **at least 20**.

If the project submitted by the applicant receives even a single negative assessment or an assessment with an insufficient number of points in Part A, the project will be excluded from further assessment as ineligible. The total points for categories A, B and C constitute the project's score, which (if the minimum threshold is reached) will be multiplied by the bonus coefficient for SME status.

4.1.1 Criterion A

Under this criterion, five binary YES/NO sub-criteria have been defined, focusing primarily on compliance with environmental requirements, the prevention of double funding, agreement among the municipalities and stakeholders concerned regarding the project's form, and the completeness and comprehensiveness of the supporting documents submitted in response to the call.

In addition to these binary sub-criteria, two further sub-criteria are defined, namely the cost-effectiveness of the project and the fulfilment of the call's objectives. The cost-effectiveness of the project is assessed according to the reasonableness and justification of the submitted budget, whilst setting a maximum grant value for the construction of a single connection (0 to 10 points) and further according to the fulfilment of the call's objectives, i.e. ensuring the required speed of the service provided to households, or to households and socio-economic actors in ZSJ categories A, B and C (0 to 14 points) and the percentage of municipalities connected via backhaul (0 to 6 points).

4.1.2 Criterion B

Criterion B assesses the feasibility of the project in terms of the applicant's readiness to implement the project, the realism of the timetable, the experience of the applicant and their project team, the management of project risks, and the provision of connectivity to the backbone optical networks (0 to 5 points).

4.1.3 Criterion C

Under Criterion C, market potential (C3 0 to 5 points) was assessed based on how well the applicant meets the specified requirements for a business strategy, demonstrates knowledge of the market and customer needs, including assumptions regarding development trends.

A new sub-criterion is the assessment of the scope of the wholesale access network offering (C2 0 to 10 points). This sub-criterion is calculated as the product of the weighting coefficient for the level of the wholesale offering (coefficient 0.1 to 1.0) and the relative number of newly covered SCOBAMs via BH compared to the number of SCOBAMs in the area concerned.

The result of the scoring is then equal to five times the decimal logarithm of the Effective Coverage Value in % multiplied by 100. If the effective coverage is < 1%, the result of the scoring is 0. If the effective coverage is = 1%, the result of the scoring is 1. If the effective coverage value reaches or exceeds 100%, the project is awarded 10 points for this criterion.

The sub-criterion C1 – Comprehensive assessment of coverage of the intervention area, the technical standard of the proposed solution and the amount of the requested grant – was the overwhelmingly dominant element of the evaluation. This criterion was scored on a scale of 0 to 50 points based on an objective calculation combining the amount of the requested grant per covered address, the coverage rate of uncovered SCOBAMs in the intervention area, and the speed of the proposed solution.

Individual speeds will be weighted by a coefficient ranging from 0.1 to 1.0 and multiplied by the coverage rate of uncovered SCOBAMs (the sum of the product of the relative coverage of the intervention area by the relevant speed). This product will then be multiplied by a weighting coefficient for the amount of the requested subsidy (range 0.1 to 1.0), resulting in the so-called effective coverage value.

The result of the scoring is then equal to 25 times the decimal logarithm of the effective coverage value in % multiplied by 100. If the effective coverage is < 1%, the result of the scoring is 0. If the effective coverage is = 1%, the result of the scoring is 1. If the effective coverage value reaches or exceeds 100%, the project is awarded 50 points under this criterion.

4.1.4 Criterion D

Criterion D was a bonus criterion, whereby small and medium-sized enterprises as defined by the EU could receive a bonus of 10% of the total points scored for criteria A to C, and the total number of points awarded to these entities was increased by this bonus.

Table 6: Evaluation model for OP TAK Call I.

Criterion	Number of points	Description
A1	20	Fulfilment of the call's objective (focus on priorities and coverage)
A2	10	Cost-effectiveness of the project
B	5	Project feasibility
C1	50	Comprehensive assessment
C2	10	Assessment of the scope of the wholesale offer
C3	5	Market potential
Total	**100**	
D	10	SME bonus (10% of total)

Source: API, MPO

4.2 Analysis of selected impacts of the OP TAK evaluation model

This sub-chapter provides a basic assessment and evaluation of selected aspects of the evaluation model in relation to the overall evaluation and selection of projects. The following impacts are assessed in the preparation of this sub-chapter:

- the basic impacts of the new model using examples of projects from the NPO call
- setting a minimum threshold for project acceptance
- setting a bonus for SMEs

4.3 Basic impacts of the OP TAK model using projects from the NPO call as an example

The evaluation model for the new call has changed compared to the model used for evaluating projects under the NPO. Whilst the basic principles of the evaluation model have been retained, the proposed changes reflect more qualitative and cost-related characteristics.

Compared to the previous call, a higher bonus for SMEs is also proposed. The main differences and their impact on the overall evaluation of projects are summarised below, using the new evaluation model on projects in the NPO call and comparing them with the results of the original evaluation model. The comparison covers only quantified criteria.

4.3.1 Criterion A1

Under criterion A1, the subject of the evaluation has been reassessed. The model of 4 sub-criteria has been retained; however, in the NPO call, the subject of the evaluation was ensuring minimum connection quality in the individual ZSJ categories A to C and the connection of the majority of OVMAMs, the new subject is the structure of coverage with minimum connection quality within this activity for individual categories A to C (sub-criteria a) to c)) and, newly, the percentage of newly connected municipalities within Activity I (BH, sub-criterion d)).

The criterion is also now an exclusionary one, whereby projects must score at least one point from each of at least two of the sub-criteria a) to d), i.e. a total of at least two points. If a project scores 0 points or 1 point, the criterion is not met and the project is excluded from further evaluation.

It is not possible to carry out an exact simulation of the evaluation in this case, as the minimum technical level varies across calls and, at the same time, the exact structure cannot be determined. Given the evaluation mechanism, it can be assumed that, under this criterion, projects will receive a number of points corresponding to the evaluation under the NPO call in the range of approximately 75 to 100%. For the purposes of simulating the overall evaluation, it is assumed that projects will receive 80% of the points compared to the previous call.

4.3.2 Criterion A2

The evaluation of criterion A2 is significantly refined and objectified in the new model, as precise thresholds for deductions are set, at which a given number of points is awarded, and at the same time a maximum acceptable deduction threshold (50%) is established, with poorly prepared projects being excluded from further evaluation.

Based on experience from the previous call, it can be assumed that projects will receive approximately 80 to 100% of the points compared to the previous call, with projects in most cases able to achieve the maximum score.

For the purposes of simulating the overall evaluation, it is assumed that projects will receive the full 10 points.

4.3.3 Criterion B1

The applicant’s readiness will now receive only 5 points, compared to 8 points in the previous call.

Based on experience from the previous call, it can be assumed that projects will receive approximately the same number of points (or a proportion of 5/8) as in the previous call, with projects in most cases able to achieve the maximum score.

For the purposes of simulating the overall evaluation, it is assumed that projects will receive the full 5 points.

4.3.4 Criterion C1

Criterion: The comprehensive evaluation of the technical level of the proposed solution (status at the end of the project) and the amount of the requested grant is assessed with the same number of points (50).

The sub-criteria VKT, PAM and VKD are retained, although the values of the coefficients corresponding to the individual value intervals, or in the case of PAM the method of calculation, have changed.

The VKT sub-criterion is more structured, as the number of intervals has been expanded from 3 to 5, with the minimum technical level being awarded a coefficient of just 0.1 (compared to 0.7 in the previous call) and, as a result, higher levels of technical solution are significantly favoured in the subsequent evaluation, whilst solutions meeting only the minimum technical requirements, or using inferior technical levels, are disadvantaged.

The PAM calculation takes into account the fact that, given the maximum grant amount, approximately one-third of the target locations in the given intervention area can realistically be covered, and the resulting value of the ratio of newly covered to previously uncovered AMs is thus multiplied by three. This achieves a situation where the PAM value does not reduce the weight of the product of VKT and PAM, and the weight of VKT is thus maintained. The harmonisation of sizes and the removal of threshold values for intervention areas also contribute to this (see table).

Table 7: Analysis of the size of intervention areas under Call I of the OP TAK

Number of AMs	NPO Call	OP TAK Call (Activities I + II)
MIN	3,628	8,244
MAX	24,525	18,866
PRU	10,943	13,104
MED	11,577	13,455

Source: MPO, own calculations

The VKD calculation now takes into account the average subsidy per covered SCOBAM, as opposed to per connection in the previous assessment. This results in a relative increase in the value of the average required subsidy, as the number of AMs is lower than the number of connections. However, the actual difference based on the simulation from the NPO call is only small, amounting to approximately 4 to 5%. This fact, as well as the increase in average costs, is taken into account in the definition of the individual intervals (and the increase in their number from 7 to 9) and their corresponding coefficients.

The table below shows the basic characteristics for selected values under criterion C1 based on projects from the NPO call.

Table 8: Simulation of scoring for criterion C1 under the OP TAK based on data from the NPO call

	Average grant requested (70 %) for AM	Number of points for the NPO call	VKD OP TAK simulation	VKT OP TAK simulation	PAM OP TAK simulation	Number of points OP TAK simulation call
MIN	15,934	0	0.10	0.50	0.01	0
MAX	160,824	30	1.00	0.90	0.91	40
PRU	96,244	17	0.47	0.76	0.31	21
MED	102,274	17	0.40	0.75	0.27	21

Source: MIT, own calculations

The changes made should have a positive impact on project evaluations, specifically by increasing the average number of points awarded by approximately one-fifth to one-quarter, and in extreme cases by up to one-third.

However, it is important to note that VKT values may decrease significantly if a technical solution of lower quality is used than that employed under the NPO call and permitted by the new OP TAK call. Such adjustments to projects are, conversely, likely to have a positive effect on increasing the VKD coefficient (lower grant amounts for lower-quality technical solutions). The exact behaviour of the model cannot be predicted at this stage, but it can be assumed that such projects should not see a significant drop in the number of points awarded by more than a third.

4.3.5 Criterion C2

Criterion C2 is a new criterion that takes Activity I into account and addresses the scope of the wholesale offer (VKN) in conjunction with the PAM for Activity I.

The VKN coefficients (5 intervals) take into account the scope of the wholesale supply, with the lowest coefficient of 0.1 assigned to the minimum required scope and increasing progressively according to the scope of this supply. The range of intervals and the assigned coefficients are still subject to discussion.

Uncovered address points for Activity I vary, with the basic characteristics set out in the table below (data from the definition of intervention areas for the OP TAK call).

Table 9: Basic characteristics of AM I. OP TAK call.

	AM for Activity II.	AM for Activity I	Ratio I / II
MIN	7,294	0	0.00%
MAX	14,957	8,816	51.91%
PRU	11,917	2,724	19.89%
MED	12,247	2,229	17.97%

Source: MIT, own calculations

The average PAM value (simulation based on projects from the NPO call) for Activity I will therefore be higher, even though for Activity
II. the value of uncovered AMs is divided by three, as shown in the table below.

Table 10: Average PAM value for OP TAK Call I.

	PAM for Activity II	PAM for Activity I
MIN	0.01	0.02
MAX	0.91	1.00
PRU	0.31	0.49
MED	0.27	0.45

Source: MIT, own calculations

An exact simulation of the value of criterion C2 is not possible, as it is unclear what range of wholesale supply applicants will declare. For the purposes of the simulation, an average VKN coefficient of 0.4 was selected, and the results are shown in the table below.

Table 11: Simulation of the scoring for sub-criterion C2, 1st call for proposals under OP TAK.

	C2 OP TAK simulation
MIN	0
MAX	8
PRU	6
MED	6

Source: API Agency, MIT

4.3.6 Criterion C3

The Market Potential criterion (C2 in the previous call) will now be worth only 5 points, compared to 6 points in the previous call. Criterion C3 from the previous call (technical feasibility of the project) is not directly included in the new evaluation.

Based on experience from the previous call, it can be assumed that projects will receive approximately the same number of points (or a 5/6 share) as in the previous call, with projects in most cases able to achieve the maximum score.

For the purposes of simulating the overall evaluation, it is assumed that projects will receive the full 5 points.

4.3.7 Overall evaluation

Predictions of the overall impact of changes to the evaluation model are currently limited by the as-yet unquantifiable effects on the score in criterion A1, the newly introduced criterion C2, and changes to other criteria.

The change to the evaluation system will most likely lead to a lower score in criterion A1, only minimal changes within criteria A2, B1 and C2 (formerly C3, taking into account the change in the maximum number of points); conversely, the number of points within criterion C1 could increase (this will depend on the structure of the projects).

The tables below present the basic results of the simulation of the new evaluation model on projects from the NPO call.

Table 12: Simulation of the scoring system under the OP TAK based on data from the NPO call

	Number of points NPO call	Number of points for the OP TAK call Simulation A+B+C	Number of points in the OP TAK call Simulation A+B+C+D	Total difference NPO – OP TAK (simulation)	Total share NPO / OP TAK simulation	Difference C1 NPO – OP TAK (simulation)
MIN	35.00	25.00	37.40	-17.50	71%	-9.00
MAX	80.00	84.00	88.00	13.63	120%	12.00
PRU	59.81	57.83	62.40	-0.24	99%	4.50
MED	60.11	56.00	59.40	1.00	102%	6.00

Source: MIT, own calculations

In the previous call, the average score for a project (final score including any 5% bonus for SMEs) was approximately 60 points, with a minimal difference between the mean and the median (only 0.3 points).

The new evaluation model extends the range of points awarded to a higher interval (the minimum number of points for a project would be reduced from 35 to 25 points and the maximum would be increased from 80 to 84 points).

The resulting absolute number of points is expected to decrease for projects without the bonus (the number of NPO points includes the bonus where relevant) by an average of 2 points, and the median is expected to decrease by 4 points. However, when taking the bonus into account (now set at 10% of the value of A+B+C), the average number of points per project should increase by approximately 2.5 points and the median should decrease only slightly.

The dominant criterion C1 (50 points out of a total of 100 points without the bonus) should increase by an average of 5 points, and this increase therefore offsets the changes in the evaluation structure and the greater difficulty in achieving the maximum scores for individual criteria (particularly A1 and C2).

The values in the last three columns take into account individual differences within each project; consequently, the resulting calculated values naturally differ from the differences that can be derived by adding up columns 1 to 3.

In general, it can be stated that the new evaluation model will have only a negligible impact on the overall average score; however, in borderline cases, there may be a significant change in the number of points, and to a considerable extent.

From the difference in scoring at the level of individual projects, it can be observed (albeit not at a high level of statistical significance) that the greatest drop in points could be seen in projects that are rather small (below average to significantly below average in terms of AM coverage), or expensive projects (highly above-average in terms of the high grant required to cover the AM), whilst a more significant increase in points could be seen in projects larger than average and relatively cheaper, which is in line with the grant provider's intentions.

4.4 Setting the minimum threshold for project acceptance

According to the proposed evaluation model, a project must, within the combined criteria, simultaneously meet the minimum required number of points for a given criterion, and the total points for categories A to C must be at least 20. The correctness of setting this threshold should be verified by carrying out this sub-assessment.

The basic starting point for this assessment is a very small project addressing a very low number of previously unaddressed SCOBAMs, which is a limiting factor in the overall evaluation of the project.

