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DRAFT!

*Annex No. 1*

*to the National Strategy for Digital*

*Transformation of the Bulgarian Construction Sector*

**ROAD MAP**

**for the implementation of the National Strategy for Digital Transformation of the Construction Sector 2030.**

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**ABBREVIATIONS USED**

|  |  |
| --- | --- |
| GCCA | Geodesy, Cartography and Cadastre Agency |
| RIA | Road Infrastructure Agency |
| PPA | Public Procurement Agency |
| BAIC | Bulgarian Association for Insulation in Construction |
| HSCE LYUBEN KARAVELOV | Higher School of Civil Engineering “Lyuben Karavelov” |
| VFU CHERNORIZETS HRABAR | Varna Free University “Chernorizets Hrabar” |
| HSs | Higher schools |
| GIS | Geographical Information Systems |
| SB | State Budget |
| FPE | Faculty of Power Engineering |
| FEE | Faculty of Electrical Engineering |
| EDIH | European Digital Innovation Hub in the Construction Sector |
| IPA | Institute of Public Administration |
| CAB | Chamber of Architects in Bulgaria |
| CBB | Chamber of Builders in Bulgaria |
| CEID | Chamber of Engineers in Investment Design |
| MEG | Ministry of eGovernment |
| MoC | Ministry of Culture |
| MES | Ministry of Education and Science |
| MOEW | Ministry of Environment and Water |
| MRDPW | Ministry of Regional Development and Public Works |
| CM | Council of Ministers |
| MoF | Ministry of Finance |
| FME | Faculty of Mechanical Engineering |
| NRRP | National Recovery and Resilience Plan |
| NWG | National Working Group |
| NAMRB | National Association of Municipalities in the Republic of Bulgaria |
| MB | Municipal Budget |
| OPGG | Operational Programme “Good Governance” |
| RIDSTP | Research, Innovation and Digitalisation for Smart Transformation Programme |
| RB | Republic of Bulgaria |
| TU-Sofia | Technical University - Sofia |
| UACEG | University of Architecture, Civil Engineering and Geodesy - Sofia |
| FEET | Faculty of Electronic Engineering and Technology |

**INTRODUCTION**

This document is a Roadmap that includes the measures and activities for the implementation of the strategic objectives set out in the National Strategy for the Digital Transformation of the Construction Sector 2030, as well as the responsible institutions and the financial resources required for this.

In order to outline the vision for the development of the construction sector and to define the strategic objectives for its achievement, an overview and analysis of the construction sector is made, situated in the objective conditions of the political, economic, socio-cultural, technological, legal and environmental environment. A SWOT analysis for the implementation of the BIM is also carried out. **The main challenges** to be addressed by 2030 are:

* low productivity growth, last among EU Member States in terms of resource efficiency,
* a growing number of bankruptcies and a shortage of skilled and professional labour,
* an ageing workforce and a reluctance of young people to pursue a career in construction due to labour intensity and the lack of new technology in the sector,
* complicated procedures and high costs for obtaining a building permit, high administrative burden,
* low public spending on education, poor cooperation of the education system with the business sector, outdated curriculum, shortage of qualified teachers,
* low levels of digital skills among adults, young people and ICT professionals;
* lack of sufficient information on the digitisation of the whole construction process and the application of BIM in public administrations, lack of unified formats for digital design and electronic submission of projects, lack of qualified staff;
* lack of centralised systems for information exchange in a Common Data Environment (CDE), lack of electronic systems for administrative services; lack of electronic cadastral maps and presence of only a few GIS systems;
* lack of awareness of the benefits and return on investment in BIM for each of the different groups involved in the construction process;
* high software and hardware costs, lack of sufficient knowledge and skills in the private sector; shortage of training literature, guidelines and template documents for use with electronic systems and BIM;
* lagging behind in terms of integration of digital technologies and the introduction of BIM Bulgaria;
* lack of a regulatory framework that defines formats and standards for the development and digital approval of plans and projects, as well as an IT infrastructure through which public administrations can accept and communicate their approval, issue the necessary permits and maintain the relevant registers and databases with them, lack of a requirement to implement BIM;
* waste management continues to be a challenge for Bulgaria, poor air quality due to high concentrations of fine particulate matter.

