Summary of evaluation findings for Operational Programme "Science and Education for Smart Growth" 2014 – 2020, co-funded by the European Regional Development Fund and the European Social Fund

Contents

1. Overview of the evaluation work

During the implementation of Operational Programme "Science and Education for Smart Growth" 2014 – 2020 (OPSESG), a total of 17 evaluations (4 internal and 13 external) were conducted until 31.12.2022. The aim of the evaluations is to support the implementation of the Programme and to ensure the effective use of the results of the evaluations as a management tool for OPSESG during the entire period of implementation of the Programme. The evaluations are focused on the effectiveness and efficiency in the implementation of the Programme, the impact on the reforms in the education system and the implementation of the strategic goals of Bulgaria laid down in European and national strategic documents.

Two evaluations are ongoing: Evaluation of the effectiveness, efficiency and impact of grant award procedures aimed at active inclusion and social economic integration of marginalized groups, including Roma, under Priority Axis 3 "Educational environment for active social inclusion" of Operational Programme "Science and Education for Smart Growth" 2014 – 2020 (external) and Evaluation of the functioning, performance and impact of Centers of Excellence (CoE) and Centers of Competence (CoC) and assessment of effects caused by COVID-19 crisis (internal one). Final results from them are expected to be available in 2023 (end of year).

Concerning effects of implementation of measures under Priority Axis 2 of OPSESG, the internal evaluation gives a "snapshot" of the achievement of systemic projects implemented with Specific beneficiary Ministry of Education and Science as of 31.01.2022. Since at the time of conducting the evaluation, some projects were still under implementation, thorough analysis of their effectiveness, efficiency and impact could be done after completion of all project activities.

The total amount of external evaluations of OPSESG (evaluations with identifier no. 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16 and 17) for 2014 – 2020 programming period is EUR 2 916 613.

2. Findings by priority axis in relation to result & output indicators

PA 3 Identifier of evaluation 1

In May 2022, an open procedure under the Public Procurement Act for the award of a public contract was launched with the subject of Evaluation of the effectiveness, efficiency and impact of procedures focused directly or indirectly on marginalized groups, such as Roma under Priority Axis 3 (PA3) "Educational Environment for Active Social Inclusion" of Operational Programme "Science and Education for Smart Growth" 2014 – 2020 (OPSESG).

According to the Technical Specification, the evaluation contains three thematic strands: 1. Evaluation of the effectiveness of operations — to what extent the specific objectives under PA 3 of the OPSESG have been achieved. 2. Assessment of the efficiency of operations — whether the optimal ratio between inputs and outputs (implementation indicators) has been achieved. Impact assessment — whether children and school students from marginalized communities, including Roma, have been successfully integrated into the education system; has the share of early school leavers decreased; the impact of the COVID-19 pandemic on projects, etc. The evaluation must provide recommendations that can be used by the institutions responsible for the implementation, monitoring and evaluation of the OPSESG, as well as stakeholders. On 08.09.2022 a contract was signed with the selected company for the execution of the public procurement and evaluation is ongoing.

- Next steps:

- by the end of March 2023, an evaluation of thematic strands "Effectiveness of operations: Result orientation and level of achievement of the specific objectives under Investment Priorities 9i and 9ii under PA 3 of the Programme and 'Effectiveness of Operations: Achieving an optimal ratio between inputs and outputs (implementation indicators) and adequacy of simplified cost accounting methodologies applied" is to be conducted.

- by the end of June 2023 an evaluation of the thematic strand "Impact assessment" is to be conducted.

- by the end of July 2023 the evaluation under the three thematic strands is to be finalized.

PA 1 Identifier of evaluation 2 – Internal evaluation is ongoing and final evaluation results will be available at the end of 2023.

The aim of internal evaluation is:

- to analyze the implementation and evaluate the achieved results of the projects in the process of implementation;

- to assess the relevance and adequacy of performance and result indicators, as well as the methodology for calculating the planned final targets;
- to assess the relevance of the external coherence of Priority Axis 1 in relation to the needs and the Strategic framework in the science and education sector;
- to propose recommendations for improving the implementation of projects under Priority Axis 1 and for ensuring the sustainability of the CoEs and the CoCs after the end of the support under OPSESG.

At the time of submission of the Evaluation findings report, the following reports were elaborated within the Working Group and main findings extracted from them are, as follows:

1. Guidelines for the preparation of Development and Sustainability Programmes with business plans by the CoEs and CoCs, financed under OPSESG in accordance with the recommendations of the Joint Research Center (JRC) to the European Commission:
   - ✓ In order to demonstrate and at the same time plan for sustainability, relevant analyzes should be carried out at the Center level, and for the international, national and regional contexts, already adopted and published reports and analyzes should be used and referenced, such as Report of the Joint Research Center "Strategic assessment of the Bulgarian Centers of Competence and Centers of Excellence and recommendations for their future development", reports prepared by the World Bank (WB), as a result of the implementation of activities from Pillar 1 "Review of public expenditure in the field of science, technologies and innovations" under the Agreement with the Ministry of Education and Science and the Executive Agency "Programme Education" (http://opnoir.bg/?go=page&pageId=451), an Innovative Strategy for Smart Specialization, and to envisage activities (both research and administrative) to ensure the required sustainability, which do not have the characteristics of temporary/project activities only, but are a step towards building and demonstrating future potential for sustainability;
   - ✓ Development and Sustainability Programmes with business plans must demonstrate the potential of newly created Centers to move into an operational phase, integrate into the country's research and innovation ecosystem, increase their contribution to smart economic transformation, and generate scientific results from new theories and hypotheses in specific engineering-technical and applied solutions;
   - ✓ When preparing Development and Sustainability Programmes with business plans, the recommendations from the Report of the Joint Research Center "Strategic assessment of the Bulgarian Centers of Competence and Centers of Excellence and recommendations for their future development" must be adequately reflected, in the relevant applicable parts;
   - ✓ Development and Sustainability Programmes with business plans should cover not only the short-term period of implementation of a project financed by Programme for Research, Innovation and Digitalisation for Smart Transformation 2021 – 2027 (PRIDST), but also the period of medium- and long-term functioning of newly created Centers in terms of sources of funding for research activity, optimal operation of the built equipment and mechanisms for effective cooperation with business, establishing an appropriate management model, building managerial and expert capacity, attracting and retaining talents, building capacity for technology transfer, management

and protection of intellectual rights, development of spin-off companies and attraction of investments for the early phases of development, risk management plan, plan for open access and dissemination of results, etc.