Table 13: Values for the simulation of the scoring system for Call I of the OP TAK.

Characteristic	Value
PAM for C1	0.01
PAM for C2	0.01
VKD (Average subsidy per connection)	0.30
VKT	0.20
VKN	0.10

Source: own calculations

The above characteristics are typical of a very small project addressing only a very low number of as yet unconnected SCOBAMs, with slightly above-average costs for connecting a new AM, a VKN commitment at only the minimum level, and a technical solution combining a minimum level (predominantly) with higher speeds for a small group of newly connected AMs.

Table 14: Simulation of the scoring for Call I of the OP TAK.

Criterion	Number of points
A1	2 to 3 points
A2	9 to 10 points
B1	4 to 5 points
C1	0 points
C2	0 points
C3	5 points
Total A+B+C	**20 to 22 points**

Source: own calculations

It can be assumed that all projects prepared with particular care will score approximately 17 to 19 points for criteria A2, B1 and C3; these can be described as well-prepared, well-thought-out and feasible.

For a project to be assessed further, it must score at least 2 points under criterion A1, which should again be met by any well-prepared, well-thought-out and feasible project.

The dominant criterion C1 and criterion C2 take into account the extent of coverage, or rather the coverage of previously unconnected address points by the project. Very small projects, where the PAM value covers only a few percentage points of unconnected locations, may score zero points even with an average solution (VKD, VKT and VKN), or obtain only a negligible number of points in the range of very low units.

A small to very small project that exhibits average characteristics of the proposed solution, but is a well-prepared, high-quality project with market potential, etc., should, under the proposed evaluation model, achieve approximately 20 to 22 points without a bonus for MPS.

The proposed threshold of at least 20 points obtained under criteria A + B + C therefore appears to be appropriately set and sufficient to ensure that a well-prepared project can pass through the evaluation process and obtain the minimum number of points, regardless of whether it may compete with other projects within the given intervention area and ultimately receive or fail to receive support.

4.5 Setting the bonus for SMEs

The SME bonus is based on the fundamental premise that support under cohesion policy should be directed primarily towards small and medium-sized enterprises, provided this is effective and efficient.

This issue has evolved over the course of previous calls, as no bonus was applied in calls under the OP PIK, a 5% bonus was applied in the NPO call, and in the current evaluation model the bonus should amount to 10%.

The purpose of the bonus should not be to select and support projects of lower or significantly lower quality simply because they are implemented by SMEs, but to reward SME applicants for projects that are of comparable quality, or which cannot benefit from economies of scale to the same extent as large enterprises.

The tables below contain basic information on past calls under the OP PIK and NPO for situations where multiple applications were submitted within a single intervention area and the applicants included both SMEs and large enterprises.

4.5.1 OP PIK calls

Under these calls, projects competed within a total of 7 intervention areas, with funding awarded to a total of 4 SME projects and 3 large enterprise projects.

In 5 areas, 2 applications competed (always one SME and one large enterprise), and in the remaining 2 areas, 3 applications competed (2 SMEs and one large enterprise).

Table 15: Basic results of the OP PIK scoring system by enterprise size

	Winner's score	Difference between 1st and 2nd	Difference between SME and large enterprise	Proportion of SMEs/large enterprises
MIN	60.5	5.5	11.0	65%
MAX	89.0	24.5	24.5	150%
PRU	72.64	15.57	19.29	111%
HONEY	73.50	17.50	20.00	127%

Source: MIT and own calculations

The average point difference between first and second place was 15.57 points, with a median of 17.50 points. However, taking into account the fact that in both areas an SME won out over three applicants and a large enterprise only came third place, the average difference between SME applications and large enterprise applications is 19.29 points, with a median of 20 points.

Table 16: Detailed results of the OP PIK scoring by enterprise size

	SME (best)	SMEs (best) + 5%	SME (best) + 10%	Large enterprises
Děčín region	89	93.5	97.9	69
Křivoklát region	65.5	68.8	72.1	76.5
Šumava	44.5	46.7	49.0	62
HV – NMnM	46.5	48.8	51.1	71
Příbram – Milevsko	60.5	63.5	66.6	47.5
Rakovník – Beroun	76	79.8	83.6	51.5
Vyškov – Holešov	73.5	77.2	80.9	49

Source: MIT and own calculations

The real difference between the assessed applications was criterion C2 in relation to the number of targeted locations in the intervention area, which is an objective qualitative criterion, and the differences in project assessment do indeed reflect an objective qualitative difference.

The differences between individual projects were so significant that, in three areas where a large enterprise received support, there would be no change even with a 5% bonus, nor with a 10% bonus. Only with a bonus of at least 17% would there have been a change in the Křivoklátsko intervention area; for the remaining areas, the bonus would have had to be 40% or 53%, respectively.

If a 5% or 10% bonus had been implemented under the OP PIK calls, there would have been no change in the outcome in the sense that an SME would have been selected instead of a large enterprise. The differences between the projects were so great that a bonus of the proposed amount could not have altered the result.

4.5.2 NPO Call

Under this call, projects competed within a total of 8 intervention areas, with support being awarded to 1 SME project and 7 large enterprise projects.

In 5 areas, 2 applications competed (always one SME and one large enterprise); in 3 areas, 3 applications competed (twice 2 SMEs and 1 large enterprise, and once 1 SME and 2 large enterprises); and in 1 area, 4 applications competed (1 large enterprise and 3 SMEs).

Under this call, SME projects were awarded a 5% bonus.

Table 17: Basic results of the NPO scoring system by enterprise size

	Number of points for the best large enterprise	Number of points of the best large enterprise without a bonus	Points for the best SME with a bonus	Winner
MIN	44.5	42.0	44.5	44.5
MAX	76.5	71.5	75.1	76.5
PRU	63.6	51.5	54.1	63.8
MED	67.0	45.5	47.8	67.0

Source: MIT and own calculations

Compared to calls under the OP PIK, projects under the NPO call were evaluated with much less variation. The average score for the winning project fell by approximately 9 points and the median by approximately 7 points. Thanks to the narrowing of the range of results, significantly smaller differences between individual applicants within the intervention areas are now apparent.

The smallest difference between first and second place was 0.4 points, with the average difference being 8.9 points (in 4 cases, less than 2 points). The differences between the winning project and other projects are significantly smaller, partly due to the SME bonus.

Table 18: Detailed results of the NPO scoring by enterprise size

	SMEs (best)	SMEs (best) + 5%	SMEs (best) + 10%	VP
Frýdlant	42.0	44.1	46.2	44.5
Opava	44.0	46.2	48.4	73.0
Konice	71.5	75.1	78.7	76.5
Mohelnice	47.0	49.4	51.7	62.0
Rakovník	69.0	72.5	75.9	71.0
Mělník	44.0	46.2	48.4	66.0
Kadaň	44.0	46.2	48.4	48.0
Holešov	50.5	53.0	55.6	66.0

Source: MIT and own calculations

If a 10% bonus were applied instead of a 5% bonus, the ranking of a total of 3 projects (purple) would change in favour of SMEs (resulting ratio of 4 LEs and 4 SMEs)

In such a case, if a VP were to win with a 10% bonus, these would be exclusively significantly better projects (a difference of 10 points or more despite the bonus); conversely, without applying the 5% bonus (as in the OPPIK calls), all projects would be awarded to VPs (the SME's victory was achieved thanks to the bonus)

Criteria C1 (quality and scope of coverage and grant amount) and A1 (scope of coverage in individual categories without scaling) had a dominant influence on the evaluation of applications.

If the bonus were changed from 5% to 10%, the winning projects in this call would be SMEs that, without the bonus, score 2.5 points, 5 points and 4 points lower. These differences do not justify the conclusion that significantly inferior projects would win due to the bonus.

On the contrary, such a small difference confirms that these are projects of a comparable standard, or only very slightly different, thereby fulfilling the original premise that the bonus for SMEs should not favour projects of significantly lower quality.

4.5.3 NPO call with evaluation simulation based on the OP TAK evaluation model

Table 19: Simulation of the basic evaluation of projects from the NPO call based on the OP TAK evaluation model

	Number of points for the best project	Number of points of the best SME without bonus	Points for the best SME with bonus	Winner
MIN	34.00	34.00	37.40	40.70
MAX	82.00	80.00	88.00	88.00
PRU	62.88	53.13	58.44	66.26
MED	68.00	49.50	54.45	69.50

Source: MIT and own calculations

Compared to the original evaluation model, projects were assessed with a wider spread. The average score for the winning project increased by approximately 2.5 points, as did the median.

The average score for large enterprises decreased by approximately 1 point, whilst the average score for SMEs without a bonus increased by approximately 1.5 points; thanks to a higher bonus, the total score including the bonus for SMEs increased by more than 4 points.

Table 20: Simulation of a detailed evaluation of projects from the NPO call for proposals according to the OP TAK evaluation model

	SMEs (best)	SMEs (best) + 5%	SMEs (best) + 10%	VP
Frýdlant	37.0	38.9	40.7	34.0
Opava	49.0	51.5	53.9	70.0
Konice	80.0	84.0	88.0	82.0
Mohelnice	50.0	52.5	55.0	58.0
Rakovník	74.0	77.7	81.4	67.0
Mělník	47.0	49.4	51.7	69.0
Kadaň	34.0	35.7	37.4	52.0
Holešov	54.0	56.7	59.4	71.0

Source: MIT and own calculations

If a 10% bonus were applied instead of a 5% bonus, the ranking would change for a total of 1 project (purple) in favour of SMEs (resulting ratio of 5 large enterprises to 3 SMEs)

Criteria C1 (quality and scope of coverage and grant amount) and A1 (scope of coverage in individual categories without scaling) had the dominant influence on the evaluation of applications.

If the bonus were changed from 5% to 10%, the SME project that is 2 points lower without the bonus would win in this call. This difference does not justify the conclusion that significantly poorer projects would win due to the bonus.

On the contrary, such a small difference confirms that the project is of a comparable standard, or differs only very slightly, thereby fulfilling the original premise that the SME bonus should not favour projects of significantly lower quality.

Table 21: Results of the simulation of the NPO call evaluation according to different SME bonuses

	NPO with a 5% bonus	NPO with a 10% bonus	OP TAK simulation with a 5% bonus	OP TAK simulation with a 10% bonus
Frýdlant	VP	SMEs	SME	MSP
Opava	VP	VP	VP	VP
Konice	VP	MSP	MSP	MSP
Mohelnice	VP	VP	VP	VP
Rakovník	SME	SME	SME	SME
Mělník	VP	VP	VP	VP
Kadaň	VP	MSP	VP	VP
Holešov	VP	VP	VP	VP

Source: MPO, own calculations

In an overall comparison between the actual NPO evaluation with a 5% bonus applied, simulating the results on this sample of projects would result in a change of winner in a total of 2 cases, and the ratio of winners would be 3 SMEs to 5 LARs (which is 1 SME project fewer than in the evaluation according to the NPO model with a 10% bonus).

4.5.4 Conclusion

The introduction of a bonus under the NPO call enabled SME projects to compete more effectively with large enterprises in real terms; however, the level of the bonus was low. If a double bonus were applied, the ratio of selected applicants would change from 7:1 to 4:4. This step would also not result in an excessively high bonus for projects of significantly lower quality.

A similar situation applies when simulating the evaluation of projects from the NPO call using the proposed evaluation model, where the ratio of selected applicants would change from 7:1 to 5:3 (the only exception is the intervention area Kadaň – Žatec – Slaný – Ústí nad Labem – Litvínov due to the very high grant requested, which is put at a greater disadvantage by the new model).

The introduction, or rather the increase, of the bonus for SMEs from 5% to 10% can be recommended in view of the possibility of favouring SMEs over large enterprises in comparable projects without significant technical or cost differences.

4.6 Sensitivity analysis of the proposed evaluation model

The aim of the applied sensitivity analysis of OP TAK projects is to verify how the final score changes if the point values of the input variables change (different projects are scored differently).

The resulting score is tested for changes in 7 individual input variables, but always for one of them separately. A total of 7 sensitivity analysis calculations are therefore presented. The study examines whether the evaluation model is, in practice, overly sensitive to changes in a single variable and whether the proposed evaluation logic of the model holds true.

Input variables

The evaluation model for supported high-speed internet projects under OP TAK in Call I served as the main basis for the CA. Four types of input variables, A, B, C and D, are used. If only a binary YES/NO rating is used for a sub-criterion, it is not included in the CA calculation, as a binary expression has no numerical value. These are point ratings in various evaluation criteria, introduced in the substantive evaluation model as follows:

Table 22: CA input variables

Category	Maximum number of points	Criterion type	Note
A-combined criteria	30	Combined (i.e. both exclusionary and evaluative)	If the project is excluded from the approval process, the CA is not relevant in such a case
B-Applicant's readiness to implement the project	5	Evaluation	

C – Necessity and relevance of the project	65	Evaluation	
D-bonus for SME status	10	Evaluation	Sum (A to C) x 0.1

Source: API, MPO

Input variable A – sub-variables An

The following sub-dependent variables are included in the CA calculation in category A (combined criteria):

Table 23: CA input variables – sub-variables An

Sub-variables An		Elimination criterion	Evaluation criterion
A1	The project content and its objectives are in line with the main parameters of the programme and the call1	NO=0 to 1	YES = 2 to 20
A2	Cost-effectiveness of the project2	NO=0	YES=1 to 10
A3	The applicant for funding must, in accordance with the terms of the call, submit individual sections collectively for the entire project3	YES/NO Not included in the CA	
A4	If the project utilises its own existing infrastructure, has this been published by the applicant as part of a public consultation (PC)? 4	YES/NO Not included in the CA	
A5	The project has clarified its relationship with other projects co-financed by EU funds and ensured that there will be no double funding for any element of the network5	YES/NO Not included in the CA	

Source: API, MIT

Input variable B – sub-variables Bn

The following dependent sub-variables are included in the CA calculation in category B (evaluation criteria):

Table 24: CA input variables – sub-variables Bn

Sub-variables An		Elimination criterion	Evaluation criterion
B1	Feasibility of project implementation in terms of the applicant's readiness to implement the project, the realism of the timetable, the experience of the applicant and their project team, the management of project risks and the assurance of connectivity to the backbone optical networks		YES = 0 to 5

Source: API, MPO

Input variable C – sub-variables Cn

The following sub-dependent variables are included in the CA calculation in category C (evaluation criteria):

Table 25: CA input variables (sub-variables Cn)

Sub-variables An		Elimination criterion	Evaluation criterion
C1	Comprehensive assessment of the technical level of the proposed solution (status at the end of the project) and the amount of the requested grant		YES=0 to 50

[1] Combined criterion; for details of the scoring method, see the evaluation model

[2] Combined criterion; for detailed scoring, see the evaluation model

[3] Exclusion criterion

[4] Exclusion criterion

[5] Exclusion criterion

C2	Assessment of the scope of the wholesale connection network offer (status at the end of the project)		YES=0 to 10
C3	Market potential, i.e. how the project responds to the company's current and future needs from the perspective of its market position – the evaluator will assess the necessity and significance of the project and the maturity of the company as a whole, particularly in terms of how likely it is that the applicant will be able to secure sales of the services offered in the given location in accordance with the objectives set out in the business plan. The assessment will also include medium-term trends in the company's development in relation to likely competition from other operators, whilst evaluating the applicant's prospects of succeeding with their project in the given market also in terms of long-term sustainability		YES = 0 to 5

Source: API, MPO

Input variable D (SME bonus)

The following sub-dependent variables are included in the CA calculation for category D (evaluation criteria):

Table 25: CA input variables (sub-variables Dn)

Sub-variables An		Elimination criterion	Evaluation criterion
D1	The applicant for support is/is not an SME		YES = 0.3 to 10

Source: API, MPO

Assumptions and CA calculation algorithm

- If a binary YES/NO criterion is used for the assessment of a sub-criterion/variable, it is not included in the CA calculation; this applies to criteria A3 to A5
- If an evaluation criterion is specified as 0 to 10, it may take values in the range 0 to 10 (including the endpoints of the range); to correctly determine the values of individual criteria, it is necessary to use the evaluation model (separate document), which is not part of the sensitivity analysis
- Minimum, maximum and mean values are defined for criteria A1, A2, B1, C1, C2 and C3, where the situation is relatively straightforward and is based on the evaluation model
- As regards criterion D1, if a project is submitted by an applicant with SME status, a situation may theoretically arise where the applicant is awarded a total of, for example, 5.5 points depending on the sum of points in criteria A to C (e.g. A to C = 55, then 55 × 0.1 = 5.5).
- Criterion D1 is therefore the only one whose value depends both on the discretion within the evaluation model and on the other criteria within the sensitivity analysis
- To analyse the sensitivity of the total score to changes in inputs, a so-called mean-value scenario is introduced. This is a hypothetical evaluation in which the hypothetical project under evaluation receives exactly the mean score in all sub-criteria
- Changes in the total score in the CA calculation for actual evaluated projects are then related to the mean values for the individual evaluation criteria of the hypothetical project
- E.g. the mean value of B1 = 2.5 (from the ratio (0+5) / 2)
- The sensitivity analysis presented here tests the movement in the total evaluation score that occurs when the value of a single sub-criterion increases or decreases by 10%

The initial values for the sensitivity analysis are shown in the table below.