In relation to the outlined challenges and development trends of the construction ecosystem of the European Union, the Bulgarian government sets the following **long-term and short-term goals:**

In the **long term**, the digital transformation of the sector through digitalisation and management of the built environment to contribute effectively to the implementation of European policies for a green, digital, sustainable ecosystem, digital economy, energy efficiency, circular economy, climate neutrality, sustainable use of resources, demographic change, attractive jobs, education, training.

In the **short term**, the National Strategy for the Digital Transformation of the Construction Sector with a horizon until 2030 focuses on creating conditions for the digital transformation of the construction sector, with a view to increasing its efficiency, competitiveness and sustainability and building a more attractive investment environment that provides equal opportunities for all, including gender equality.

The implementation of the Roadmap of the National Strategy for Digital Transformation of the Construction Sector will be realised through the **funding, connectivity and synergy** of the National Recovery and Resilience Plan (NRRP), the Operational Programme for Good Governance (OPGG), the National Programmes Vocational Education and Training, IT Skills and Career Training, Business Teaches and Motivated Teachers and Skills, the Education 2021-2027 Programme (EP), the Digital Europe 2021-2027 Programme, “Research, Innovation and Digitalisation for Smart Transformation Programme” (RIDSTP), through the state and municipal budgets.

**The funds required from the state budget should be charged to the approved expenditure in the budgets of the ministries and departments concerned for the year concerned.**

**The main results expected to be achieved by 2030** are the creation of conditions for digital transformation of the construction sector through the implementation of effective electronic administrative services in the investment process, optimization of the design process, improvement of the quality of construction, environmental protection through the introduction of level 2 of the BIM, developing the digital capacity and skills of human capital and the workforce in the construction sector, developing activities related to innovation in the construction sector, providing information on

The implementation of the digital reform of the construction sector will lead to an increase in the quality and efficiency of the design and execution processes of the construction works, to the creation of opportunities for their better maintenance, prolongation of their life and better management of energy resources. The reform aims to modernise the conservative construction sector and attract young people to it, to increase their qualifications and competitiveness, to stimulate high-tech innovation in the sector, sustainable construction, to reduce its negative environmental footprint and to create favourable conditions for international investment.