- ✓ In relation to the above, the Development and Sustainability Programmes of the Centers should be of long-term duration and cover the period from 2023 to 2033. This period can be divided into stages, in accordance with the recommendations in the Report of the Joint Research Center.

2. Report on the assessment of the compliance of CoEs and CoCs funded under the Operational Programme "Science and Education for Smart Growth" 2014 – 2020 with the Strategic Framework in the field of scientific research and innovation:

Concerning assessing compliance with RIS3:

- ✓ The distribution of CoE and CoC funding across the four Innovation strategy for smart specialization (RIS3) thematic areas shows a certain imbalance in favor of a greater share of funding under the Thematic area (TA) "Mechatronics and Clean Technologies" and significantly less funding under the TA "New Technologies in Creative and Recreational Industries";
- ✓ Regarding the assessment of the orientation of resources by thematic areas, the analysis of the projects financed under PA1 of OPSESG shows an unbalanced distribution, in contrast to the finding in the interim assessment of RIS3, which was made in a summary of information for all instruments. The reasons for the unbalanced distribution of funding under PA1 among the thematic areas of RIS3 can be sought in the following directions:

- Different resource intensity of R&D in each of the TAs;
- Disproportionately developed capacity of scientific organizations in R&D areas falling in the individual TAs;
- Targeted allocation of the resource under PA1 in different amounts to the different TAs of RIS3 – according to the criteria for the selection of operations under CoE and CoC under procedures BG05M2OP001-1.001 "Creation and development of Centres of Excellence" (Procedure 1) and BG05M2OP001-1.002 "Creation and development of Centres of Competence" (Procedure 2);

- ✓ The allocation of the resource under procedure "Supplementary support for scientific organizations with approved projects under HORIZON 2020 Framework Programme, Call WIDESPREAD-TEAMING, Phase 2" (Procedure 3) depends on the rules of the supplementary support and in the specific case is defined as equal to the amount provided by HORIZON 2020 to each project, which is BGN 30,000,000. The inclusion of the projects from this procedure in the different thematic areas of RIS3 is also not linked to the application, as the condition was set with the division of the budgets by components under the first two procedures;
- ✓ At this stage of internal evaluation, the general assessment that the procedures are in line with RIS3 can be confirmed, as also found by the Interim Evaluation of RIS3, which states that the activities and objectives announced within the procedures funded by OPSESG were in line with RIS3 to a high degree and are aligned with Priority Areas of Strategy and regional smart specialization. The projects supported by the Programme have a significant contribution to the sub-goals "Effective science-business collaborations" and "Quality human resource". The support provided by OPSESG corresponds to the needs of the beneficiaries and the organizations they represent. At the time of the mid-term evaluation, the activities provided for in part of the procedures are still in the process of implementation and it is not possible to analyze the results achieved, and no information is available for others. With the successful implementation of

the projects, the set goals of the procedures will be achieved. Part of the procedures can be defined as effective and efficient in reaching the intended indicators and goals, and in others this is valid to a certain extent.

Concerning assessment of compliance with the National Research Strategy of the Republic of Bulgaria:

- ✓ The activities fully correspond to the strategy and operational plan;
- ✓ In the management of the procedures for the implementation of the activities by the MA of OPSESG, as the responsible institution for the implementation of the operational plan, the planned budgeting according to the relevant measures was implemented adequately and in full compliance;
- ✓ The successful implementation of Activity 4.1 within the first stage of the Strategy can be counted with the implementation of activities under PA1, with the exception of what is provided for in measure 4.1.3. creation of Regional Scientific Centers according to the priorities of the relevant regional RIS3 with funding from OPSESG.

Concerning assessment of compliance with the National Science Infrastructure Roadmap:

- ✓ The activities under Priority Axis 1 of OPSESG are in full compliance with the objectives of the National Science Infrastructure Roadmap (NSIR). All CoEs and CoCs created under the OPSESG are included in the NSIR, being distributed in appropriate categories, according to the scope and tasks of R&D in each center, respectively 3 CoEs and 9 CoCs in category 7.4. "National science and innovation complexes – projects of key importance for the development of the competitiveness of the Bulgarian economy and the technological base" and 3 CoEs and 1 CoC in category 7.5. "E-infrastructures. Digital, Computational and Computing Research (E-Research)";
- ✓ OPSESG's PA1 activities have contributed to the successful implementation of the first stage of the NSIR, which envisages increased participation in Horizon Europe, internationalization and national capacity building (2020 – 2023).

Concerning the impact of the procedures under the Programme on reforms in the field of science and scientific research:

- ✓ Given the complexity of the projects financed under PA1 of OPSESG and the fact that their full implementation is planned for the middle and end of 2023, at this stage it is too early to analyze the impact of the Programme procedures on the reforms in the field of science and scientific research.

Concerning the contribution of OPSESG to the implementation of the strategic goal of the "Europe 2020" Strategy, the National Development Programme BULGARIA 2020 and the National Reform Programme, the specific recommendations of the Council regarding the science and education sector for the five-year period 2015 – 2019 – reaching 1.5% of GDP invested in R&D:

- ✓ The activities under Priority Axis 1 of OPSESG are in full compliance with the objectives of the "Europe 2020" Strategy, the National Development Programme BULGARIA 2020 and the National Reform Programme, as well as the specific recommendations of the Council regarding the science and education sector for the five-year period 2015 – 2019 – reaching 1.5% of GDP invested in R&D;
- ✓ There is an increase in the country's place in terms of the degree of cooperation between science and business, which proves the correct orientation of OPSESG towards achieving the national strategic goals in this area, as well as the gradual restoration of the relationship between the two spheres, which was broken in the last two decades;