Table 26: Initial values for the sensitivity analysis

Criterion	Min. value	Max. value	Median
A1	2	20	11
A2	1	10	5.5
B1	0	5	2.5
C1	0	50	25
C2	0	10	5
C3	0	5	2.5
D1	0	10	5
Total of scored criteria	3	110	56.5

Source: MIT, own calculations

CA calculation

Change from criterion A1 by +10%					**Change to criterion A1 by -10%**				
Criterion	Min. values and	Max. values	Average value	Rating A1 = mean A1 * 1.1, others the same	Criterion	Min. value and	Max. value	Average value	Rating = average *0.9, others the same
A1	2	20	11	12.1	A1	2	20	11	9.9
A2	1	10	5.5	5.5	A2	1	10	5.5	5.5
B1	0	5	2.5	2.5	B1	0	5	2.5	2.5
C1	0	50	25	25	C1	0	50	25	25
C2	0	10	5	5	C2	0	10	5	5
C3	0	5	2.5	2.5	C3	0	5	2.5	2.5
D1	0	10	5	5	D1	0	10	5	5
Total of weighted criteria	3	110	56.5	57.6	Total of scored criteria	3	110	56.5	55.4
Change from criterion A2 by +10%					**Change from criterion A2 by -10%**				
Criterion	Min. values and	Max. values	Average value	Rated = mean * 1.1, others the same	Criterion	Min. value and	Max. value and	Average value	Rated = mean *0.9, others the same
A1	2	20	11	11	A1	2	20	11	11
A2	1	10	5.5	6.05	A2	1	10	5.5	4.95
B1	0	5	2.5	2.5	B1	0	5	2.5	2.5

C1	0	50	25	25	C1	0	50	25	25
C2	0	10	5	5	C2	0	10	5	5
C3	0	5	2.5	2.5	C3	0	5	2.5	2.5
D1	0	10	5	5	D1	0	10	5	5
Total of weighted criteria	3	110	56.5	57.05	Total of scored criteria	3	110	56.5	55.95

	Change to criteria B1 by +10%				**Change in B1 by - 10%**				
Criterion	Min. values and	Max. values	Mean	Rated = mean * 1.1, others the same	Criterion	Min. value and	Max. value and	Average value	Rated = mean *0.9, others the same
A1	2	20	11	11	A1	2	20	11	11
A2	1	10	5.5	5.5	A2	1	10	5.5	5.5
B1	0	5	2.5	2.75	B1	0	5	2.5	2.25
C1	0	50	25	25	C1	0	50	25	25
C2	0	10	5	5	C2	0	10	5	5
C3	0	5	2.5	2.5	C3	0	5	2.5	2.5
D1	0	10	5	5	D1	0	10	5	5
Total of weighted criteria	3	110	56.5	56.8	Total of scored criteria	3	110	56.5	56.25

	Change to C1 criteria by +10%				**Change to criterion C 1 by -10%**				
Criterion	Min. values and	Max. values	Mean	Rated = mean * 1.1, others the same	Criterion	Min. value and	Max. value and	Average value	Rated = mean *0.9; others the same
A1	2	20	11	11	A1	2	20	11	11
A2	1	10	5.5	5.5	A2	1	10	5.5	5.5
B1	0	5	2.5	2.5	B1	0	5	2.5	2.5
C1	0	50	25	27.5	C1	0	50	25	22.5
C2	0	10	5	5	C2	0	10	5	5
C3	0	5	2.5	2.5	C3	0	5	2.5	2.5

D1	0	10	5	5	D1	0	10	5	5
Total of weighted criteria	3	110	56.5	59.0	Total of scored criteria	3	110	56.5	54.0
Change to C2 criteria by +10%					**Change to criterion C 2 by -10%**				
Criterion	Min. values and	Max. values	Mean	Rated = mean * 1.1, others the same	Criterion	Min. value and	Max. value and	Average value	Rated = mean *0.9, others the same
A1	2	20	11	11	A1	2	20	11	11
A2	1	10	5.5	5.5	A2	1	10	5.5	5.5
B1	0	5	2.5	2.5	B1	0	5	2.5	2.5
C1	0	50	25	25	C1	0	50	25	25
C2	0	10	5	5.5	C2	0	10	5	4.5
C3	0	5	2.5	2.5	C3	0	5	2.5	2.5
D1	0	10	5	5	D1	0	10	5	5
Total of weighted criteria	3	110	56.5	57.0	Total score for criteria	3	110	56.5	56.0
Change to C3 criteria by +10%					**Change to criterion C 3 by -10%**				
Criterion	Min. values and	Max. values	Mean	Rated = mean * 1.1, others the same	Criterion	Min. value and	Max. value and	Average value	Rated = mean * 0.9, others the same
A1	2	20	11	11	A1	2	20	11	11
A2	1	10	5.5	5.5	A2	1	10	5.5	5.5
B1	0	5	2.5	2.5	B1	0	5	2.5	2.5
C1	0	50	25	25	C1	0	50	25	25
C2	0	10	5	5	C2	0	10	5	5
C3	0	5	2.5	2.75	C3	0	5	2.5	2.25
D1	0	10	5	5	D1	0	10	5	5
Total of weighted criteria	3	110	56.5	56.75	Total of scored criteria	3	110	56.5	56.25

Change in criterion	**D1 by + 10%**				**Change in**	**D1 by - 10%**			
Criterion	Min. values and	Max. values and	Mean	Rated = mean * 1.1, others the same	Criterion	Min. value and	Max. value and	Averag e value	Rated = mean *0.9, others the same
A1	2	20	11	11	A1	2	20	11	11
A2	1	10	5.5	5.5	A2	1	10	5.5	5.5
B1	0	5	2.5	2.5	B1	0	5	2.5	2.5
C1	0	50	25	25	C1	0	50	25	25
C2	0	10	5	5	C2	0	10	5	5
C3	0	5	2.5	2.5	C3	0	5	2.5	2.5
D1	0	10	5	5.5	D1	0	10	5	4.5
Total score for criteria	3	110	56.5	57.0	Total of scored criteria	3	110	56.5	56.0

Table 27: Conclusions of the sensitivity analysis

	Mean	**Achieved value**	**Deviation**
A1 10% higher	56.50	57.60	1.1
A1 10% lower	56.50	55.40	-1.1
A2 10% higher	56.50	57.05	0.55
A2 10% lower	56.50	55.95	-0.55
B1 10% higher	56.50	56.75	0.25
B1 10% lower	56.50	56.25	-0.25
C1 10% higher	56.50	59.00	2.50
C1 10% lower	56.50	54.00	-2.50
C2 10% higher	56.50	57.00	0.50
C2 10% lower	56.50	56.00	-0.50
C3 10% higher	56.50	56.75	0.25
C3 10% lower	56.50	56.25	-0.25
D1 10% higher	56.50	57.00	0.50
D1 10% lower	56.50	56.00	-0.50

Source: MIT, own calculations

The greatest impact on the overall evaluation score is caused by a change in sub-criterion C1 (Comprehensive assessment of the technical level of the proposed solution (status at the end of the project) and the amount of the requested grant), where the percentage deviation from the mean scenario is 4.42%. This is due to the substantial weighting of sub-criterion C1, which accounts for 50 points out of a possible 110. It is assumed that this was the intention of the evaluation model. If so, from the perspective of the sensitivity analysis, this situation should not change.

The change in sub-criteria B1 (Feasibility of project implementation in terms of the applicant's readiness to implement the project, the realism of the schedule, the experience of the applicant and their project

team, management of project risks and ensuring connectivity to the backbone optical networks) and C3 (How the project responds to the company's current and future needs in terms of its market position), where the percentage deviation from the mean-value scenario (for both B1 and C3) is 0.44%.

Using a different basis for comparison than the mean value scenario is possible; it will yield mathematically different values, but it will not eliminate the dominance of sub-criterion C1.

Purely theoretically, it would be possible to introduce weights for individual criteria and analyse the differences in weighted averages. The question is to what extent this would affect the verifiability of the assessment, where the evaluation model (within which points are allocated) already works with decimal logarithms and weighting coefficients.

4.7 Risk analysis

The proposed evaluation model is based on experience from previous calls, takes into account the expansion of the scope and objectives of the grant programme, and responds to situations that arose in previous calls and which the grant provider ideally wishes to eliminate.

The risk analysis below identifies the main potential risks inherent in the proposed evaluation model, as well as methods for eliminating and mitigating these risks. The significance and probability of risks are expressed on a scale of 1 to 3, where 1 represents low significance or probability, whilst 3 represents high significance or probability.

Table 28: Risk analysis of the evaluation model

Risk	Severity	Probability
Subjectivity of project evaluation	3	1
Insufficient absorption capacity	3	2
Complexity of the evaluation model	2	1
Consideration of relevant evaluation criteria	2	1
Inappropriately set minimum threshold	3	1
Inappropriately set value for SME bonus	2	2
Selection of less suitable projects	3	1
Inappropriate weighting of criteria	2	1
Overlap of projects	3	2

Source: Own compilation

In terms of the overall importance of individual risks, those risks for which the product of severity and probability is greater than or equal to 3 can be considered significant risks. Risks with a product value greater than or equal to 6 can be considered very significant risks. Conversely, risks with a product value lower than 3 can be considered less significant.

Possible solutions to individual risks are listed in the following table.

Table 29: Risk analysis of the evaluation model

Risk	Measures	Overall importance
The subjectivity of project evaluation of projects	Increasing the objectivity of the decision-making process, maximising the quality of evaluators	Significant
Insufficient absorption capacity	Detailed discussion of the call and conditions with relevant stakeholders, adjustment of conditions to increase absorption capacity	Significant
Complexity of the evaluation model	Detailed discussion of the call and conditions with relevant stakeholders	Less significant
Taking relevant evaluation criteria into account	Analysis of previous calls, consideration of best practice, detailed discussion of the call and conditions with relevant stakeholders	Less significant
Inappropriately set minimum threshold	Analysis of previous calls and consideration of changes made	Significant
Inappropriately set value for SME bonus	Analysis of previous calls and consideration of changes made	Significant
Selection of less suitable projects	Analysis of previous calls, consideration of best practice, detailed discussion of the call and conditions with relevant stakeholders	Significant

Inappropriate weighting of criteria	Analysis of previous calls, detailed discussion of the call and conditions with relevant stakeholders	Less significant
Overlap of projects	Establishment of a mechanism to address project overlap	Very significant

Source: Own compilation

The preparation of a new evaluation model for the call under the OP TAK took place concurrently with the drafting of this study. The author of the study consulted on individual adjustments to the evaluation model on an ongoing basis, which were subsequently incorporated into the final version of the proposed evaluation model.

For this reason, it can be stated that all comments and suggestions contained in this study, which are considered appropriate or recommendations, were taken into account and incorporated during the development of the evaluation model. It can therefore be stated that the individual measures for risk elimination have already been implemented and are reflected in the final version of the evaluation model. For a clearer overview, the individual measures for risk elimination and mitigation are summarised below.

Table 30: Overview of measures to reduce the significance and mitigate the risks of the OP TAK evaluation model

Measure	Specific method of consideration	Taken into account
Increasing the objectivity of the decision-making process	Expansion of objectively assessed sub-criteria with a precise definition of the assessed condition and the corresponding number of points – e.g. criterion A2	Yes
Maximising the quality of evaluators	The managing authority takes into account experience from previous and related calls and, alongside increasing the objectivity of the decision-making process, also refines the evaluation procedures and enhances the quality of the evaluation team (qualifications, experience, harmonisation of evaluation practices, etc.)	Yes
Detailed discussion of the call and conditions with relevant stakeholders	Detailed discussions on the call and conditions with relevant stakeholders took place in line with best practice from other EU countries and based on previous experience. Both a public consultation and individual workshops with stakeholders were held, and the preparation of the call was also discussed with these stakeholders on an ongoing basis; their comments were taken into account when final version of the evaluation model.	Yes
Analysis of past calls	The analysis of past calls, carried out in part in this study, takes into account experience from past calls and simultaneously applies the new evaluation model to the results of past calls with the aim of verifying the adjustments and their functionality.	Yes
Incorporation of best practice	Good practice from previous calls and international experience was taken into account when developing the new evaluation model, which, based on good practice, combines increased objectivity of evaluation, the inclusion of all relevant areas under evaluation, and a balanced combination and weighting of these areas.	Yes
Creation of a mechanism to address project overlap	Based on experience from previous calls, a mechanism has been created that will allow a second application within the same intervention area with partial overlap with a selected application to undergo a new project evaluation with the overlap excluded and, in the event of a successful evaluation, the implementation of the remaining part of the project, thereby increasing the number of target locations covered (greater coverage complexity) within a single intervention area.	Yes

Source: Own processing

4.8 Recommendations for adjustments to the evaluation model

This sub-chapter provides a summary of the proposed adjustments to the evaluation model, which were taken into account by the grant provider in all cases and implemented in the new evaluation model for the OP TAK call.

It can thus be stated that the new evaluation model for the OP TAK call not only takes into account the recommendations contained in this study, but is constructed on the basis of good practice and with due regard to experience from previous calls, and fully respects both the adjustments to the scope and objectives of the grant scheme and the desired changes to the evaluation model based on experience to date.