**MEASURES, FINANCING, RESPONSIBLE INSTITUTIONS, PERFORMANCE INDICATORS, EXPECTED RESULTS, IMPLEMENTATION DEADLINES BY STRATEGIC AND OPERATIONAL OBJECTIVES**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Name of the measure** | **Responsible institution (partner)** | **Source of funding** | **Financial resources required** | **Period of implementation** |
| **STRATEGIC OBJECTIVE 1** **CREATING CONDITIONS FOR DIGITISATION OF THE CONSTRUCTION SECTOR** | | | | | |
| **SPECIFIC STRATEGIC OBJECTIVE 1.1** **Create conditions for effective electronic administrative services in the investment process**  ***Operational objective 1.1.1* Establishing regulatory conditions and IT infrastructure for the provision of electronic administrative services in spatial planning, investment design and construction permitting** | | | | | |
| 1 | Establishment of a unified register for spatial planning, investment design and construction permitting | MRDPW | OPGG | BGN 3 056 918 | 31.12.2023 |
| 2 | Establishment of a Unified Information System for spatial planning, investment design and construction permitting | MRDPW | NRRP, SB | BGN 3 512 000 | 30.06.2026 |
| 3 | Development of draft amendments to related laws and regulations, including new regulations created for the functioning of the systems  Integration of the above systems with information systems and registers of other administrations, with developed horizontal modules of e-government: e-Authentication, e-Granting, e-Authorization; e-Payment and with an environment for inter-register exchange (RegiX). | MRDPW | OPGG  NRRP, SB | The activities shall be financed within the framework of the projects under points 1 and 2. | 2023-2026 |
| 4 | Digitization of existing spatial plans and integration into a common spatial database of the Unified Register | regional and municipal administrations, Ministry of Regional Development and Regional Development, GCCA | European programmes, MB, SB | - | Annually after 2026 |
| **Expected results of the implementation of the measures included in Specific Objective 1.1:**  **Established IT infrastructure for provision of electronic administrative services in spatial planning, investment design and construction permitting**   * **Functioning Single Registry and Single Information System;** * **Integrated Unified Information System with the Unified Register of Spatial Planning, Investment Design and Construction Permitting, the Spatial Planning Portal and the Single Information Point established under the ECNPIA, respectively Directive 2014/61;** * **Integrated the above systems with information systems and registers of other administrations, with developed horizontal modules of e-government: e-Authentication, e-Granting, e-Authorization; e-Payment and with an environment for inter-register exchange (RegiX).** * **Digitized spatial plans in force, integrated into a common spatial database of the Unified Registry;** * **Drafted amendments to related laws and regulations, including new regulations for the functioning of the systems.** | | | | | |
| ***Operational objective 1.1.2* Development of the specialised spatial data information systems of GCCA** | | | | | |
| 5 | Creation of a new single, unified, optimized centralized cadastral architecture and information system;  New, improved (streamlined, simplified and shortened) workflows for the provision of administrative and e-administrative services;  Revised model and implementation of the information and communication environment, with improved quality, speed and reliability of the cadastral administrative services provided by the GCCA system and interoperability, in accordance with the Law on Electronic Management (LEM);  Integration with information systems and registers of other administrations, with the developed horizontal modules of e-government: e-Authentication, e-Granting, e-Authorization; e-Payment and with the environment for inter-register exchange (RegiX). | GCCA | SB | BGN 5 340 000 including VAT | 30.07.2020 – 31.12.2023 |
| 6 | Creation of a Portal on Spatial Planning | MRDPW, GCCA | SB | BGN 5 000 000 including VAT | 2023-2027 |
| **Expected results from the implementation of the measures included in Operational Objective 1.1.2:**  **Functioning unified, streamlined and centralized cadastral information system;**   * **Shortened and simplified work processes for the provision of user-oriented administrative and e-administrative services, in line with the integrated administrative service and the principles of the e-Government Act;** * **Implemented an information and communication environment with improved quality, speed and reliability of the cadastral administrative services provided by the GCCA system and ensured interoperability in accordance with the SPA;** * **Integration with information systems and registers of other administrations, with developed horizontal modules of e-government: e-Authentication, e-Granting, e-Authorization; e-Payment and with an environment for inter-register exchange (RegiX);** * **Established Portal on spatial planning.** | | | | | |
| ***Operational objective 1.1.3* Update and upgrade the Register of landslide areas on the territory of the Republic of Bulgaria and of areas with abrasion and erosion processes along the Black Sea and Danube coasts** | | | | | |
| 7 | Development of new modules, update and optimization of existing applications of the Landslide Register and integration of all components of the GIS of the MRDPW | MRDPW | SB | BGN 200 000 including VAT | 01.01-31.12.2023 |