- ✓ However, this process is very slow, as the country's place according to this indicator continues to tend towards the lower half of the respective rankings: according to the indicator "Degree of "university-industry" cooperation in the field of scientific research and innovation, Bulgaria rises from 113th in 2014 to 62nd place in 2019; by indicator "Degree of scientific research cooperation "universities-industry" respectively – from 111th to 69th place. The performance of business on the "Transfer of research and innovation" indicator shows its almost unchanged inadequate status in this area, with very minor fluctuations in its values during the period under review – between 3.2 and 3.4, with its possible maximum value of 9;
- ✓ There are still a number of obstacles and weaknesses in building the interaction between the academic sphere and business and the transfer of knowledge in Bulgaria.
- ✓ Report on the progress in the implementation of the indicators and assessment of the relevance of the methodology for calculating the set target values of the indicators of the projects financed under Priority Axis 1 of the Operational Programme "Science and Education for Smart Growth" 2014 – 2020: Overall, data on progress in the implementation of the indicators provided by the beneficiaries under PA1 of OPSESG are insufficient to allow an in-depth assessment at this stage. For projects that have made significant progress in the construction of the research infrastructure, consideration will be given to the actual implementation of the scientific programmes of the Centres and the achievement of the indicators set.
- ✓ In this regard, the focus in 2022 – 2023 should be on the implementation of research plans, the creation of a business model of the Centres, the commercialisation and internationalisation of scientific results, the recruitment of new researchers (indicator CO24 and CO25), the implementation of joint projects with the business (Indicator 114) and the implementation of the other indicators set in the projects for the construction and development of CoEs and CoCs.
- ✓ At present, on the basis of the targets set by the beneficiaries in the contracts under the PA1 grant procedures of the OPSESG, it can only be concluded that if projects are successfully completed in 2023, most of the indicators will have over-achieved targets.
- ✓ It should be borne in mind that the expected overachievement of the indicator targets is due to the higher targets set at project level. The three procedures under PA1 were open for competitive application, i.e. each beneficiary, according to his interpretation of the nature of the relevant indicator, has set in his project proposal target values of the indicators he has decided to reach with the implementation of the project. Already at the stage of contracting with the approved projects, the targets set in the projects under some of the indicators are cumulatively higher than the target values at the level of the Programme. On the other hand, the accumulated delays in the implementation of projects and the possibility of further difficulties in the event of a further deterioration of the epidemiological situation may lead to lower implementation of indicators than previously set, despite the measures taken by the MA to support and accelerate implementation.

PA 2, PA 3 Identifier of evaluation 3 – Key findings and recommendations from the analytical review

The evaluation aims at an independent analysis to assess progress in the implementation of the Programme and the key impact systemic projects have on education reforms. The specific objectives are:

- Assess the overall progress in implementing project activities;
- Difficulties encountered in the implementation of the projects and actions taken to overcome them (including as a result of COVID-19);
- Sustainability of project results (including the products created under the projects);
- Lessons learned and impact of projects;
- Territorial coverage of the target groups;
- Identified needs in the course of project implementation (including as regards the need for regulatory changes);
- Implementation of the indicators set out in the projects;

***Main findings from the internal evaluation are*:**

- The systemic projects implemented are a key tool to support ongoing education and training policies and reforms and to address the consequences of COVID-19;
- All projects provide for ensuring sustainability and building on the results of the implementation of the activities, and the products created under the projects will be used after the projects are completed;
- The implemented system projects under the OPSESG are very effective due to their scale (target group coverage) and mode of implementation (including the possibility of rapid implementation of measures throughout the country). This effectiveness has also proved successful during the COVID-19 crisis;
- In order to monitor the effects and results of the implementation of systemic projects under the Education Programme 2021 – 2027, the MA should consider requesting the necessary information from the Specific beneficiary in the form of questionnaires for each specific procedure to be implemented as part of the grant contract and periodically completed by the Ministry of Education.

PA 2, PA 3 Identifier(s) of evaluation 4, 5, 6 and 7 – Key findings and recommendations from the analytical review of education system in Bulgaria

Early Childhood Education and Care

Pre-school Policy Implementation and Policy Mix

Set specific outcome indicators as a core practice for pre-school education interventions. Carefully designed indicators could replace the currently used input and activity-level indicators that function as substitutes for outcome indictors. This would require a shift in practice from formulating input or activity-level indicators (e.g., that measure the number of participants in an intervention: teachers trained, children enrolled, parents involved, etc.) to developing outcome indicators that address the specific policy goals for the system. Pre-school investment programs needs to directly address and measure child development and early learning outcomes. The pre-schools' contribution to (future) learning outcomes is not well documented, analyzed and utilized, and does not allow scope for designing and implementing learning- and developmental-focused interventions. Learning and developmental outcomes are not measured at the system level; at the intervention level, such indicators are limited and project-specific. In addition to being part of the education system, pre-schools are also places where child development – beyond education – is to be fostered.

Introduce specific measurement of the impact of the considerable efforts and investments in continuous professional development as a matter of urgency. Coherent, systemic planning of the cluster of interventions relating to continuous professional development in pre-school education is not only a matter of efficient allocation of resources, but also of the effectiveness and contribution of the system to its statutory goals. Finally, classroom-level observation tools are needed for the system to track and learn from the investments in qualifications. Examples and experiences from other countries could be adapted to address specific pre-school needs.

Horizontal Aspects: Pre-school Education in the Broader Context of ECEC and General Social, Economic and Developmental Targets

In the context of financial and epidemiological crises, the financing for pre-school education must remain of equal priority with the funding for schools. This could be achieved by: (i) ensuring pre-school policy access to a share of the education budget to secure not only the operational needs, but also the necessary resources for the policy mix of reform and development; (ii) recognizing that ESF+ funding will play a critical role during the early years following the COVID-19 stress, and committing to securing funds for ideas and reforms in pre-school education; and (iii) avoiding a lack of clarity around the allocation of resources between pre-school and school education within the interventions that address both, and ensuring funding plans are revised to secure levels for pre-schools.

Improved information provision and better data management are critical for generating up-to-date knowledge that allows reliable self-evaluation and self-reflection. The analysis demonstrates that the system is challenged by lack of data, limited monitoring practice and lack of impact assessment to inform policy outcomes. The Ministry of Education and Science (MES) is expected to adopt a general strategy for data driven interventions that will incentivize the system to focus on organizational development and outcomes as a learning organization.