Table 32: List of recommendations for incorporation into the OP TAK evaluation model – adjustments made by the grant provider

Specific recommendation	Incorporated
A1 – adjustment of sub-criteria A to D, taking into account the extent of coverage of previously uncovered locations/municipalities through the relevant technical solution	Yes
A2 – Objectification of the evaluation process; addition of a table for assigning individual point values according to the extent of identified project inefficiencies	Yes
B1 – reduction of the weighting of the criterion in favour of other evaluation criteria	Yes
C1 – balancing the number of specific locations within intervention areas to increase the consistency of the evaluation process	Yes
C1 – adjustment of the formula for calculating the total number of points (within the framework of relative coverage, adding a divisor to account for the difference in the number of addressable locations within Activity I and Activity II)	Yes
C1 – change in the evaluation criterion from the required subsidy per connection to the required subsidy per covered address point	Yes
C2 – introduction of a new evaluation criterion for Activity I	Yes
C3 – reduction in the weighting of the criterion in favour of other evaluation criteria	Yes
D – adjustment of the SME bonus value	Yes

Source: Own compilation

Table 31: List of recommendations for incorporation into the OP TAK evaluation model – adjustments proposed by the study author

Specific recommendation	Incorporated
A1 – maintaining the weighting of sub-criteria A to C by adjusting the calculation of points for sub-criteria A to C so that the maximum defined number of points can be achieved (multiplying the sum of points for A + B + C by a specified coefficient).	Yes
C1 – expanding the number of assignable items within the evaluation range	Yes
C1 – adjustment of the values of assignable items within the evaluation range aimed at better balancing the evaluation model in the interaction of sub-evaluation criteria, including a response to the adjustment of the sub-evaluation criterion for the requested grant	Yes
C1 – adjustment of the formula for calculating the total number of points (removal of rounding to whole numbers, adjustment of the formula, etc.)	Yes
C2 – adjustment of the formula for calculating the total number of points (removal of rounding to whole numbers, adjustment of the formula, etc.)	Yes
D – justification and verification of the new bonus value for SMEs	Yes
Total – justification and verification of the new minimum threshold for project selection	Yes

Source: Own compilation

The main reasons for the proposed and implemented adjustments to the evaluation model were:

- taking into account the newly included Activity I in the evaluation process
- overall adjustment of the weighting of individual criteria in view of the inclusion of the new criterion C2 (system balancing)
- optimisation of the balance between individual criteria and parameters with the aim of selecting the most suitable combination of technical solution, coverage and project costs
- greater consideration of the coverage rate of target locations in individual categories
- reducing the influence of subjectively assessed criteria
- optimisation of the minimum score threshold for project selection, taking into account absorption capacity
- optimisation of the bonus points for SMEs with the aim of increasing the number of qualitatively similar projects implemented by SMEs

The individual adjustments made subsequently address the above-mentioned reasons and fully resolve them. The proposed evaluation model for the OP TAK call fully takes into account both the grant provider's objectives (implementation of the largest possible number of high-quality projects at a reasonable cost) and the experience gained from previous calls, as well as examples of good practice.

Thanks to the adjustment of the criteria and their weightings, as well as the overall rebalancing of the system, the current evaluation model should, ceteris paribus, lead to an increase in the number of projects that can proceed to the project selection stage, a reduction in the number of projects rejected due to overlap with another application, the prioritisation of SME applicants for projects of similar quality, and the maintenance (or improvement) of the selection of projects offering the best possible combination of relative coverage, overall cost-effectiveness and technical solution.

At the same time, the evaluation model allows for the implementation of projects solely within Activity I (backhaul); however, such projects will be at a disadvantage compared to full-scale projects addressing a combination of both activities or Activity I alone, which reflects the grant provider’s intention to implement at least projects containing backhaul if applicants are not interested in implementing a broader scope of the project.

5 Infrastructure sharing

The sharing of electronic communications network infrastructure, whether in fixed locations or mobile networks, is becoming increasingly common, particularly within the EU. Over the past fifteen years, network-sharing agreements have been reached between mobile operators in almost every Member State. In most cases, these are agreements aimed at reducing the costs of infrastructure roll-out, particularly to locations that are less profitable (rural, sparsely populated areas), or where coverage is complicated for other reasons, such as listed heritage sites.

From the perspective of the impact on the end customer, these agreements are not unequivocally beneficial – on the one hand, they bring better and faster coverage and thus improved quality and potentially lower prices, provided operators pass on the cost savings to their customers. On the other hand, they may lead to a potential loss of competition at the infrastructure level, the promotion of which has been a cornerstone of the European regulatory framework since 2002.

There is not much academic literature on the subject of electronic communications network sharing. The study by Koutroumpis et al. “To share or not to share? The impact of mobile network sharing for consumers and operators”[6] , which contributes empirical findings from a series of network-sharing agreements between 2000 and 2019 to theoretical works concerning mergers and competition in general. The authors conclude that European operators who entered into sharing agreements were able to reduce prices (or rather, their ARPU decreased), increase coverage and improve network quality.

According to the authors, savings in capital expenditure, increased margins, improved coverage and lower prices were associated primarily with passive sharing. Active sharing, meanwhile, contributed to the speed of 4G coverage roll-out and improved quality (availability of higher download speeds). They recommend that regulators should not stand in the way of sharing agreements, as these do not appear to reduce the willingness to invest.

Infrastructure sharing, however, was previously viewed as problematic within the European regulatory framework. It was always based on theories such as the ‘investment ladder’, which assumed that competition would benefit more if smaller players had access to a range of different wholesale products from an operator designated by the regulator as having significant market power. Sharing was thus primarily seen as the sharing of resources by operators with a dominant market position.

The situation on the European market has also changed significantly. In mobile networks, a model is beginning to take hold where passive infrastructure is completely separated from active elements and service provision (the emergence of so-called “TowerCos”). Political representatives at both the European level and in the Member States have also realised that the need for high levels of investment in electronic communications, particularly in optical networks and 5G networks, goes hand in hand with the need to minimise costs whilst retaining the maximum benefits offered by a competitive environment.

The result is a significantly more positive perception of sharing agreements and support for the sharing of electronic communications networks with other network infrastructure in the form of European legislation (first a directive, then a regulation).

5.1 Definition of the possibilities and scope of sharing

Network sharing brings a number of benefits. These include, in particular:

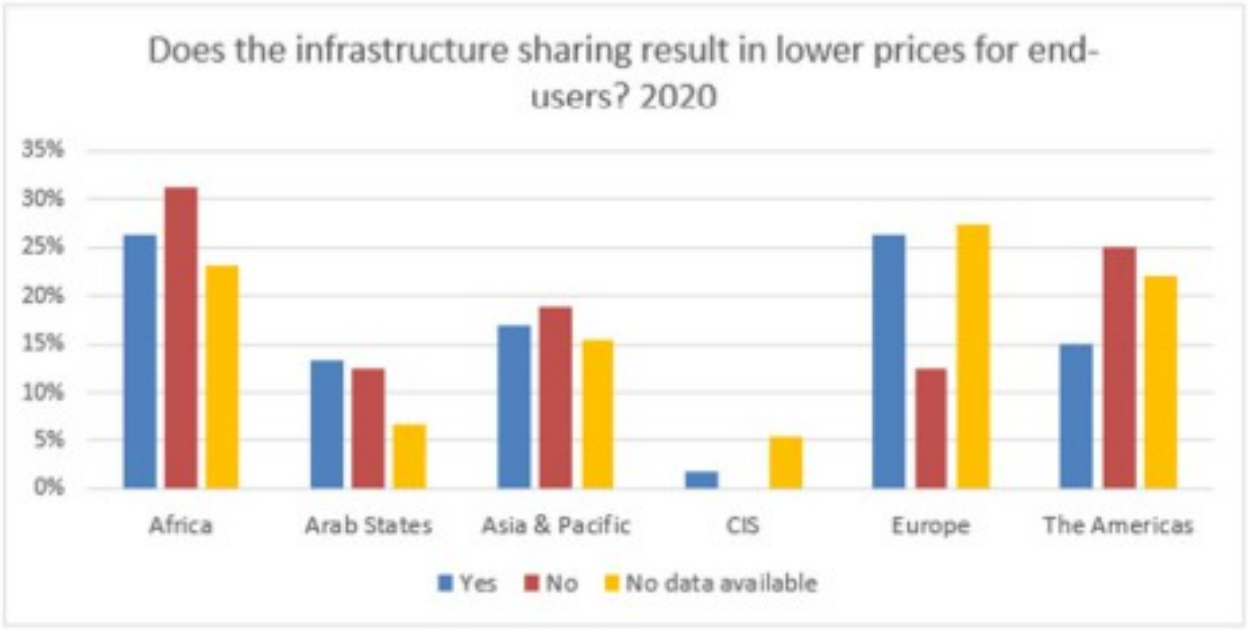
- It enables **the efficient use of limited resources**. Building a large number of networks entails costs, not only economic but also environmental (greater energy consumption, or the need to impact the environment during excavation or mast construction) and, where applicable, a greater burden on society, for example if roads need to be closed for network installation.
- **Lower costs**. Sharing ensures optimal use of infrastructure.

[6] Pantelis Koutroumpis, Pau Castells, Kalvin Bahia, To share or not to share? The impact of mobile network sharing for consumers and operators, Information Economics and Policy, Volume 65, 2023.

- **Expanded coverage**. Cost savings can be distributed to shareholders in the form of dividends or profit shares, but more often they are channelled into investments to provide wider coverage, particularly in more expensive remote and rural areas.
- **Strengthening competition**. Thanks to sharing, smaller operators can achieve coverage even in areas where it would normally be more expensive to build
- **Lower prices**. Lower costs should be passed on to consumers. An ITU survey of regulators in various countries worldwide found that European regulators in particular consider it likely that infrastructure sharing leads to lower prices for end-users, as shown in the following chart:

Chart 1 Impact of infrastructure sharing on reducing prices for end-users across continents

Figure 3.1.1: Does infrastructure sharing result in lower prices for end users? Distribution by region, 2020



Source: ITU Tariff Policies Survey

Source: ITU 2021[7]

However, infrastructure sharing also has its drawbacks. These include, in particular:

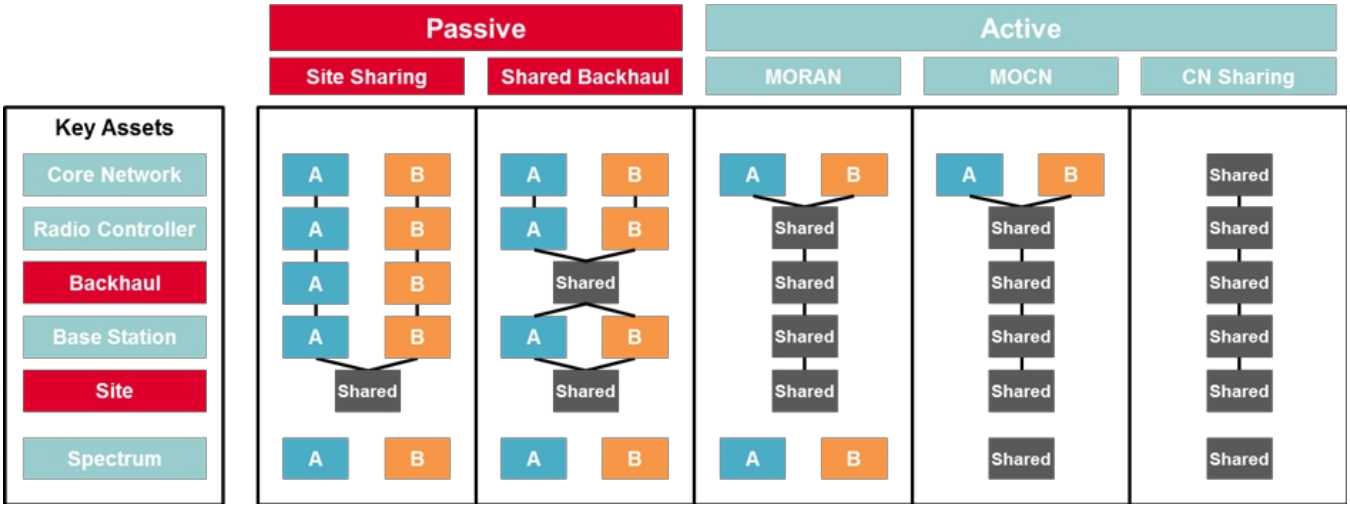
- **Reduced willingness to invest**. Infrastructure sharing increases the efficiency of existing infrastructure, but may dampen the propensity for further investment if investors perceive it as riskier.
- **Reduced resilience**. A lack of redundant infrastructure—that is, a greater number of independent networks operated by competing entities—places greater demands on the existing network and also means that any outages will have more severe consequences. Network resilience is also reduced in the event of natural disasters or other emergencies.
- **Risk of collusion**. Particularly when sharing active elements, it may be more difficult for operators to differentiate their service portfolio from that of competitors, and there is therefore less incentive to reduce prices. This is one reason why the sharing of active infrastructure is subject to more scrutiny by competition regulators and is often avoided in areas where there is a faster return on investment (such as urban areas).
- **Coordination**. Network planning and management must be coordinated across multiple entities, which can be demanding and complicated.

[7] Economic policies and methods of determining the costs of services related to national telecommunication/ICT networks, ITU 2021, https://digitalregulation.org/wp-content/uploads/ITU-D-Question-4-1-Final-Report-2021.pdf

5.1.1 5G mobile networks

Mobile network sharing can be divided into passive and active sharing. The assets shared under each type of sharing agreement are shown in the following chart.

Figure 2 Shared assets under different types of sharing agreements



Source: GSMA[8]

5.1.1.1 Passive sharing – colocation, site sharing, mast sharing

Passive infrastructure sharing involves sharing infrastructure that is not connected to the electricity and/or telecommunications network at the base station site. This includes sharing systems such as power supply, and physical elements such as masts, beams, roofs and other locations where active technology can be deployed. Passive sharing can take the form of sharing a base station site or sharing the backhaul (connecting) part of the network.

Mobile backhaul provides the connection within a mobile network between base stations and the backbone of the network, where the network control elements are located. Backhaul is most commonly implemented (in the Czech Republic) as a wireless microwave link in a licensed band or in the unlicensed 80 GHz band, or via optical cable.

Passive infrastructure sharing is the simplest in terms of coordination between operators, and agreements between the parties can be made at the level of individual locations. Network traffic management is also simpler for operators, as individual network devices remain separate. At the same time, however, passive sharing yields the lowest (though still significant) cost savings.

Sharing passive infrastructure can take the following forms:

- **Site sharing** (sharing a physical site for the construction of a transmitter):

Operator 1 and Operator 2 share the same plot of land for the placement of passive elements and active technologies, but erect separate masts, antennas and equipment. They may share certain supporting elements, such as connection to the electricity distribution network, air conditioning or structures for housing the equipment. This is a form of sharing that is common in urban or suburban environments where there is a shortage of suitable sites for mobile network transmitters, or where obtaining the necessary permits is complicated due to factors such as the site's heritage protection status.