| 8 | Implementation and regular operation of the new functionalities of the Landslide Register. | MRDPW | SB | BGN 200 000 including VAT | 01.01-31.12.2023 |
| **Expected results from the implementation of the measures included in Operational Objective 1.1.3:**  **Updated and upgraded Register of Landslide Areas on the Territory of the Republic of Bulgaria and of Areas with Abrasion and Erosion Processes on the Black Sea and Danube Coasts**   * **Developed new modules, updated and optimized applications of the Landslide Register and integration of all components of the MRDPW GIS;** * **New functionalities of the Landslide Register implemented and put into operation;** * **Optimized integration of data from Geopreservation companies;** * **Implemented mobile application for field data collection;** * **Search, Feedback and Forum modules developed;** * **Updated map services in the system;** * **Built an application to share data from partner organizations;** * **Updated user interface.** | | | | | |
| **SPECIFIC STRATEGIC OBJECTIVE 1.2** **Optimise the design process, improve the quality of construction, protect the environment by introducing Level 2 of BIM in investment design and construction**  ***Operational objective 1.2.1:* Establish the regulatory conditions and IT infrastructure for the introduction of BIM** | | | | | |
| 1 | Analysis and development of a legislative framework | MRDPW | NRRP, SB | BGN 1 450 000 | 2022-2026 |
| 2 | Development of a national BIM model, templates and procedures for information collection, management and sharing, security and access control based on BDS EN ISO 19650 and CEN standards |
| 3 | Develop libraries of BIM objects to reflect construction products and materials in infrastructure construction; |
| 4 | Establishment of software infrastructure for working with BIM projects in the process of approval and coordination of investment projects | MRDPW, MEG | NRRP, SB | BGN 845 000 | 2022-2026 |
| 5 | Introduction of requirements for the application of SIM in public procurement  1 stage  2 stage | MRDPW, PPA | - | - | 2027  2030 |
| 6 | An analysis of the application of BIM and the readiness of the sector to use it, with a view to scoping the procurement of construction works for the third phase of the introduction of BIM. | MRDPW | SB | BGN 5000 | 2033 |
| **Expected results from the implementation of the measures included in Operational Objective 1.2.1:**  **Provided regulatory conditions and IT infrastructure for the introduction of BIM through:**   * **Legislative framework ensuring the application of BIM in public works procurement;** * **Developed a national BIM model and guidelines for information collection, management and sharing, security and access control;** * **Developed libraries of BIM objects to reflect construction products and materials in infrastructure construction;** * **Established software infrastructure for working with BIM projects in the process of approval and coordination of investment projects and plans.** * **Requirements introduced for the application of BIM in public procurement** * **Analysis prepared with proposal for scope of Stage 3 to introduce BIM in public works procurement** | | | | | |
| ***Operational objective 1.2.2* Provide facilities for the introduction of electronic administrative services related to BIM in investment design** | | | | | |
| 7 | Hardware and software support for experts from municipal, regional and state administration involved in the process of coordination and approval of investment projects | MRDPW | NRRP, SB | BGN 900 000 | 2022-2026 |
| 8 | Development of a web-based platform with published online training, an interactive guide (manual) on the national BIM model, design and approval processes for BIM projects, downloadable resources such as libraries, templates and forms, and digital maturity checker applications for enterprises in the construction sector | MRDPW | NRRP, SB | BGN 360 000 | 2022-2026 |
| 9 | Pilot development of a module for automated checking for conflicts between all engineering networks, structural and architectural elements within the BIM model and for automated reconciliation | MRDPW | NRRP, SB | BGN 955 000 | 2022-2026 |
| **Expected results from the implementation of the measures included in Operational Objective 1.3.1:**  **Provided facilities for the introduction of electronic administrative services related to BIM in investment design.**   * **300 jobs created for experts from municipal, regional and state administration involved in the process of coordination and approval of investment projects;** * **A functioning web-based platform with published online training, an interactive guide (manual) to the national BIM model, design and approval processes for BIM projects, downloadable resources such as libraries, templates and forms, and digital maturity checker applications for businesses in the construction sector** * **Developed module for automated checking for conflicts between all engineering networks, structural and architectural elements within the BIM model** | | | | | |
| ***Operational objective 1.2.3:* Develop the digital capacity and skills of public administration involved in investment design** | | | | | |
| 10 | Conducting specialized trainings in line with the common framework standards for the introduction of SIM and European best practices in the administration | MRDPW | NRRP, SB | BGN 270 000 | 2022-2026 |