Maintain and reaffirm the pre-school education system's focus on inclusion, and on the related but separate priority of ensuring access to quality and individualized support for children with special education needs. There is a strong legacy of pre-school policy interventions with respect to inclusion and specifically to children with special education needs. Outside the domain of pre-school universal practices, the inclusion policy

domain need actions in two key aspects. First, to further endorse 'inclusion' to ensure that it is appreciated by all Bulgarian children and families to internalize the value of the inclusive (pre-school) education for the whole society. Second, to promote it as a natural link between education and the other ECEC related sectors (social welfare, health) to secure holistic policy approaches and implementation.

Detailed recommendations on the ECEC policies and planning are provided in the analytical review (Output 4.1.) ***Early Childhood Education and Care, General Education, and Inclusion: Situation Analysis and Policy Direction Recommendations***

General Education and Inclusion

Focusing on students' competencies, not only on content, is the biggest challenge from a pedagogical perspective that both the initial and continuous training systems must address, and where lessons must be learned from the outcomes of international assessments (Programme for International Student Assessment [PISA], Trends in International Mathematics and Science Study [TIMSS], Progress in International Reading Literacy Study [PIRLS]). Transitions to higher education levels, especially targeted support for low-opportunity categories, encouraging integrated interventions and promoting active early risk identification policies are areas in which the education system already has experience and could further intensify its efforts. Bulgaria could also capitalize on current initiatives in digital education, as initiatives in this field are key to preparing the jobs and skills for the future and also have proven their value/usefulness during the crisis caused by the COVID-19 pandemic.

Invest more in impact evaluations in the education system to analyze results, interventions, or policy deployment in education, both at general and tertiary education levels, leading to adjusted evidence-based policies. Equally, it is essential institutional capacity be built to collect and analyze data at a systemic level. A combination of mainstreaming and targeting approaches is recommended to enhance and support educational integration and social inclusion. Mainstreaming, in the context of education, is the practice of placing students with special (additional) education services in a general education classroom. Prepare and implement strategic, integrated and systematic programs focusing on vulnerable learners and vulnerable schools to support students, preventing early school leaving and dropouts, and improve performance and learning outcomes.

Collect, monitor and use data regularly in direct connection with the established dropout tracking system. An important component will be regular monitoring, collection, and use of data related to the groups at risk of ESL. A Data Collection Methodology would support the implementation and monitoring of interventions. It could cover all data and information to be collected by schools needed to identify and track students at risk of ESL/dropout and out-of-school children using dedicated instruments, as well as a list of key performance indicators to measure progress towards reducing ESL rates and improving student outcomes. With basic data and information collected at the school and community level, the ESL data could be integrated with contextual data such as socio-economic information, census data, births, etc., providing a comprehensive snapshot to inform further actions to be taken.

Detailed recommendations on the general education policies and planning are provided in the analytical review (Output 4.1.) ***Early Childhood Education and Care, General Education, and Inclusion: Situation Analysis and Policy Direction Recommendations***

Higher Education Higher Education

Regarding strategic action planning, it is important to embed an outcome assessment that identifies the barriers encountered in achieving the objectives set out in the previous strategy for the sector, making use of theories of change in the planning process. Adopt a multidimensional strategy to promote and broaden participation in HE, adequately targeting the under-represented sectors of the population in HE. This would require conducting a detailed analysis of the characteristics of those excluded from access to HE and the adoption of measures to support vulnerable groups that not only address financial barriers but also include the expansion of flexible options for program delivery (i.e. options other than full-time/in person attendance).

Support prospective students to make informed choices, and that they include in their considerations the assessment of data about the employment prospects of the most in-demand specialties in the labor market. Look beyond strict alignment between field of study and job in evaluations of the relevance of HE for the labor market as specialties can provide graduates with a set of transversal skills that enhance their employability across a variety of sectors and occupations. The full transition to competence-based curricula and more frequent implementation of the survey component of BURS would be essential to mainstream this approach.

Detailed recommendations on the general education policies and planning are provided in the analytical review (Output 4.1.) ***Higher Education in Bulgaria: Situation Analysis and Policy Direction Recommendations.***

Vocational Education and Training Vocational Education and Training

Continue investing resources in VET with the aim of achieving key policy objectives in a well-targeted manner. The allocation of both national and EU resources to VET is essential and appropriate and it is recommended to continue. Also continue aligning the government's program objectives with national and EU policy aims, although some rebalancing may be needed.

Increase investment to address the key challenge of early school leaving in VET. Ensure a clear focus on reducing early school leaving in VET. If investments to address early school leaving in VET are integrated into broader programs that also target general education (as is currently the case), then it is recommended that these include clear, VET-specific targets, budget allocations, activities, indicators, implementation arrangements, and accountability mechanisms. Another option that can be considered is designing programs that exclusively target early school leaving in VET (rather than bundling them with interventions targeting general education). Whichever approach is used, it is recommended that the design of VET-specific interventions consider the specific characteristics of VET that make it different from general education, and therefore require tailored interventions.

This relates both to the particular features of VET students (who tend to be at greater risk of dropping out) and the specific nature of VET delivery (with its strong focus on practical skills).

For all investments that target both VET and general education, make explicit the VET-specific elements. Many investments in VET are combined in a single program with investments in general education (national or EU funding), for example, those targeting early school leaving and those focusing on teacher development and management. For these 'combined' investments, clarify what the VET-specific elements are. This means that it is important to be clear what the VET-specific objectives, budget, activities, and indicators are. In terms of process, it is also important to specify implementation arrangements and accountability mechanisms related to the VET-specific investments, since these may differ from those related to general education.

Improve the intervention logic and measure the impact of all investments. Ensure all investments have a clear and consistent alignment between program objectives, activities, and indicators. To be able to assess if investments achieve their objectives in a cost-effective manner, ensure results frameworks include appropriate outcome indicators. Depending on the objectives of the investments, outcome indicators can include, for example, indicators measuring student retention and completion, especially of at-risk students (related to dropout and equity); job outcomes of graduates and employer satisfaction with the performance of VET graduates (related to relevance); indicators of acquired skills; and changed attitudes and behavior of teachers (related to teacher-focused investments). Make program evaluations and the systematic use of evaluation findings that inform further interventions part and parcel of the ministries' reforms activities.