- M**ast sharing**

Operator 1 and Operator 2 share the same mast or other structure intended for the installation of active technology, or a site suitable for the installation of such technology (such as a suitable location on a building roof). Each operator installs

[8] GSMA: Infrastructure Sharing: An Overview, 2019, https://www.gsma.com/solutions-and-impact/technologies/networks/gsma_resources/infrastructure-sharing-an-overview/

the shared mast with its own antenna technologies. As with land sharing, the sharing of supporting infrastructure elements is common.

This form of sharing is common where the site in question is owned by one of the specialised infrastructure companies managing passive infrastructure intended for electronic communications networks (in the Czech Republic, these include, for example, Vantage Towers or T-Mobile Infra CZ). These companies were spun off from the originally vertically integrated operators as managers of physical infrastructure intended for electronic communications networks

Infrastructure spin-off

We regard the spin-off of infrastructure into a separate company as a special form of sharing, which has become particularly popular in recent years, especially in EU countries and the US. The reason is the different investment and business strategy that such a move enables.

So-called “TowerCos”, i.e. companies responsible for the development and maintenance of passive infrastructure primarily for mobile networks, have different business incentives due to their separation from the “parent” company and can thus achieve better returns for shareholders. For example, a vertically integrated operator has little incentive to share infrastructure with its competitors; conversely, it is important for a TowerCo to attract as many customers as possible (operators of active network elements) and thereby achieve a faster return on investment.

An EY report[9] cites the environmental aspects of TowerCos as a further benefit – according to EY, if at least fifty per cent of European construction were to take the form of shared masts and towers, 109,000 fewer such structures would be built, which would also result in savings in terms of CO2 emissions (researchers state that this would prevent emissions of around 4 million tonnes of CO2 – more than 2 million tonnes of emissions would be saved thanks to lower energy consumption, 1.1 million tonnes thanks to lower steel consumption, 0.6 million tonnes thanks to reduced concrete requirements, and the remaining 0.1 million tonnes thanks to emissions associated with construction.

Benefits of passive infrastructure sharing

- Significant savings in investment costs
- Significant savings in administrative costs and time
- Sufficient scope for commercial differentiation among operators
- Low regulatory barriers

Disadvantages of passive infrastructure

sharing

- The capacity of the shared site may be exhausted sooner, as it is shared among multiple competitors

5.1.1.2 Active network sharing – MORAN, MOCN, national roaming

Active mobile infrastructure sharing refers to the sharing of active elements in the radio access network (e.g. antenna, radio network controller (RNC)). National roaming is also a form of active sharing. Sharing in various forms is characteristic of a number of European markets.

The BEREC report on infrastructure sharing identified 16 cases of mobile infrastructure sharing within the European Economic Area (including two in the UK, which is no longer an EU member) and six cases of national roaming agreements. Generally, in the vast majority of cases, sharing agreements are the result of commercial arrangements; less frequently, they are the result of regulatory intervention.

According to the responses from individual national regulators to the questionnaire for the purposes of the Report, network sharing can lead to significant cost savings. The Report cites the following range of savings:

- passive sharing – 16–35% CAPEX, 16–35% OPEX;
- active sharing without sharing of spectrum allocations – 33–35% CAPEX, 25–33% OPEX;
- active sharing including spectrum sharing – 33–45% CAPEX, 30–33% OPEX;
- core network sharing – only the Swiss national regulator stated that core network sharing has a limited impact on cost savings.

[9] EY, The sustainability contribution of the European independent TowerCos sector, 2023, https://static.abc.es/gestordocumental/uploads/economia/EY-tecos-informe.pdf

Regulators have also noted a significant reduction in the operating costs incurred for the radio part of the network in cases where operators shared the network. The Dutch regulator, for example, estimated the savings at up to 35%. Most of the findings reported by the BEREC study are neutral and positive – network sharing therefore does not lead to problems in terms of competition and tends to result in better coverage.

At the same time, however, the European regulatory framework is largely based on competition at the infrastructure level. In the case of active network sharing, there is frequent scrutiny by regulators or competition authorities, at both national and European levels, to ensure competition and, above all, to incentivise investment in innovation.

In any case, operators are motivated to reduce costs, particularly in areas where the return on investment in infrastructure is longer (such as rural and hard-to-cover areas). The BEREC study also notes that demand for further infrastructure sharing may arise with the anticipated use of higher frequency bands associated with 5G (millimetre waves) – unlike in some Asian countries (Korea) or the US, however, this development has not yet occurred in the EU, and it remains to be seen whether it will occur to any significant extent, as the benefits that operators, regulators and political representatives generally expected from 5G have not yet materialised.

Types of active network sharing

Active sharing in the radio part of the network goes beyond the mere use of passive infrastructure. Operators utilise not only passive elements in a given location, but also active technologies – antennas, radio equipment, and often also the access and transport parts of the network right up to the connection to the network core. Although they share hardware, operators retain a certain degree of control over the radio part of the network, as they use their own software.

- **MORAN** (Multi-Operator Radio Access Network) is a form of sharing where operators use the same technologies but also utilise their own frequency allocations.
- **MOCN** (Multi-Operator Core Network) is a form of sharing where operators use not only the same technologies but also the same frequencies and share parts of the network core.
- **National roaming** is a form of sharing where customers can use a rival operator's network where their home operator's network is not available (similar to using a foreign network whilst abroad).

Table 33: Advantages and disadvantages of individual types of sharing (according to GSMA)

Type of sharing	Pros	Against
MORAN, MOCN	• Moderate savings in investment costs compared to passive infrastructure sharing • Significant savings in operating costs • Sharing of base station costs • Reduced administrative burden (shared among multiple players)	• Regulatory approval usually required • Greater operational complexity • Requires a long-term commitment from the sharing operators • Sharing agreements are difficult to terminate
Sharing the network core	• Further significant cost savings • Investments can be channelled into service innovation • Maximum savings for operators sharing existing infrastructure	• Regulatory assessment is almost always required • Operational complexity and tight integration • Inability to differentiate based on service quality
National roaming	• Significant savings in both capital and operating costs • Clear ownership of technologies • Differentiation at service level • Low risk for parties to the sharing agreement	• Requires regulatory assessment • Limited impact on network operation (an outage in the visiting operator's network means the service is unavailable) • Very complicated handover of customers between the home and visiting operators' networks (Inter-PLMN handover)

Source: GSMA[10]

[10] GSMA: Infrastructure Sharing: An Overview, 2019, https://www.gsma.com/solutions-and-impact/technologies/networks/gsma_resources/infrastructure-sharing-an-overview/

5.1.2 Fixed high-speed networks

5.1.2.1 Forms of physical infrastructure sharing

Infrastructure sharing in the fixed network sector takes place in several basic forms.

- **The "joint venture" model** – operators become investors in a new entity or company, which then builds FTTx high-speed networks for the purpose of offering these operators' services.
- **Joint construction model** – two or more entities coordinate construction works during the infrastructure build-out (this may also be done in accordance with Act No. 194/2017 Coll., if the construction is partly or wholly financed from public funds) or in the form of a right-of-way (under the so-called Line Act, Act No. 416/2009 Coll.)
- **Mutual access model** – two or more entities agree to provide reciprocal access to their FTTx networks. This enables them to reach customers in geographically separate areas.
- **Infrastructure access model** – one operator builds FTTx networks and provides co-investors with access to these networks on the basis of long-term contractual relationships (e.g. long-term minimum commitment agreements or indefeasible rights of use, known as IRUs)
- **Passive infrastructure sharing model** – similar to passive infrastructure sharing in the mobile part of the network, in terms of sharing masts, land or rooftops for the deployment of radio links for fixed wireless networks. Another way to share infrastructure is through reciprocity.

Infrastructure sharing in the fixed network sector is relatively common at all scales. Among the largest operators in the Czech Republic, there are two major agreements on fixed infrastructure sharing – between CETIN and T-Mobile (dated December 2020) and between Vodafone and T-Mobile (dated March 2022).

Both are based on the principle of reciprocity, meaning that the operators who are parties to the agreement build their own network and, on a 'quid pro quo' basis, allow the other party to the agreement access to their own network. It is therefore not a matter of cost-sharing, as costs do not play a role.

The vast majority of sharing agreements in the Czech Republic are entirely commercial, with no role for the state as a regulator and without making use of the options formally granted to competitors by law. Meanwhile, in line with European regulations and the need to support the construction of digital infrastructure, the state has introduced a range of statutory and non-statutory regulations.

Act No. 194/2017 Coll., on measures to reduce the costs of deploying high-speed electronic communications networks and amending certain related acts, Directive 2014/61/EU of the European Parliament and of the Council of 15 May 2014 on measures to reduce the costs of deploying electronic communications networks was transposed into Czech law.

The aim of implementing this Directive is to establish minimum rights and obligations applicable throughout the European Union with a view to facilitating the deployment of high-speed electronic communications networks and coordination between different types of network infrastructure (the entities subject to these obligations are the majority of operators or owners of various types of network infrastructure).

On 18 September 2020, the European Commission adopted a recommendation calling on Member States to boost investment in high-speed connectivity infrastructure (the so-called Connectivity Toolbox)[11] . The aim of the recommendation was for Member States to develop a set of measures to reduce the costs of deploying electronic communications networks and to ensure effective access to 5G networks.

The Connectivity Toolbox also included a recommendation to promote opportunities for network sharing. Recommendation 30 calls on Member States to provide guidance on the sharing of passive and active infrastructure, taking into account the Directive on measures to reduce the cost of deploying electronic communications networks and competition law. It recommends promoting infrastructure sharing where the investment environment is more challenging (e.g. less densely populated areas, transport routes or other critical public/national infrastructure).

According to the Connectivity Toolbox, infrastructure sharing in these areas is a good solution for reducing network roll-out costs and promoting connectivity, coverage and capacity for users. It also recommends that Member States issue guidelines on infrastructure sharing.

The recommendation requires Member States to inform the Commission on how they are implementing the various provisions. The Czech report from 2022[12] refers, with regard to sharing (Recommendation No 30), to the case of mobile network sharing between companies

[11] https://digital-strategy.ec.europa.eu/en/policies/connectivity-toolbox

[12] https://digital-strategy.ec.europa.eu/en/library/connectivity-toolbox-member-states-implementation-reports

CETIN and T-Mobile and the European Commission's investigation into a potential breach of competition law, and further states the following:

> *The Czech Republic is examining ways in which telecommunications and non-telecommunications infrastructure could be shared for the development of electronic communications networks, and is preparing the relevant methodology. Clarifying the possibilities for infrastructure sharing to facilitate the roll-out of high-speed internet networks is one of the ongoing tasks of the Broadband Competence Office Czech Republic (BCO) project. During visits by BCO staff, local authorities are informed about the possibilities for such sharing and are provided with practical assistance in reaching the necessary agreements with infrastructure owners. The necessary legislative changes are being prepared.*

Developments in European legislation ultimately led to the adoption of the Gigabit Infrastructure Regulation (Regulation (EU) (EU) 2024/1309 of 29 April 2024 on measures to reduce the costs of deploying gigabit electronic communications networks), which repeals the 2014 Directive and is directly applicable throughout the EU.

In essence, this is a logical development, as the Directive did not achieve the required level of harmonisation, as is evident, inter alia, from the BEREC report on methods for valuing access to infrastructure and civil engineering works under the Directive (BoR
(19) 23)[13] .

5.1.2.2 Cost allocation for individual sharing methods (co-location, use of existing infrastructure). The "market standard", i.e. experience from actual operations and how operators typically share costs.

As we noted in the previous chapter, fixed network sharing takes various forms. Probably the most common in terms of the number of households covered is the sharing of access networks in the form of connections, where operators participating in the sharing provide each other with access to the networks they have built. Such an agreement assumes that the number of connections built or owned is more or less symmetrical.

The agreement between Vodafone Czech Republic and T-Mobile Czech Republic is precisely of this nature, and both operators promise to cover "almost a million households over the next few years"[14] . Cost-sharing in this case thus effectively amounts to risk-sharing; given that geographical and administrative conditions vary across different regions in the Czech Republic, it is highly likely that both operators will face the same conditions during their roll-out and will therefore save on construction and administrative costs in roughly equal measure. There is, of course, no formal agreement between the parties to these arrangements that would, for example, stipulate that construction costs should be identical in all respects.

Conversely, in the Czech Republic, joint ventures similar to those in Belgium (or rather in Flanders) between Telenet and Fluvius (Fluvius builds and manages public utility networks for electricity, natural gas, sewerage, heating and street lighting in the Flemish part of Belgium), or, for example, in the Netherlands between KPN and APG (Glaspoort), where APG is a pension fund. In Europe, alongside reciprocal agreements between operators, the most common form of cost-sharing is generally joint ventures between an operator and a utility, or between an operator and a pension or infrastructure fund.

Similarly, agreements on unilateral network access based on IRU have not developed in the Czech Republic, as is common in France, where all operators have concluded such agreements with one another (SFR and Bouygues Telecom since 2010, Orange and Free since 2011, Orange and Bouygues Telecom since 2012).

What remains are less extensive agreements at the local or hyper-local level, which are rather opportunistic – municipalities carrying out infrastructure renovations often invite operators with both local and national presence to co-locate their infrastructure, for example, alongside sewerage systems or during pavement renovations.

This is also attractive because if, by 2024, high-speed electronic communications network infrastructure has not been built on a commercial basis in a given location, it is increasingly likely that the location is not attractive enough for operators to invest in it using their own funds, as the return on investment would take too long. The municipal infrastructure contribution is therefore attractive to both parties.

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[13] https://www.berec.europa.eu/sites/default/files/files/document_register_store/2019/3/BoR_%2819%29_23_Report_BCRD_post_consultation.pdf

[14] https://www.t-press.cz/cs/tiskove-materialy/tiskove-zpravy-t-mobile/t-mobile-a-vodafone-spolecne-propojuji-cesko-pro-temer-milion-domacnosti-postavi-nove-opticke-internetove-pripojky.html

Where providers of electronic communications services or networks lay their infrastructure by coordinating construction works with other linear infrastructure, this represents a relatively attractive financial option for them to reach locations where it would not be as commercially viable otherwise. This is because the price is usually set as reimbursement for the additional costs incurred by the primary construction investor, provided that this is coordinated with the party interested in laying the electronic communications network infrastructure.

This practice also stems from a methodological guideline issued by the Czech Telecommunications Office, which distinguishes between cases where infrastructure is made available to operators by another telecommunications operator or by an operator of another type of linear infrastructure (such as energy, roads, sewerage, etc.).

> *When determining monthly rental prices for physical infrastructure, it is necessary, in accordance with Section 17(3) of the Act, to take into account the impact on the business plan of the obligated party. The business plans of obligated parties from different infrastructure sectors differ, and the key distinction in terms of the impact of the set wholesale prices lies in the difference between the business plans of obligated parties who are also undertakings in the electronic communications sector and use the physical infrastructure they make available themselves to provide electronic communications services, and those of undertakings that do not operate in the electronic communications sector and do not make the infrastructure available to their competitors (or, more generally, to entities with which they subsequently interact in the electronic communications markets).*

This difference in business plans should then also be taken into account when setting wholesale prices in the resolution of disputes by the CTO. The dividing line should not be the mere classification of the obligated party as an operator in the electronic communications sector, but only among those operators who, by utilising their made-available physical infrastructure, compete or are highly likely to compete with authorised parties in downstream markets for services that utilise high-speed electronic communications networks.