| 11 | Preparation of an online training format for further training of staff from all interested administrations through the Institute of Public Administration | MRDPW, IPA | NRRP, SB | BGN 270 000 | 2022-2026 |
| 12 | Conducting annual training for experts from public administrations | state, regional and municipal administrations  IPA | - | No cash required from SB and MB | annually |
| **Expected results from the implementation of the measures included in Operational Objective 1.3.2:**  **Trained 300 experts from the administration of 28 regional administrations, 28 large municipalities and 3 ministries (MRDPW, MoI and MoC) to implement the reform in the construction sector and created an opportunity to enhance the capacity of design and construction actors in the private sector and administration through:**   * **Conducted specialised trainings in line with the common framework standards for the introduction of BIM and European best practices to 300 experts from the administration;** * **Online trainings prepared for follow-up training of all interested administrations, provided to the Institute of Public Administration and published on a web-based platform;** * **Number of public administration experts trained** | | | | | |
| **STRATEGIC OBJECTIVE 2 SUSTAINABLE AND COMPETITIVE CONSTRUCTION SECTOR** | | | | | |
| **SPECIFIC STRATEGIC OBJECTIVE 2.1 Develop the digital capacity and skills of the human capital and workforce in the construction sector**  ***Operational objective 2.1.1* Prepare the education system to provide quality training in the application of BIM in vocational schools for secondary technical education in the field of construction** | | | | | |
| 1 | Specialized training of 70 teachers in vocational schools preparing personnel for the construction sector to work with BIM; | MES in partnership with construction business organizations | Education Programme 2021-2027 | After approval of the Programme by the EC | indicative period 2021-2027 |
| 2 | Updating the state educational standards for the construction professions, curricula and syllabuses to ensure skills in working with BIM software; | MES in partnership with construction business organizations | Education Programme 2021-2027 | After approval of the Programme by the EC | indicative period 2021-2027 |
| 3 | Provision of the necessary hardware and software for the training in at least 4 vocational schools in the field of construction (respectively 4 classrooms with 14 workstations in each of them in the amount of 4 x 28 000 EUR - 112 000 EUR or 220 000 BGN. | MES in partnership with construction business organizations | NRRP | BGN 220 000 | 2020-2026 |
| **Expected results from the implementation of the measures included in Operational Objective 2.1.1:**  **Provided quality training in the application of BIM in vocational schools for secondary technical education in the field of construction through:**   * **70 teachers in vocational high schools preparing personnel for the construction sector qualified to work with BIM;** * **Updated state educational standards for construction professions, curricula and syllabi to ensure skills in working with BIM software;** * **Provided hardware and software to conduct the training in at least 4 vocational schools in the field of construction.** | | | | | |
| ***Operational Objective 2.1.2* Prepare the education system to provide quality training on the implementation of BIM in HSs** | | | | | |
| 4 | Preparation of teachers from all necessary specialties in the university;  12 pcs. x 6 000 BGN = 72 000 BGN; | UACEG; HSCE Lyuben Karavelov; VFU Chernorizets Hrabar; TU-Sofia | Own budget, Ministry of Education, European programmes  Own budget, European programmes | BGN 72 000 | 2026-2028  2026-2030 |
| 5 | Development and introduction of curricula for the application of BIM and their inclusion in the curricula for the training of all architectural and engineering staff in HSs. | HSs,  MRDPW  TU-Sofia | Own budget, Ministry of Education, European programmes  NRRP, SB  Own budget, European programmes | BGN 440 000  BGN 300 000 | 2028-2031  2022-2026  2028-2030 |
| 6 | Ensuring the necessary conditions for effective training in the BIM in the individual specialties | HSs  TU-Sofia | European programmes  business support | BGN 120 000 | 2027-2031  2027-2030 |
| 7 | Providing internships and placements for students in construction business organizations | HSs in partnership with construction business organisations | European programmes | - | annually |
| **Expected results from the implementation of the measures included in Operational Objective 2.1.2:**  **Provided quality training on the implementation of BIM in HSs through:**   * **Trained teaching staff: 12 pcs. 12 faculty members;** * **Introduced BIM implementation programs for all architecture and engineering majors in HSs;** * **Hardware and software for the training: 8 classrooms and 120 computers - TU-Sofia;** * **Provided annual internships and placements for students in construction business organizations.** | | | | | |
| ***Operational objective 2.1.3:* Enhancing the capacity of design and construction actors** | | | | | |
| 8 | Development of 2 web-based manuals - for work with BIM, for designers and for the administration approving investment projects | MRDPW | NRRP, SB | BGN 970 000 | 2022-2026 |
| 9 | Creation of a web-based platform with published online training, an interactive guide (manual) to the national BIM model, design and approval processes for BIM projects, downloadable resources such as libraries, templates and forms, and digital maturity checker applications for businesses in the construction sector | MRDPW | NRRP, SB | BGN 108 000 | 2022-2026 |