Establish sound data-gathering, processing, and reporting mechanisms to enable the planning of VET-specific interventions and resource allocation. The National Electronic Information System for Preschool and School Education (maintained by the MES) provides a good basis for the development of a coherent data collection and data processing mechanism to produce credible and consistent VET-specific information.

Detailed recommendations on the vocational education and training policies and planning are provided in the analytical review (Output 4.1.) ***Vocational Education and Lifelong Learning in Bulgaria: Situation Analysis and Policy Direction Recommendations.***

Learning Environments

Planning and programming for learning environment: general recommendations

Teacher support and qualification programs are natural and successful instruments used in incorporating and addressing LE through a concept approach focused on teaching and learning. The teacher is a key agent in developing and using the contemporary LE. In the context of the Education

Strategy 2030 and future investment plans, this approach could be considered as key to addressing LE through a combination of learning-focused elements – teacher practices, teaching materials, and direct LE infrastructure elements (subject-specific classroom, activity room, library, science, technology, engineering, and mathematics [STEM]-classroom, digital classroom, etc.).

Establish a connection between the Green Deal policy and the Green Schools concept, introduced in the Education Strategy2030. The EU will finance significant rehabilitation of schools in the framework of the Green Deal to ensure that physical learning environments (school buildings) are more energy efficient. In terms of the European Social Fund Plus (ESF+), future projects could target soft measures for LE development (e.g. teacher training on the development of green educational environments; curriculum development and assessment of existing LEs by users). Additionally, the OECD teacher questionnaire on key elements of LE (light, temperature, comfort) can inform this thematic area and support the collection of necessary data for the programming.

Detailed recommendations for learning environment improvements in ECEC, GE and VET are provided in the analytical review (Output 4.2.) ***Assessment and recommendations on the learning environments in preschool, general schools and vocational schools in Bulgaria***

Identifier of evaluation 8

*Output 5 – PILLAR 2 – Support for Building Evidence-based Approach for the National Strategic Framework in Education 2030 – WB Report Bulgaria: A report detailing a proposal for monitoring system of education policy developments and outcomes, Agreement between MES, EA OPSESG and the International Bank for Reconstruction and Development (World Bank)

Report elaborated is a Monitoring and Evaluation Methodology for the education sector. Main findings related to OPSESG:

- The existing institutional arrangements for M&E are adequate to measure performance of outputs of reform programs. An example of this is found in OPSESG 2014 – 2020 (OP14-20) where there are indicators that measure participation mostly and reach but do not measure change in behavior, attitude, application of the output in the classroom (new skills, methods, approaches), or the effect of these outputs on the students and the education sector, and especially the effect of the OP14-20 on the national indicators. For example, targets within the OP14-20 on actions designed to reduce ESL will be mostly achieved by the end of the program, yet the national ESL statistics continue to degrade. To go beyond this level of reporting, there needs to be an institutional structure that can funnel all collected data, collect its own information through formative evaluations, and undertake deep analysis of data to produce insights that deepen understanding of the effect of ongoing reforms on the sector.
- When institutions manage complex reforms, they require constant progress updates about the intended outputs and outcomes to help them achieve success. Monitoring projects and programs associated with national reforms goes beyond tracking the implementation of activities and disbursement of funds. It needs to identify details on how the reform is being executed.

- MES and EA to consider establishing at the Performance Measurement Unit (PMU – whose purpose is to monitor and evaluate the education sector, collect all data from relevant sources and provide analysis ranging from programs to subsectors and from themes to the whole sector) modern data warehousing and data marts configuration that are conducive to automated input of data from multiple sources; the system should be able to handle automated analysis. The key to this recommendation is not the placement of the PMU but its function, which shifts performance measurement in the education sector from being activity based to becoming a unified management function.
- MES and EA to consider establishing at the PMU modern data science approaches and applications for data collection and analysis and engage in greater predictive analysis.
- MES and EA to consider establishing at the PMU modern data warehousing and data marts configuration that are conducive to automated input of data from multiple sources.
- The report recommends the provision of relevant indicator fiches for 2021 - 2027 programming period to beneficiaries implementing operations and to make available to them training, templates, and other tools and to encourage them to develop operational level indicators that help them to better manage their individual projects and to understand how these contribute to the achievement of sectoral and national outcomes.

PA 1 Identifiers of evaluations 9, 10 and 11

- **Bulgaria Country Needs and STI Policy Mix Assessment:** This report provides a comprehensive assessment of the country's research and innovation needs and an original analysis of the policies devoted to supporting STI in Bulgaria, including nearly all national-level STI-related policy instruments (118 instruments operational from 2013 to 2019 with €843 million in disbursed funding). An analytical framework is used to compare the coherence of the STI policy mix to the country needs, and a set of policy recommendations is presented to reduce misalignment or gaps between policy support and the research and innovation needs of the nation's public and private sectors. *Appendix V.* National and European STI Support – short presentation of OPSESG.

- **Enhancing the Contribution of Bulgaria's Public Research to Innovation: A Survey-based Diagnostic (2020**: The findings in this report are based on two surveys: an in-person survey of administrators from a sample of public research organizations (PROs) and higher education institution (HEI) technology transfer offices (TTOs); and an online survey of over 4,000 public sector researchers in Bulgaria. Key findings from the survey include: Institutional Governance; Research and Technology Transfer Capacity and Policy; Research Outputs and Innovation Linkages; Incentives and Obstacles. This report provides a set of recommendations for improving research and technology transfer outcomes in public research institutions. *Part 3. Recommended Areas for Action*: This section lays out seven recommended areas for action based on the key challenges identified in this report in the areas of the national policy framework, institutional governance, research and technology transfer capacity and policy, and academic incentives. MA of OPSESG is one of the defined responsible stakeholders.