If an obligated party from among electronic communications operators does not provide services utilising a high-speed electronic communications network via the physical infrastructure made available, nor is it highly likely to offer such services in the future, there is no reason to treat the physical infrastructure made available differently from that of obligated parties outside the group of electronic communications operators.

The different methodological approach to the two groups of obligated entities consists in establishing a different allocation key for the costs of the physical infrastructure made available. For obligated entities outside the electronic communications sector, or entities that do not operate (using the made-available infrastructure) in markets for services utilising high-speed electronic communications networks, it is appropriate to establish an allocation key that takes into account only the incrementally utilised capacity (e.g. utilised area, carrying capacity) of the physical infrastructure element, as the primary reason for constructing this infrastructure was the provision of services in different markets (mostly in different sectors of the economy) where, compared to the markets in which authorised entities operate, different conditions prevail, i.e. in particular different price levels, levels of competition, payment terms, etc.

In such cases, it is desirable to provide the obligated party with reimbursement of costs attributable solely to the incrementally utilised capacity, thereby complying with both the requirement of Section 17(3) of the Act to set a price comprising economically justifiable costs and minimising the level of the wholesale price, and thus also the costs of building high-speed electronic communications networks.

It is therefore clear that both the Act and the regulator assume that costs will be allocated differently where sharing involves de facto competitors—that is, two providers of electronic communications services or networks—or where infrastructure is shared by operators with different commercial objectives. This is also taken into account by the new Gigabit Infrastructure Regulation, which, in the case of access to operators' physical infrastructure, additionally allows for other aspects to be considered:

- the economic viability of investments based on their risk profile,
- the need for a fair return on investment and any timeframe for such a return,
- any impact of access on competition in downstream markets and, consequently, on prices and return on investment,
- depreciation of network assets at the time of the access request,
- commercial reasons supporting the investment at the time it was made, in particular in physical infrastructure used to provide connectivity,
- opportunities for concurrent joint investment in the construction of physical infrastructure that is provisionally offered to the access seeker, in particular pursuant to Article 76 of Directive (EU) 2018/1972, or, where applicable, for concurrent construction alongside it.

In practice, the vast majority of construction sharing or coordination currently takes the form of commercial agreements between operators without the use of any statutory means. Cost-sharing between operators then takes place as follows:

- **Coordination** – The most commonly used model is a coordination agreement, which is used where a planning permission has been issued by the relevant planning authority following a planning procedure. In such cases, the parties enter into a coordination agreement which determines who will act as the "leader" and physically supervise the construction and contractors (excavation works, laying and supply of materials, etc.), with costs usually split equally.
- **Purchase agreement** – The second model applies where one of the operators has not obtained planning permission and easements, or is under time pressure for various reasons, such as obligations arising from commitments made during the frequency allocation auction. In such cases, the situation is usually resolved through a purchase agreement – the developer who holds the planning permission lays parallel infrastructure alongside their own and subsequently sells it to the 'target' operator. The costs of earthworks, as well as those for the project, easements, land acquisition, etc., are split equally. This is a cheaper form of cost-sharing than a coordination agreement.
- **Co-location** – The third model is co-location, where costs are shared on the basis of a co-location agreement. Furthermore, the servitude is explicitly regulated by the Line Act (416/2009 Coll.) in Section 2i(3) and does not require a building authority permit, nor a binding opinion or decision from the state heritage conservation authority, provided that the protection zone of the servitude does not exceed the boundary of the protection zone of the structure to which the servitude is attached, and the builder of the service connection and the builder of the building to which the service connection is attached have concluded an agreement on the service connection, in which they have agreed their rights and obligations during the construction and subsequent operation of both structures and have determined their relative positions. The costs incurred are then usually in the form of additional costs incurred by the developer as a result of allowing the operator to lay their own infrastructure alongside the developer's infrastructure.

5.2 Analysis of the issue across EU countries to identify relevant examples

5.2.1 Conditions pursuant to the implementation of Directive 2014/61/EU (Act on Measures to Reduce the Costs of Deploying High-Speed Electronic Communications Networks)

The rules governing the construction of high-speed electronic communications networks are set out in Act No. 194/2017 Coll., on measures to reduce the costs of deploying high-speed electronic communications networks, hereinafter referred to as the "Line Act" - Act No. 416/2009 Coll. on the acceleration of the construction of strategically important infrastructure and the Building Act (No. 283/2021 Coll.). The conditions for the use of third-party property by operators are governed by the Electronic Communications Act (No. 127/2005 Coll.).

The Act on Measures to Reduce Costs is based on the Construction Facilitation Directive (2014/61/EU), which was repealed by the adoption of the Gigabit Infrastructure Regulation. It can therefore be assumed that the Act, which is based on the Directive, will be significantly amended in the future and will serve as an implementing regulation for the aforementioned Regulation.

The Act primarily addresses transparency (i.e. the provision of data on physical infrastructure) and the possibility of using physical infrastructure. The obligated parties are operators (public communications network operators), but mainly other operators of physical infrastructure – providers of transport, transmission or distribution services for gas or electricity, including public lighting, distribution of thermal energy, water distribution including the removal or treatment of waste water and sewage, and drainage systems, as well as operators of physical infrastructure intended for the provision of transport services, including railways, roads, ports and airports.

The principle of the Act is that obligated parties shall grant authorised parties (public communications network operators) access to physical infrastructure upon request and by means of a written contract in accordance with the template published by the Czech Telecommunications Office. A request may be refused, but only on grounds specified by law.

Operators also have the right to be provided with a set of minimum data on the physical infrastructure of obligated entities, upon submission of a written request to the CTO. If the CTO does not have this data available, it will request it from the relevant authority that may hold it. If this proves unsuccessful, the operator may request this data from the relevant owner of the physical infrastructure (the obligated entity).

Crucial is the possibility of coordinating construction works, as provided for by law – in the case of construction works financed wholly or partly from public funds, the obligated entity must allow operators to coordinate construction works for the purpose of deploying a high-speed electronic communications network.

Coordination will take place if the legal conditions are met, i.e. if the coordination of construction works does not entail additional costs for the originally planned construction works, the coordination does not impede supervision of the construction works, and the request for coordination of construction works was submitted by the authorised person no later than one month before the submission of the application for a permit

and that the security and integrity of networks, national security, public safety, public health or the protection of its trade secrets are not compromised.

No formal evaluation of the Act's effectiveness has been carried out, and it is not known whether the Ministry of Industry and Trade has any plans to do so. As most of the Act's provisions will be superseded by a directly applicable European Union regulation (the Gigabit Infrastructure Act), it is also unlikely that anything of the sort will happen.

According to information from electronic communications network providers, the provisions of the Act are not widely used, and most sharing takes place outside the scope of the Act, in an unregulated manner. The complaints we have recorded regarding the functioning of the regulation mainly concern the fact that the necessary information on planned construction projects, particularly by public institutions (such as sewerage works, water mains, road and pavement repairs, and the like), is not available in one place sufficiently in advance and in sufficient detail.

Nor is the number of disputes that had to be resolved by the competent authority, namely the Czech Telecommunications Office, significant

5.2.2 New legislation – Regulation on gigabit infrastructure

Regulation (EU) 2024/1309 of the European Parliament and of the Council of 29 April 2024 on measures to reduce the costs of deploying gigabit electronic communications networks, amending Regulation (EU) 2015/2120 and repealing Directive 2014/61/EU (the Gigabit Infrastructure Regulation, "GIA") will enter into force in respect of most of its articles on 12 November 2025.

Certain parts of the repealed Directive on reducing the costs of deploying high-speed electronic communications networks will remain in force until 12 February 2026 (requirements for physical infrastructure inside buildings) and 12 May 2026 (primarily the minimum set of information that infrastructure operators must make available to electronic communications network providers and the authorisation procedure).

The GIA replaces the Directive on measures to reduce the cost of deploying high-speed electronic communications networks (BCRD). The general objective is to reduce the costs of deploying very high-capacity networks. The GIA covers most of the same areas as the BCRD, but the intention this time – as it is a regulation rather than a directive – is to ensure stricter and more harmonised application of the individual provisions. The regulation sets out minimum requirements, beyond which Member States may adopt further measures to address specific aspects of deployment in their respective countries.

The GIA applies to undertakings providing associated facilities of electronic communications networks, such as the assets of companies managing passive telecommunications infrastructure ("TowerCos"), which enable the installation of active telecommunications infrastructure (such as antennas and the radio network of mobile operators). The GIA also extends access obligations to certain publicly owned infrastructure, such as buildings or street furniture, for the deployment of VHCN network elements.

The aim of the regulation is to remove the complexity associated with land ownership and related easements as early as possible in the planning process. Land rights and ownership are addressed during the planning process, with terms to be negotiated 'in good faith' directly with tenants and managers, not just with property owners. To reduce delays in the administrative approval of permits, Member States will have to include tacit consent clauses. However, they will have the option to introduce alternative measures to speed up administrative processes. Single information points will provide telecommunications operators with extended data, including georeferenced information on physical infrastructure owned by network operators and public entities.

The GIA also allows Member States to adopt their own conditions beyond the minimum requirements of the Regulation. However, it expressly does not permit any further national measures in relation to the following provisions:

- Refusal of access to physical infrastructure. An entity may refuse access only if the physical infrastructure to which access has been requested is not technically suitable, there is insufficient space within it to accommodate high-speed network elements, or there are reasons relating to safety, network integrity and security, or serious interference with other services provided via the same physical infrastructure
- Exceptions to the obligation to provide access to physical infrastructure – access need not be provided to companies that are already subject to this obligation for other reasons, such as regulation under the European Electronic Communications Code and the resulting legislation, or due to subsidies or state aid. Public sector entities are also not required to provide access to infrastructure where this would be inappropriate for reasons of architectural, historical, religious or environmental value, or for reasons of public order, security, defence and health protection.

- A refusal to grant access must be in writing, specifically and fully justified, and sent no later than one month after the request (a refusal of access to national critical infrastructure need not be justified or detailed).
- Exceptions to the infrastructure transparency obligation (access via a single information point to minimum information on existing physical infrastructure) apply only in cases where the physical infrastructure is not technically suitable for the deployment of VHCN networks or associated equipment; the obligation to provide information on certain types of existing physical infrastructure would be disproportionate, based on a cost-benefit analysis carried out by Member States and founded on consultation with stakeholders, or the physical infrastructure is not subject to access obligations because it is public sector infrastructure of historical or environmental value.
- The exemption from the obligation for buildings to be fibre-ready applies only to buildings such as monuments, historic buildings, military buildings and buildings used for national security purposes.
- It is mandatory to comply with a request for the coordination of construction works, provided that this does not result in irrecoverable additional costs for the network operator or public sector entity, provided that the network operator or public sector entity retains control over the coordination, and provided that the request is submitted as soon as possible, at the latest one month before the final design is submitted to the authorising authorities.

A key change introduced by the GIA is the reduction of administrative deadlines, which may have a significant impact on the Czech process for issuing building permits. The deadline for assessing whether an application is complete is twenty days, and a decision must be issued within four months (this may be extended, but only for exceptional and justified reasons).

The same applies to easements, and the permit is deemed to have been granted (deemed consent) if no decision is made within the time limit. Member States may avoid the presumption of consent if they provide the operator with an alternative remedy in the event that the competent authority fails to meet the deadline – the operator must then have the option to claim compensation for any loss incurred as a result of the authorities' delay, or to appeal to a higher authority or court.

The Czech legal system does not recognise institutions such as the de facto presumption of consent contained in the GIA. Yet the Regulation is directly applicable, and unless building legislation is amended, the result would be either that most construction projects would be authorised through this presumption or that operators would claim compensation for damages. Generally, this situation is undesirable from the perspective of both the developer and the state.

In connection with the GIA, changes to building law will therefore likely be necessary – the introduction of the presumption of completeness for applications for planning permission and applications for expropriation, the amendment of the presumption of decision, and the setting of time limits for appeals and the review of decisions appear appropriate. The state should also consider, before the GIA is fully implemented, whether to assign the construction of electronic communications networks to specialised units to prevent a massive wave of approvals by default, as local building authorities will be unable to meet the deadlines.

5.2.3 BEREC guidelines and European Commission recommendations

BEREC (Body of European Regulators for Electronic Communications) has issued a series of guidelines concerning co-investment and the possible relaxation of certain obligations imposed under ex-ante regulation on an undertaking with significant market power, as determined on the basis of an analysis of the relevant market in question. In the Czech Republic, the only market where an operator with significant market power has been designated is Market No. 1 – wholesale local access services provided at a fixed location, and this applies only in 33 specifically designated geographical areas.

Guidelines aimed at supporting the roll-out of VHCN networks by an operator with significant market power through the relaxation of certain regulatory measures therefore make little practical sense in the Czech context.

The European Commission's gigabit recommendation (Commission Recommendation (EU) 2024/539 of 6 February 2024 on regulatory support for gigabit connectivity) has a similar objective. It also applies to regulatory obligations to be imposed on operators designated as having significant market power following a market analysis procedure.

In theory, it would be possible to apply certain provisions of the "gigabit recommendation" to infrastructure built partly with public funds, for example the structuring of obligations – the recommendation states that the regulator should consider whether it makes sense to impose an access obligation where there is sufficient access to physical infrastructure.

However, under the current framework, where wholesale access to subsidised infrastructure is clearly set out in the Commission Communication "Guidelines on State aid for broadband networks" (2023/C 36/01), this is more of a forward-looking consideration for the revision of these guidelines.

5.2.4 Best practice in regulating infrastructure deployment and sharing

In the following sub-sections, we present a selection of three countries which we believe may serve as inspiration in the future regarding how they have addressed the construction of electronic communications networks, how they support potential infrastructure sharing, and how they have established the relevant legislation and individual administrative steps that need to be taken. We consider the legal frameworks of Portugal, Poland and Ireland to be inspiring.

5.2.4.1 Portugal

Legislation on electronic communications

The primary legislation in Portugal governing the construction of electronic communications networks is Law No. 123/2009 (DL123/2009) of 21 May, which governs the construction of infrastructure suitable for the deployment of electronic communications networks, the deployment of such networks and the construction of telecommunications infrastructure in building projects and urban developments (hereinafter the “Infrastructure Act” or “DL123”), supplemented by Portuguese Law 16/2022 on Electronic Communications (hereinafter referred to as “ZEK”).

Restrictions on property rights

With regard to the construction of and access to public land, the Portuguese ZEK sets out the rights of companies providing publicly available electronic communications networks and services, specifically:

- the right to apply, in accordance with applicable legislation, for expropriation and the establishment of a public easement, and
- the right to use public land for the installation of necessary infrastructure

These rights and their exercise are governed by the principles of transparency and non-discrimination; they apply mutatis mutandis to companies providing electronic communications networks and services that are not publicly accessible. These companies are also entitled to use public space for the installation of necessary equipment and other facilities related to electronic communications networks.