| 10 | Developing annual plans and organizing seminars and training for architects, engineers and builders from the chambers, including sharing best practices and challenges overcome | CEID, CAB, BAIC, CBB | European programmes, own funds | - | annually |
| 11 | Organizing and conducting specialized trainings, conferences, lectures, seminars and consultations aimed at capacity building on topics related to the introduction of digital technologies in construction processes;  Annual publication of a list of services provided by the EDIH | EDIH | Digital Europe Programme, RIDSTP, other European programmes | - | annually |
| **Expected results from the implementation of the measures included in Operational Objective 2.1.3:**  **Opportunities created to enhance the capacity of design and construction actors:**   * **Manuals developed for planners and the administration approving investment projects;** * **Created and published on a web-based platform online training, an interactive guide (manual) on the national BIM model, design and approval processes for BIM projects, downloadable resources such as libraries, templates and forms, and digital maturity checker applications for businesses in the construction sector with open access for businesses;** * **Number of seminars and trainings held; number of specialists trained/year.** | | | | | |
| **INNOVATION, RESEARCH AND DEVELOPMENT** | | | | | |
| **SPECIFIC STRATEGIC OBJECTIVE 2.2 Develop innovation-related activities in the construction sector** | | | | | |
| 1 | Providing access to specialised research infrastructure and expertise for pilot testing of experimental equipment, innovative products, digital and technological solutions, materials and services to accelerate their commercialisation | EDIH | Digital Europe Programme, RIDSTP, other European programmes | - | annually |
| 2 | Providing information on tools and mechanisms for management and financing of small and medium-sized businesses through international and national programmes and initiatives for pilot testing of digital technologies and the implementation of innovative projects. | EDIH | Digital Europe Programme, RIDSTP, other European programmes | - | annually |
| 3 | Supporting access to partner organisations, the creation of innovation platforms, shared infrastructures and stimulating networking. | EDIH | Digital Europe Programme, RIDSTP, other European programmes | - | annually |
| 4 | Defining themes and areas of collaboration between science and business with a focus on the digitisation of the construction process and providing a database of research projects with potential for commercialisation | EDIH | Digital Europe Programme, RIDSTP, other European programmes | - | 2024-2025 |
| 5 | Preparation and procurement of pilot projects for implementation through BIM technology - infrastructure project and building project | RIA, NAMRB  branch organizations in the field of spatial planning, investment design and construction | SB, own budget, EU programmes | - | 2027 |
| **Expected results of the implementation of the measures included in Specific Objective 2.2:**  **A functioning Digital Innovation Hub for construction in Bulgaria;**   * **Access to specialised research infrastructure and expertise;** * **Number of SMEs informed and consulted on management and financing instruments and mechanisms;** * **Provided access to partner organisations, created innovation platforms, shared infrastructures;** * **Planned research and development activities in the field of construction** * **Procurement of 2 pilot investment projects for implementation through BIM technology** | | | | | |
| **SPECIFIC STRATEGIC OBJECTIVE 2.3 Ensure awareness and active participation of the construction sector in government plans for construction reform**  ***Operational objective 2.3.1* Involve all stakeholders in the preparation and implementation of the reform** | | | | | |
| 1 | Functioning of an NWG of representatives of all stakeholders to monitor the implementation of the strategy; | MRDPW, MEG, MES  all branch organisations | - | - | 2023-2030 |
| **Expected results from the implementation of the measures included in Operational Objective 2.3.1:**  **Involvement of all stakeholders in the preparation and implementation of the reform**   * **Functioning NWG, monitoring of strategy implementation.** | | | | | |
|  |  |  |  |  |  |
| ***Operational objective 2.3.2* Conduct an information campaign** | | | | | |
| 2 | Conduct a survey of stakeholders' communication needs and attitudes and run a media campaign | MRDPW | NRRP | BGN 203 568 | 2023-2026 |
| 3 | Conducting 12 press conferences in the 6 planning regions in Bulgaria | MRDPW | NRRP | BGN 23 000 | 2023-2026 |
| **Expected results from the implementation of the measures included in Operational Objective 2.3.2:**  **Increased stakeholder awareness of the digitalisation of the construction sector**   * **Media campaigns to promote the construction sector reform strategy;** * **Press conferences held in the 6 planning regions in Bulgaria.** | | | | | |

*Аз, долуподписаният преводач Галя Петрова Пейчева, гарантирам, че този документ е пълен, верен и точен превод от английски на български език на приложения оригинален документ на английски език.*

*Преводът се състои от 17 (седемнадесет) страници.*

*Преводач: Галя Петрова Пейчева*