- **Functional and Governance Analysis:** *Appendix IV Developing Theories of Change and Indicators:* The work detailed in this Appendix is a part of a capacity building exercise aimed at improving the M&E framework of STI instruments in Bulgaria. **Four instruments** from across the STI portfolio were selected to undergo this exercise: **Support for Development of the Centres of Excellence, a program implemented by the EA OPSESG focused on developing research infrastructure and supporting research excellence;** Fundamental Research, a program implemented by NSF that provides grants for basic research; Young Scientists and Postdoctorates, a program implemented by MES that supplements the salaries of young researchers in the public sector; and The National Innovation Fund, a program implemented by SMEPA that provides research and innovation grants to firms. Part "Key Takeaways" – This section provides a summary of findings stemming from WB review of program documentation and the Theory of Change mapping exercise.

- **Final Report for the Bulgaria Public Expenditure Review for Science, Technology, and Innovation:** This document provides a summary of the key findings and recommendations of the Bulgaria Public Expenditure Review for Science, Technology, and Innovation (PER STI) project. The objective of the project is to provide an analytical background for improving the effectiveness of public investments for STI through reallocation of resources, redesign and rationalization of STI policies and instruments. The project utilizes the PER STI methodology, a results-based framework to logically link inputs, outputs, outcomes, and impacts of public spending on research and innovation. This work was conducted at the request of and in collaboration with MES and implemented in close collaboration with the Executive Agency for Operational Programme Science and Education for Smart Growth (EA OPSESG) and Ministry of Economy and Industry (MoEI), as well as the National Science Fund (NSF), SME Promotion Agency (SMEPA), and other relevant stakeholders.

PA 1, PA2 and PA3 Identifier of evaluation 12

The evaluation was carried out on the basis of a nationally representative sociological survey through direct standardised interviews with respondents, representatives of the target groups. The main conclusion of the evaluation is the positive image of the Programme among the representatives of the target groups and that the Programme meets the objectives and priorities underpinning the activities financed by the Programme: improving the quality of Bulgarian education and development of Bulgarian science. Besides the objectives, activities and opportunities for development of education and science in Bulgaria, which the Programme provides, positive impact on the image and have individual information materials prepared during the programming period. The interest in individual information channels is primarily focused on the internet, the evaluation finds that this is mainly due to the significant uptake of digital technologies and the internet in the lives of target group representatives, which has been significantly strengthened in view of the exceptional circumstances that occurred during the course of the COVID-19 pandemic, in which all key activities and communication between individuals and organisations went entirely through internet platforms. In this regard, the vast majority of current beneficiaries included in the survey indicate that they would like to receive information about OPSESG mainly via the internet. The evaluation recommends these circumstances to be taken into account in the implementation of further communication activities, and the evaluation recommends that in the subsequent phases of the programming period and/or the next one, emphasis should be placed on the

results achieved and the changes that the Programme has brought about, as well as the change in the educational environment, including by providing individual achievements and good practices, which can be a good basis for showing the results achieved by the implementation of the Programme. Overall, respondents from the broad publicity included in the survey were mainly interested in this type of information.

The evaluation identifies higher education teachers and pedagogical specialists as the best-informed community among the general public. On the other hand, parents, school students and students are familiar with the Programme to a significantly weaker extent, with the least awareness recorded among the representatives of vulnerable groups. The evaluation makes the following recommendations: there is a need to raise awareness and awareness not only of the objectives and strands of the Programme, but also on the results and achievements achieved on specific activities and practical benefits. There is a need to raise awareness among potential beneficiaries and improve the conditions for access to information on the funding opportunities offered by the OPSESG, the eligibility criteria for applications, as well as updating the information materials on the objectives and measures of the Programme. As a recommendation, it is also indicated that it is necessary to disseminate information on various non-specialised websites (e.g. information, news sites and other websites where information about operational programs and their directions and activities is not leading). A recommendation was made to actively develop and increase the effectiveness of national and international partner networks supporting cooperation between institutions and individuals in order to increase their level of awareness of successful activities and practices. Overall, the evaluation found the high levels of trust among respondents in the program, as a significant factor for improving the quality of Bulgarian education and science.

PA2 and PA3 Identifier of evaluation 13

The evaluation shall focus on an analysis of the systemic approach and competitive selection grant procedures in the context of their external and internal coherence, effectiveness, efficiency and impact. Subject of the Evaluation are two procedures aimed at educational integration of students from marginalized groups, such as Roma, early and early leaving the education system and retention of students in education realized under PA 2 and 3 of the Programme. In all the characteristics analyzed, the evaluation found that projects with a Specific beneficiary achieve much higher effectiveness and efficiency by achieving the objectives of the Programme in a much more explicit way than competitive selection procedures. This in turn minimizes the levels of risk of failure to meet the Programme's objectives and indicators and is a prerequisite for sustainability and high impact levels. The evaluation found that many of the activities included in the procedure with a Specific beneficiary were duplicated in the competitive selection procedure, but not as successful and with an existing risk of non-fulfilment of the indicators and a significantly smaller and narrower scope of participants and territorial scope. A significant conclusion of the evaluation is the lack of an adequate tool for tracking the effectively integrated and reintegrated pupils in education by the beneficiaries after the completion of project activities. It is concluded that inclusion in educational integration activities does not necessarily imply integration into the education system. The assessment also points to the much higher cost-effectiveness at participant level involved in Programme activities of the system approach compared to that of competitive selection, as well as the denser territorial scope and the high performance values of the system approach indicators compared to that of a competitive approach. In

the two procedures studied, additional training in Bulgarian language is the leading activity, but it is found that in the competitive selection procedure the achievement in the implementation of this activity cannot be measured effectively as it is not clear what happens to the participants of the project after its completion. For comparison in the procedure with a Specific beneficiary, all participants are actually involved in the educational process, which is also evident from the selection of a Specific beneficiary — Ministry of Education and Science in which the registers for the movement of pupils and the information could be checked. The evaluation sets out as a key recommendation the introduction of an approach for subsequent reporting of indicators related to educational integration after the completion of the activities at project level, and the data of the participants in the activities are used to track them in the current registers of the Ministry of Education, as well as with up-to-date data from the Center for Information Provision of Education, and in particular, verification of the continuation of education by the participants involved in project activities. The advantage of this approach, according to the assessment, is that the real achievements of the procedure and their real impact on educational integration will be measured. Its disadvantage is that results with unfavorable values can be obtained when there will no longer be scope for corrective action as projects will be completed. On the other hand, the evaluation shows that, although competitive selection procedures cannot be an objective and demonstrable factor for integrated actors in the education system, they have a positive effect on inclusion and integration in education.