The Portuguese ZEK extends land use rights to land held by public bodies. Municipalities may levy municipal charges on operators, but central government and regional authorities may not demand payment for easements.

The Act also addresses the issue of passive infrastructure on public and private property. In the case of public property, there is an obligation, particularly in urban and suburban areas, to install facilities in any infrastructure that may serve to roll out high-speed electronic communications networks (Article 29 of the Act), and for such infrastructure to be subsequently transferred free of charge to the municipalities in which it is located, in accordance with Article 31(2) of the Infrastructure Act. This is intended to enable electronic communications undertakings to access the infrastructure in a transparent, expedited and non-discriminatory manner.

Construction of electronic communications

Under the Portuguese legal framework, the construction of suitable infrastructure by electronic communications companies is governed by Decree-Law No 123/2009. For the installation of mobile infrastructure and the construction of physical infrastructure suitable for the deployment of electronic communications networks, there are two procedures under Portuguese law:

- The regulator (ANACOM) in the context of licensing;
- Municipalities with competence in authorising the construction/installation of physical infrastructure. In this regard, the installation of supporting infrastructure for base stations and accessories is subject to a municipal permit regime. In accordance with this, an application (submitted under Article 5) must be submitted to the mayor. A decision on the application must be made within 30 days. During this period, entities outside the municipality may be consulted. If the applicant receives no notification from the mayor, they may commence construction.

As regards the construction of physical infrastructure suitable for the deployment of electronic communications, under the Portuguese legal framework, developers must notify the municipality. Thereafter, and following payment of any applicable fees, they may commence construction without the need for further authorisation decisions. Municipalities may set technical conditions for the construction or extension of infrastructure and publish these in the Information System on Suitable Infrastructure (Sistema de informação de infraestruturas aptas, SIIA)

The notification to the municipality must include confirmation of the commencement of construction works, submitted within the timeframe required by law, a declaration that the developer has verified with the SIIA information system that there is no suitable existing

infrastructure that would allow them to build the network without construction works, or confirmation that they have been denied access to other infrastructure. They must also have clarified easements, where relevant.

5.2.4.2 Poland

Poland's priority is the use of existing infrastructure. The objectives of the legislation (the so-called 'Mega-Act') are to facilitate access to land and buildings for investment in the construction of telecommunications infrastructure, to remove restrictions and prohibitions related to spatial development plans that hinder the development of telecommunications infrastructure, and to strengthen the powers of the Polish Telecommunications Office (UKE) in resolving disputes concerning the granting of access to land and buildings (so-called right of way).

The mega-bill focuses on:

- removing legal barriers and streamlining the investment process in the field of telecommunications infrastructure and in administrative procedures related to the construction of telecommunications infrastructure
- providing tools for network deployment even in cases where property owners do not consent
- opening up access to existing infrastructure to foster competition in the infrastructure sector – it has introduced rules governing telecommunications operators' access to public utility infrastructure (water supply, sewerage, energy), to the telecommunications infrastructure of other operators (sharing or access to services) and to public entities, including local authorities
- involving local authorities in the construction and provision of telecommunications networks and the provision of telecommunications services carrying out activities related to telecommunications.
- the creation of an open information system on telecommunications infrastructure – the Mega-Act introduced an obligation to provide information on infrastructure at the request of state and local government bodies entrusted with tasks in the field of telecommunications. Entities carrying out activities in the field of telecommunications are obliged to provide the regulator with information on their telecommunications infrastructure.

Thanks to the implementation of the Mega Act, the number of masts in use doubled between 2019 and the first quarter of 2023, reaching 1 million.

Legal framework for electronic communications

In Poland, the construction of electronic communications networks is primarily regulated by the Act of 7 May 2010 on the promotion of the development of telecommunications services (as amended by the major amendment of 17 July 2010). This Act, also known as the Mega-Act, contains a whole range of provisions aimed at supporting the development of broadband telecommunications infrastructure. The Mega-Act has been supplemented by amendments to other Acts, and is due to be replaced by a more comprehensive Electronic Communications Act, which, however, has not yet been adopted.

Regulatory authorities

The Polish national regulatory authority is the Office of Electronic Communications, Postal Services and Frequency Management (**Urząd Komunikacji Elektronicznej**), **abbreviated to UKE**.

In the area of network deployment, UKE is responsible for:

- the collection of data provided by operators on their networks and telecommunications network coverage (a report is submitted once a year; under the draft law, reporting is to take place twice a year).
- the collection of data on available infrastructure – information provided to the President of UKE cannot be treated as a trade secret,
- the administration of the Telecommunications Information Point (PIT), operated as a publicly accessible website at pit.uke.gov.pl. The aim is to ensure the most effective planning and implementation of high-speed telecommunications networks and the use of technical infrastructure suitable for the construction of such networks, by providing access to information useful from the perspective of a telecommunications entrepreneur;

ultimately, the PIT will contain information on:

- the procedures and requirements necessary prior to the commencement of construction work on telecommunications infrastructure, during its implementation and until its completion and the commencement of use of this infrastructure,
- telecommunications services and infrastructure from reports compiled by UKE,
- existing technical infrastructure, other than that covered by the UKE report,
- investment plans for construction works financed wholly or partly from public funds relating to technical infrastructure,

- websites containing framework conditions for access to technical infrastructure and real estate (framework offers) for the deployment of high-speed telecommunications networks,
- applicable rates of fees for the occupation of a traffic lane,

The Chairman of UKE determines, by way of an administrative decision, the framework conditions for granting telecommunications operators access to real estate, including buildings (Article 30(1) and (3) of the Mega-Act), or for the siting of equipment and the construction of telecommunications infrastructure on land, including the amount of fees (Article 33(1) of the Mega-Act).

Restrictions on property rights

A telecommunications operator may use generally available solutions (civil law contracts or the establishment of an easement). However, easements are not a mechanism frequently used in practice, primarily because their establishment requires the involvement of a notary and incurs costs for registration in the land register.

Difficulties also arise if the property owner refuses to establish an easement and the operator must seek to enforce its rights through the courts. Court proceedings require the involvement of experts, which incurs further costs. In practice, telecommunications operators initiate the establishment of easements only for key sections of the network.

For most telecommunications operators, the acquisition of property rights is carried out through the conclusion of so-called access agreements governed by the Mega Act – there are two types:

1. Access to land where the purpose is not related to the provision of telecommunications services in a building situated on that land (easement under Article 33 of the Mega Act).

Article 33 of the Mega Act sets out the rules for obtaining access to property for the purpose of installing telecommunications infrastructure and its subsequent operation and maintenance. The essence of access is to ensure that the property can be used for the construction of transit (distribution) networks, i.e. those not serving to provide telecommunications services in buildings erected on the land.

Access is granted on the basis of a contract concluded between the operator and the owner, permanent user or manager of the property. The contract should be signed within 30 days of the operator submitting the application. Access is generally subject to a fee, although the regulations expressly permit free access. A contract concluded in the appropriate form also serves as the basis for registering the operator's right in the land register maintained for the property in question.

If the terms of access are not agreed, the telecommunications operator may request the mayor of the municipality to issue a decision replacing the agreement and specifying the conditions for the use of the property. The administrative proceedings are conducted on the basis of the provisions of the Act on Real Estate Administration relating to expropriation.

Such a decision by the mayor is in the nature of a quasi-expropriation administrative decision. The mayor may, for reasons of protecting public health or human life, or if necessary to safeguard the economy against serious losses, issue a special decision authorising the investor, or another party pursuing a public objective, to retain the expropriated property on a non-returnable basis.

It is clear that this step may be taken only in exceptional circumstances and in strictly defined cases, which cannot be interpreted broadly. This decision may be issued only on the basis of a prior expropriation decision; otherwise, it would essentially amount to de facto expropriation without due process.

According to the judgment of the Polish Supreme Administrative Court (NSA) of 11 July 2002, ref. no. II SA/Ka 1577/00, interference with the constitutionally protected right to property is possible only in the situation referred to in Article 124(1) of the Act on Real Estate Management of 21 August 1997. However, paragraph 3 of this provision requires that the granting of a permit be preceded by negotiations with the owner or permanent user of the property to obtain consent to carry out the works.

The legal framework for restricting the use of property suggests that this constitutes one of the forms of expropriation defined in Section 112(2) of the Real Estate Management Act; consequently, such a restriction may be imposed only if public purposes cannot be achieved by any means other than by restricting rights to the property (Section 112(3) of the Act).

In a situation where an investor carrying out a public purpose on property that is not his own fails to obtain the consent of the owners
/ perpetual usufructuaries / of individual plots to carry out the works referred to in Section 124(1) of the Act, he may, in accordance with Section 124(2) of the Act, apply for permission to restrict the use of the property.

A decision issued in this manner by the mayor establishes the right to use the property for construction purposes, as provided for in Article 32(4)(2) of the Building Act of 7 July 1994. The mayor's decision granting permission to

carry out works on the property referred to in Article 124(1) on the disposal of real estate must be preceded by a decision granting a building permit for the investment and a decision issued pursuant to Article 124(1) of the Act, together with proof of authorisation to use the property for construction purposes, which the applicant is obliged to demonstrate in the application for a building permit.[EE2]

2. Access to buildings for the provision of telecommunications services (Article 30(1) and (3) of the Mega Act).

A telecommunications operator is entitled to gain access to a property and the building situated thereon for the purpose of providing telecommunications services to its residents.

This includes:

a) providing the opportunity to use an existing telecommunications connection or existing telecommunications equipment in the building, where it would be economically unviable or technically impossible to duplicate such infrastructure, or providing a telecommunications connection up to the point of interconnection;
b) allowing the relevant operator to install telecommunications equipment in the building, provided that:
   i. there is no telecommunications equipment in the building adapted for the provision of broadband internet access services with a capacity of at least 30 Mbps, or
   ii. the existing telecommunications equipment in the building adapted for the provision of broadband internet access services with a capacity of at least 30 Mbps is not available or does not meet the telecommunications operator's requirements;
c) to allow the use of the connection point and subsequently to allow the maintenance, operation, reconstruction or repair of the telecommunications connection or the building's telecommunications equipment (owned by the operator);
d) to allow access to the land, including the building, to the extent necessary to utilise access to the building, the connection point and the equipment as specified above, for the purpose of providing telecommunications services in the building.

The Mega-Act stipulates that these obligations are independent of whether the building has been completed and whether its use has commenced, and are also independent of whether other telecommunications equipment exists or has been installed in the building. In this case, the party subject to this obligation will be the investor, i.e. the developer.

The basis for obtaining access is negotiation with the owner, permanent occupier or property manager and the conclusion of the relevant agreement within 30 days of the application being submitted. Access is free of charge. The operator should only reimburse the provider for the actual costs of access (e.g. arising from electricity consumption or supervision of installation works).

In the event of a refusal to grant access to the land and the building, the telecommunications operator is entitled to submit a request to the UKE. Following the conclusion of the proceedings, an administrative decision is issued, enabling the operator to commence the network construction process or utilise existing facilities.

Construction of electronic communications networks

Where the construction of a separate mast for the installation of telecommunications networks is concerned, a building permit must be obtained. However, some stages of telecommunications network construction are covered by the statutory exemptions set out in Article 29 of the Polish Building Act. For purely pragmatic reasons, it is advisable to apply for a decision on the issue of a building permit in accordance with the provisions on building permits under Section 28(1) of the Polish Building Act.

If a project **exceeding 3 m** in height is to be carried out, for example, on an existing building structure – in accordance with the Polish Building Act (Article 29(3)(3)(a)) – a building permit is not required, but a notification under Article 30 of the Polish Building Act is required.

If a project with a height **of no more than 3 m** is to be carried out, for example, on an existing building structure – in accordance with the Polish Building Act (Article 29(4)(3)(a)), neither a building permit nor a notification under Article 30 of the Polish Building Act is required.

5.2.4.3 Ireland

The key relevant legislation in Ireland is the Communications Regulation Act 2002, which provides that local authorities may grant telecommunications operators permission to open up regional and local public roads for the installation of underground communications infrastructure, and the Communications Regulation Act (Premium Rate Services and Electronic Communications Infrastructure) Act 2010.

The Planning and Development Act 2000, which falls under the remit of the Department of Housing, Local Government and Heritage, and its accompanying regulations, then implement national and regional planning rules and

provides the legislative framework for the preparation of development plans, local plans and the assessment and decision-making on planning applications. Under planning legislation, developments require planning permission unless they are expressly exempted by the Act or related regulations.

Exemptions are set out in the Planning and Development Regulations of 2001. These include certain works carried out by telecommunications service providers, provided that their construction does not contravene the general conditions and restrictions laid down by the regulations, nor the conditions and restrictions for specific individual structures specified in the annex to the Act.

Applications for planning permission are submitted to the relevant local planning authority, where each authority has an official responsible for high-speed broadband connectivity who acts as the point of contact for cooperation with network operators. Decisions by the planning authority may be appealed to An Bord Pleanála, and an application may also be made to the High Court for judicial review of any decision issued by the planning authority or An Bord Pleanála.

Planning permission

Planning permission is governed by Part III of the Planning and Development Act 2000. Under the Planning and Development Act, all construction works require a building permit unless expressly exempted by the Act or related regulations. The Schedule to the Planning and Development Regulations provides that certain types of works carried out by an undertaking authorised to provide telecommunications services are, under certain conditions, exempt from the requirement to obtain a building permit.

Where a building permit is required, an application for a building permit must be submitted to the relevant building authority, which is the competent local planning authority (there are 31 local planning authorities in Ireland, each of which decides on permit applications within its area).

Generally, the planning authority will process a valid application for planning permission within 12 weeks, starting from the date of submission and ending on the date the final planning permission is granted. However, this timeframe may vary, particularly if the planning authority requests further information from the applicant (it should do so within the first eight weeks). The planning authority then has four weeks from the date it receives a response to the request for further information to decide on the application.

It is also possible to consult the planning authority in advance, before submitting a planning application. All planning authorities are required to provide access to pre-application consultations within a reasonable timeframe, in accordance with the provisions of Section 247 of the Planning and Development Act 2000. However, there is no obligation on the applicant to do so, except in cases where the application concerns development which:

- is defined as large-scale residential development (i.e. development with a population of 100,000 or more residential units, or student and accommodation facilities comprising 200 or more beds, or a combination of these options), or
- consists of one or both of these types of development, or includes residential development comprising more than 10 housing units, or non-residential development with a floor area of more than 1,000 square metres.

When deciding on a planning application, the planning authority must consider the impact on local plans and the sustainable development of the area, taking into account the provisions of the development plan; it must also consider any submissions or comments received from the public and all relevant government policies, including guidance issued by the Ministry.

The planning authority may specify the duration of the permit and its conditions, including conditions relating to the location.

If, in the opinion of the planning authority, a structure is obstructing or has become dangerous, the planning authority may, upon notice, revoke the licence and require the licence holder to remove the relevant equipment, apparatus or structure at their own expense.

Appeals are then dealt with by the special board An Bord Pleanála, to which the applicant or any other person may appeal against the planning authority’s decision on the application for a permit. Judicial review of any decision issued by the planning authority or An Bord Pleanála is dealt with by the High Court within eight weeks of the date of the decision.