PA1, PA2 and PA3 Identifier of evaluation 14

The evaluation analyses the implementation of the indicators under OPSESG, the relevance of their target values and an analysis of the applicability, adequacy and effectiveness of the proposals made by the MA to change the Programme. The contractor's conclusion is that some of the indicators of the OPSESG have to be changed, some of them should be dropped, others need to change the milestone and target value, and the third type of proposals is to use new indicators to be included in the Programme. The evaluation found that the indicator under PE 1 Research, Innovation: "Number of new researchers in supported entities" should be changed its target and milestone value It is also found that indicators under PE 1 "Researchers working in improved structures of research infrastructure outside Sofia", "Renewed infrastructures", "Number of enterprises cooperating with research institutions" and "Public spending on R&D (GOVERD plus HERD) financed by enterprises in all areas outside BG411 district Sofia (capital), as % of total public spending on R&D (GOVERD plus HERD)" should be dropped as the funds for the projects to which they relate are transferred from OPSESG to OPIC.

The evaluation makes recommends indicators under PA 2 "Students studying in the field of higher education "pedagogical sciences" and "Students studying in technical specialties from the activities of OP" to drop or be redefined. It was found that the four group net enrolment rates used in the different stages of education under PA 2 could not be used due to the change in the Law on pre-school and school education (in force since 13 October 2015). This requires these indicators to be reduced to two new ones according to the changes in the regulatory framework or to be dropped.

It is also proposed that the indicator "Reduction of the share of early school leavers of 18–24-year-olds involved in OP activities" is proposed to be replaced by a new indicator "relative share of pupils leaving formal education for non-objective reasons in the total number of pupils", and a method for its calculation is proposed.

The evaluation also recommends that the indicator "Share of high school students studying in vocational high schools from those involved in OP activities" should also be dropped, while at the same time proposing a new indicator "Share of high school students studying in vocational high schools and classes", and it is found that in case the indicator is maintained, it should be redefined, but not directly suggestions for its redefinition.

For PA 3 indicators, the assessment has not provided recommendations for redefining or dropping indicators and/or changing their milestones and target values.

PA2 and PA3 Identifier of evaluation 15

The evaluation focused on the implementation of the projects in force at the time with a Specific beneficiary MES. The analysis found numerous problems that are at risk for the implementation of projects, mainly focusing on three strands: indicators, budget(s) and activities. Some of the projects examined include sub-activities that are not inherent to an activity, as a result of which the risk of their qualification as ineligible increases and would require the imposition of a financial correction of the amount of their expenditure. In addition, the inclusion in budgets of draft expenditure which is insufficiently justified and which is not based on clear and transparent calculation principles does not comply with the principles of sound financial management and could also lead to the imposition of financial corrections in respect of these expenditure. The setting of activities and results that are not linked to specific objectives and indicators is not effective and leads to the planning and spending of funds that are not necessary to achieve the objectives of the project. The evaluation also recognizes that the lack of direct linkage and justification of the planned activities and results with the objectives and indicators put at risk the achievement of the objectives of the procedure and the ex-post evaluation of the impact of the project as a whole. In this regard, the setting of project objectives that are not linked to specific indicators or indicators that are not applicable to the relevant procedure/project leads to difficulties in the subsequent monitoring of the implementation of these objectives/indicators. The assessment finds that there is a risk of non-compliance with approved indicators that are related to the achievement of the objectives of the Programme. Also, the setting of targets for indicators significantly exceeding the planned targets in the operational Programme indicates weaknesses already at the planning stage of the respective grant procedures. According to the evaluation, non-compliance with the deadlines for reporting on the implementation of projects does not allow for an analysis of the results achieved, leading to a risk of failure to achieve the project's objectives. Moreover, the lack of ex ante analysis before the submission of the project proposal on additionality and synchronization between operations may lead to the inclusion of overlapping activities and the duplication of project costs. The lack of synchronization in the programming of procedures of one investment priority or those with similar activities entails a risk of duplication of activities and costs, as well as the creation of unregulated practices in the implementation of projects, as a consequence of the lack of clear rules. Good practices are also outlined,

the main one being the linking of project activities both to concrete results and indicators, as well as to a specific budget, necessary for their implementation is a good practice, which UMIS allows and which speaks of good planning at the level of individual project.

In general terms, the findings of the assessment are limited to focusing on key risk factors that could negatively affect the quality implementation of projects, not indicating specific weaknesses for each risk factor, but only for some of them. However, the assessment is committed to specific recommendations in minimizing risk factors at project level.

PA1, PA2 and PA3 Identifier of evaluation 16

The ex-ante evaluation of the Operational Programme "Science and Education for Smart Growth 2014 – 2020" was carried out as part of the mandatory activities under the programming of the operational programme. It focuses on several key components: Assessment of external coherence; Assessment of internal consistency; Evaluation of the system of indicators; An assessment of the financial allocation of the programme; Assessment of administrative capacity, management, monitoring and evaluation of OPSESG.

With regard to external coherence, the evaluation found that the Operational Programme was not contrary to the provisions of national legislation on science and education, and that it generally took into account the objectives and measures set out in European and national sectoral strategy papers, including the Partnership Agreement. On internal coherence, the evaluation recognises that the Programme Strategy is well-founded and motivated, the main weaknesses being the need to complement the analyses and address all the issues analysed through appropriate measures. The programme also embodies the main horizontal principles of "partnership, equality and non-discrimination, sustainable development", "gender equality, social innovation" and "transnational cooperation". With regard to the system of indicators, the evaluation recommends the need to specify the system in terms of reducing the number of result indicators for some of the specific objectives and clearly linking them to the specific objectives, but also recognises that the MA has proposed an improved system of indicators for which, however, there is no methodology for calculating the target and intermediate values. As regards the assessment of the financial allocation of the programme, the evaluation concludes as a key conclusion that the allocation of budgetary commitments by year does not risk automatic loss of funds. In the last component, an assessment of the administrative capacity found that the MA (at that time the General Directorate — Structural Funds and International Education Programmes — at the Ministry of Education and Science) was restructured and new units were added in relation to the functions that the Directorate would assume as managing authority of the Operational Programme. The structure of the MA has also been identified as adequate to the new responsibilities of the Directorate. In addition, it is recognised that a large proportion of the potential beneficiaries of the programme already have capacity built on projects implemented in the 2007 – 2013 programming period. As key recommendations, the evaluation makes it possible to better reflect in the programme text the objectives set out in the Partnership Agreement in terms of partnerships between higher education, enterprise and research and the improvement of the management capacity of scientific institutes. The distinction and complementarity with some of the other operational programmes and in particular with the Operational Programme "Innovation and Competitiveness" must be specified. It is also recognised that the