The court may accept an application for judicial review after the expiry of this period if it considers that there are good and proper grounds for doing so, or if it can be shown that there were circumstances beyond the applicant’s control which prevented them from filing the application within the prescribed period.

Separately, the authorisation of certain installations (which includes above-ground electronic communications infrastructure and all related physical infrastructure) on public roads and pavements is governed by Article 254 of the Planning and Development Act 2000 and related regulations.

The aim of this licensing system is to ensure that the planning authority can control installations placed on public roads or pavements, in particular to prevent obstructions or other hazards to persons using the public road or pavement. When assessing an application for a licence, the local authority or An Bord Pleanála on appeal must therefore take into account, amongst other things, the safety of road and pavement users, including pedestrians.

Submission of electronic applications for building works permits

In Ireland, the single point of contact under the provisions of the Cost Reduction Directive is the Communications Regulation Commission (ComReg). The Commission does not operate a centralised electronic system for submitting applications for building works permits.

However, the Local Government Management Agency (LGMA) is currently developing an online ePlanning system. This portal will integrate the information systems of 31 Irish planning authorities and enable the submission of planning applications online.

The ePlanning system (for obtaining planning permission), once fully developed and implemented, together with the already established MRL system (for obtaining permits for excavation works on public roads for the purpose of installing telecommunications infrastructure), will together ensure the simplification of the application process for such works. The already established MapRoad Licensing (MRL) system, operated by the Road Administration, facilitates the submission of applications for licences for excavation works on public roads for the purpose of telecommunications works.

Exemptions from permits

Generally speaking, a building permit is required for any development of land or property, unless the construction is expressly exempt from this requirement under the relevant legislation. The purpose of exemptions is to avoid burdening minor construction projects with administrative red tape and to speed up the construction of projects that are socially important.

Structures exempt from the requirement for a building permit therefore also include works carried out by businesses in the electronic communications sector. Such works include, for example:

- underground telecommunications structures or other underground telecommunications works.
- above-ground telecommunications, including the construction of masts or other supporting structures, or the use of existing masts or other supporting structures
- equipment for transmitting or receiving signals from satellites
- permanent telecommunications exchanges and containers for radio stations, including containers for electronic equipment required for the transmission, reception and processing of telecommunications data for wireless or cable networks
- cabinets forming part of a telecommunications system
- portable radio equipment
- antennas for high-speed transmission links that are attached to existing structures
- antennas, including antennas for small cells

Exempt structures may be subject to further construction conditions set out in the law and in planning and building regulations. In practice, however, it is relatively straightforward to build electronic communications infrastructure in Ireland.

Operators' access to physical infrastructure

Since 2017, Ireland has established a working group tasked with proposing measures to enable operators to gain access to physical infrastructure (including buildings and street furniture) controlled by public bodies, which is capable of hosting very high-capacity network elements, under conditions similar to those set out in Article 3 of the Cost Reduction Directive.

The working group has drafted a government policy statement on the strategic importance of facilitating access for telecommunications service providers to state-owned and publicly owned property. The aim is to draw up standard contracts that could be used by commercial and non-commercial entities in connection with the siting of telecommunications infrastructure on their land and property, to develop maps showing the available infrastructure across the country, and to draw up guidelines on where infrastructure may and may not be sited.

This approach should ensure that every operator has access to any physical infrastructure controlled by public entities at national, regional or local level that is suitable for the siting and installation of telecommunications infrastructure.

Regulatory Authority

The state body responsible for regulating the electronic communications and postal sectors in Ireland is **the Communications Regulation Commission (ComReg**). It is established by the Communications Regulation Act (2002).

Under the Broadband Cost Reduction Regulation (BCRR), as in other countries, ComReg has been designated in Ireland as the body performing the functions of a single information point. ComReg provides information on all available construction works across different regions based on information from local authorities responsible for issuing local planning permissions.

On the other hand, in Ireland, public sector bodies are not obliged to provide information to the single information point, and network operators in Ireland are currently not required to make available via the single information point, in electronic form, information on their existing physical infrastructure which they have provided to other operators upon specific request.

Other authorities of key importance for the deployment of electronic communications networks are:

- **Local planning authorities, in particular Broadband Officers (BBOs)** – To simplify and streamline authorisation procedures, and based on the findings of the Mobile Telecommunications and Broadband Working Group, the Department for Rural and Community Development (DRCD) has provided co-funding to all local authorities (LA) to appoint a Broadband Officer (BBO), who acts as a point of contact for cooperation with network operators, assists in the accelerated implementation of the National Broadband Plan (NBP), raises awareness of high-speed internet access services and seeks to stimulate demand. The working group has established structures that enable operators to actively collaborate with BBOs in local authorities, both formally and informally. BBOs have become key intermediaries, enabling operators to engage at an early stage in all phases of the planning process.
- **An Bord Pleanála** – An Bord Pleanála, which means ‘Planning Board’ (ABP), is an independent, statutory quasi-judicial body that rules on appeals against planning decisions issued by local authorities in the Republic of Ireland. Since 2007, An Bord Pleanála has been directly deciding on major strategic infrastructure projects. The Board also considers applications from local authorities for projects that would have a significant impact on the environment.
- **Department of the Environment** – supporting the roll-out of electronic communications networks with a reduced environmental footprint, particularly in terms of energy consumption and associated greenhouse gas emissions, including criteria for assessing the environmental sustainability of future networks and incentives provided to operators to roll out environmentally sustainable networks, is the role of the Department of the Environment. Following on from the Irish Government’s plan for climate change adaptation in the electronic communications sector, the Department of the Environment is working with industry stakeholders, sector associations and communications network operators in Ireland and abroad to identify best practices that are currently in use or planned for implementation in relation to the above-mentioned areas.
- **Ministry of Housing, Local Government and Cultural Heritage** – Its role is to oversee the implementation of, and take into account the results of, environmental impact assessments in accordance with the relevant European Directives (2001/42/EC (SEA), 2011/92/EU (SEA) and 92/43/EC (Habitat)) at various stages.
- **The Department of Housing, Local Government and Heritage (DHLGH)** has issued, pursuant to Section 28 of the Planning and Development Act 2000, a series of guidelines which planning authorities and An Bord Pleanála are required to take into account in the performance of their planning functions. The guidelines largely address key areas of the individual planning stages. The purpose of these guidelines is to provide planning authorities and the Board (the competent authorities) with practical guidance on legal and procedural issues and matters of interpretation arising from the amended Directives, which should lead to greater consistency in the procedures adopted by the competent authorities within the planning system.

Further mechanisms to enhance transparency in relation to physical infrastructure

The Working Group on Mobile Telecommunications and High-Speed Connectivity has collaborated with the Office of Parliamentary Works (OPW) as part of its 2016–2019 work programme with the aim of obliging commercial and non-commercial state and public entities to increase the number of entries listed in the national infrastructure register.

An official national infrastructure register is expected to be established, which state authorities will be required to update regularly to ensure full transparency regarding the availability of physical infrastructure.

Consideration is also being given to requiring the Council of City and District Administrations (CCMA) to geocode all new utility networks and make information about them available to local authorities – where possible, feasible and provided this does not give rise to security issues. The aim would be to provide a more comprehensive overview of the utility infrastructure beneath roads, which would further enable telecommunications companies and local authorities to gain a better understanding of what infrastructure is potentially available for sharing and would allow them to avoid other companies' infrastructure.

It is envisaged that, as part of the future work programme of the Working Group on Mobile Telecommunications and High-Speed Connectivity, the possibility of creating a database for sharing information on telecommunications operators and local authorities' infrastructure will be explored, in order to further improve transparency in this regard.

Restrictions on property rights

Articles 40.3 and 43 of the Irish Constitution guarantee the right to own and use private property. The Irish Constitution allows the right to private ownership of property to be restricted in the public interest and upon payment of fair compensation for expropriation. The framework for the expropriation of land and the payment of compensation is laid down by law.

Historically, the state telecommunications operator had the right, under its enabling statute, to acquire or enter privately owned land on the basis of a statutory licence. The private legal successor to the state telecommunications operator has inherited all the rights and powers previously held by its predecessor under statutory authorisation.

As a private company, it no longer requires the statutory authorisation that its predecessor, as a public-law entity, needed; however, its employees and representatives continue to exercise easements and rights of way across private property throughout the country. They may enter privately owned land for the purpose of operating, replacing or maintaining existing infrastructure on private property and have 'free passage' across private property.

Under European rules, it must also share these access rights with other electronic communications providers. Such access may involve employees of other communications providers entering and passing through private land to reach the infrastructure.

Under the Telecommunications Services Act of 2018, the Minister for Communications, Climate Action and the Environment is the owner of certain lines, ducts and cables, and of easements relating to lines and cables, for the purposes of performing his or her duties in relation to telecommunications. The Act also regulates compensation and other related obligations and matters. Under Annex 2 of the Act, the Minister has the right

> *"to lay, construct, use, inspect, maintain, repair, replace, remove or render unusable any cable ducts and cables for telecommunications purposes, together with the right to install and place all necessary ancillary equipment on, above or below the surface of the land of the owner forming any part of the route, together with the Minister's full and unrestricted right and freedom to pass through and cross the aforementioned land for any of the aforementioned purposes, and with an easement on any land of such an owner adjacent to the aforementioned land for the purposes of accessing the route at a reasonable time and at any time in an emergency, in each case with all necessary equipment, machinery and apparatus.*

6 Impact of passive infrastructure sharing on grant projects

6.1 General description

Linear infrastructure construction projects, in the sense of electronic communications networks, offer significant potential for savings and increased competition, particularly in the context of subsidised projects – typically construction in areas with naturally low or unrealised returns on investment – where various forms of infrastructure sharing are implemented.

At the same time, it is necessary to consider the rules governing grant schemes, in particular the need to ensure the objectivity of costs, so that risks are mitigated as much as possible and the efficient management of grant funds is ensured. To this end, it is therefore appropriate to establish clear guidelines in advance regarding the options and related rules for infrastructure sharing, both in the form of new construction and, for example, in the form of existing infrastructure, covering both the obligations of the grant applicant and the options available to them.

Part of the preparation of this study involves, among other things, the operational development of a cost-sharing methodology for grant projects under the current grant scheme for the construction of electronic communications networks (broadband). The primary objective is to establish cost-sharing rules for calculating the grant applicant's eligible costs (for the grant).

6.2 Cooperation models

For the purposes of cooperation, it is appropriate to define two levels, i.e. the given cooperation model is utilised by both (1) the grant applicant and (2) a third party other than the grant applicant. At the same time, there are several cooperation mechanisms utilised by law and market practice in the sense of sharing, which lead to significant savings. The cooperation models emphasised within the cost-sharing methodology being prepared for the Ministry of Industry and Trade (MPO) for the current grant scheme include:

- Přípož,
- Coordination,
- Purchase of passive infrastructure,
- Access to passive infrastructure, and
- General guidelines for cost sharing within an enterprise.

The individual forms of cooperation are described in more detail above (in the previous chapters) and are set out and explained in detail for the specific conditions of the grant scheme within the methodology, which forms an annex to the grant scheme.

6.3 Methodological guidelines for cost allocation

The basic variables used in the cost allocation methodology can be divided into the following:

- Adequate costs for calculation – Cost base
- Allocation of costs that cannot be attributed to a specific cause – Cost allocation
- Eligibility determination mechanism – Cost eligibility
- Variable for calculating cost allocation between entities – Sharing coefficient

6.3.1 Cost base

The cost base must always consist of directly related costs. Specific details are set out in the methodology; however, in general, it can be summarised that in the case of cost-sharing calculations, the cost base should always consist solely of costs directly related to the cause. This also applies when determining the eligibility of costs by comparison with, for example, the simple construction of electronic communications network infrastructure by a single entity without cost-sharing. In this case too, only comparable and causally related costs should form part of the 'expert' construction cost.

An example of the coordination or installation of passive infrastructure (conduit pipes), where it can be expected that entities will lay conduit pipes or micro-tubes themselves (with the help of their contractors), the cost calculation within the cost base should include: Design/Engineering work, Surveying work, Excavation work and similar.

When accessing physical infrastructure or purchasing it, it is advisable to include all costs in the calculation, including the costs of any transmission media that form part of the agreement. In detail, this would include: design/engineering work, surveying work, excavation work, easements, protective conduits, micro-tubes and similar items. In some cases, operating costs, WACC or one-off access costs and others may also be included.

6.3.2 Cost allocation

Typically, a situation will arise where there is a total sum of costs, but the section affected by any form of cost-sharing will be smaller or shorter. For example, a grant applicant may draw up a project for the construction of the entire infrastructure by a single contractor, and the section in question may be only part of this entire infrastructure. Costs can be divided into two groups:

1) those for which costs can be easily allocated by converting to a unit cost and allocating to the project (for example, the cost per metre of excavation work, the cost per metre of conduit, and so on),
2) and costs that relate to the overall project, for which it is appropriate to define a conversion unit for the section concerned by the sharing (e.g. design work).

In case 2), it is typical to use allocation methods based on the ratio of the length of the linear structure in question or the ratio of the costs of individual sections of the network.

6.3.3 Sharing coefficient

When allocating costs, it is advisable to distinguish between sharing cases (1) involving existing infrastructure, which is utilised, for example, through access arrangements such as leasing or IRU, and sharing cases (2) within infrastructure construction, such as cross-connections or coordination. At the same time, it is advisable to ensure that this mechanism cannot be abused in the context of grant schemes, and therefore to set minimum or maximum sharing coefficients.

To determine the sharing coefficient, it is always appropriate to use the ratio of passive infrastructure, i.e. for example the ratio of the sum of the averages/cross-sectional area of conduits/micro-tubes, the ratio of the area utilised (for collectors or towers/masts) and so on.

In the context of case 2), i.e. construction, it is appropriate to use **the ratio of all installed** passive infrastructure **assets** of the individual entities utilising the coordination for the sharing coefficient, i.e. for cost allocation. *For example, if entity A installs 7 conduits and entity B installs 3, the sharing coefficient is therefore 70% to 30%.*

For the calculation in case 1), i.e. access to infrastructure, it is appropriate to use as a basis **the maximum expected number of** passive infrastructure **assets utilised** (e.g. conduits) and the assets requested by the accessing entity. *For example, Entity A owns infrastructure with 15 protection devices and expects a maximum of 9 protection devices to be utilised over the lifetime of the passive infrastructure; Entity B requests 1 protection device via access. The total costs should therefore be divided in a ratio of 9 to 1, i.e. 90% to 10%. The rent or one-off investment for the purchase of the intangible asset/IRU right is then calculated in accordance with the agreement.*

6.3.4 Eligibility of costs

To verify the eligibility of costs under grant schemes, in the absence of a guarantee of the customary nature of the costs (i.e. where the costs did not arise from a public procurement procedure), it is advisable to use expert reports that compare the construction costs of similar infrastructure. These costs should, of course, be adjusted to account for any time lag or the specific nature of the infrastructure in question.

An expert opinion should always determine the maximum eligible cost. However, the use of the infrastructure should not be restricted, even at a higher price, without including part of the costs among the eligible costs. At the same time, the expert opinion

ensure compliance with all calculation principles, such as cost determination, cost allocation, and the calculation and application of the sharing coefficient.