programme still insufficiently addresses the territorial aspects of the quality of education in small and large settlements, as well as to consolidate some activities and to fine-tune the wording of others. The evaluation concludes that some key national strategic and regulatory documents are still in preparation (at that time) or in the process of being updated, which makes it somewhat difficult to focus the foreseen support under the Operational Programme.

PA 1 Identifier evaluation 17

Recommendations to the Centres and the founding partner research organisations:

1. **Legal Structure for the Centres**

Legally, the CoEs and CoCs have a flexible initial set-up, which provides possibilities to apply a different legal structure and incorporate dedicated entities with own legal personality. All Centres have initiated their operations based on and within the framework of Partnership Agreements defined for this purpose, with one Centre also incorporating an association. Almost all Centres will clearly benefit from the creation of separate legal entities, with a degree of autonomy, entrusted with the development of the common interest of the partner organisations within the Centre-projects.

The proposed legal entities are generally divided in two broad groups: “facilitators” where some particular activities are entrusted to professional independent teams such as coordination, representation and promotion of industry collaboration; and “fully integrated governance structures” where Centres become even more integrated and empowered organisational structures capable of also managing the research infrastructure.

Thus, looking ahead, especially in the period after 2023, the Centres should establish a clear institutional setup, on a more permanent basis than the current consortia, with professional management and staff entrusted through clear rules with responsibilities to support or respectively lead the sustainable development of the Centres.

2. **Governance Structure for the Centres**

Whatever the legal framework, a streamlined governance and organisational structure is preferred which focuses its efforts on joint value adding RDI actions. Where possible, a single structure should be created for the effective management and/or coordination of the Centres’ activities. Initially, activities could be grouped around thematic specialisations each with a manager (Component Leader and subject matter expert). The Director of the Centre, a dedicated leader with both business understanding and scientific knowledge, would manage the Centre and be accountable for its successful operation. Considering the reduced needs for procurements management and project implementation, the structures after 2023 should have less layers of management and reporting and be essentially focused on research and innovation.

The Centres should have a professional manager with a high degree of autonomy from the partner research organisations, who can be held accountable for actions and results. It is vital for the Centres (starting from their founding partners) to build a governance structure with strong governance capacity at the institutional sustainability level, strong administrative capacity as well as project application and management potential (R&D project management); and to develop common rules for functioning and ensuring operational sustainability.

3. **Build an understanding of EU State Aid rules and apply them correctly**

In order to achieve successful cooperation with industry, the partner research organisations (universities, research institutes at the Academy of Sciences as well as the private partner associations beneficiaries of funds for research infrastructure) need to build essential knowledge and internal capacity in understanding and correctly applying EU State Aid Rules in R&D&I. The research organisations managing infrastructure should be able to differentiate between engaging in "effective collaboration" (which is a non-economic activity) and conducting research on behalf of undertakings (which is an economic activity). To help with this, the report presents a step-by-step methodology based on the experience of the experts.

4. **Build capacity in Technology Transfer and strengthen collaboration with industry**.

Technology Transfer (TT) and industrial collaboration strategies should be developed according to actual demand needs and future opportunities including contract research, joint laboratories, Proof of Concept (PoC) funds, licensing and spin-off creation.

There is a clear need for TT capacity building in the country. This activity should include continuous education of the technology transfer offices (TTO) staff across all Centres. The appointment of a TT manager within each Centre will allow more efficient coordination of TT activities between the Centre and partner institutions' TTOs. Centre management should create a favourable internal framework and streamline the process of spin-off creation that will encourage scientists and researchers to engage in entrepreneurial activities in parallel with their research work, including networking opportunities and mentoring programmes. Investor readiness programmes in Bulgaria must also be improved and adjusted to the needs of the research and deep-tech oriented funds, as well as to the particular characteristics of researchers.

5. **Strive for sustainability**

The Centres should utilise their full potential for increased sustainability achieved through: Increased economic and non-economic collaborations with industry in the short-, mid- and long term; Research commercialisation through licensing and spin-off creation in the mid-to-long term; Increased participation in international projects (e.g. Horizon Europe).

The Centres should take a more proactive role in organising their sustainability, especially after 2023, by not relying exclusively on (guaranteed) block public funding and support. Since most Centres have prepared their scientific programmes and plans for collaboration with industry in 2016 – 2018, these should be substantially updated, taking into account that a large part of the infrastructure has been procured and the Centres are becoming increasingly operational. While in some Centres the plans for collaborations are based on careful and detailed track record and analysis, others only have plans at conceptual stage and will need to conduct a deeper and/or more specific market consultation. The Centres would also benefit from developing more comprehensive business plans that capture the vision and strategy for their long-term sustainability.

Priority axis	IP	Findings of evaluation and comments (if any)	Related output indicators (1)	Related result indicators (2)	Actions taken (3) (optional)	Identifier(s) of evaluation (4)
All	All	The main conclusion of the evaluation is the positive image of the Programme among the representatives of the target groups and that it corresponds to the objectives and priorities underlying the activities financed by the Programme. Besides the objectives, activities and opportunities for development of education and science in Bulgaria, which the Programme provides, positive impact on the image and the individual information materials prepared during the programming period.	N/A	N/A	Findings will be taken into account during implementation of PE 21-27.	12
PA2, PA3	All	In all the characteristics analyzed, the evaluation found that projects with a Specific beneficiary achieve much higher effectiveness and efficiency by achieving the objectives of the Programme in a much more explicit way than competitive selection procedures, which are at risk of non-fulfilment of indicators and significantly smaller and narrower coverage of participants and territorial coverage.	"School students involved in activities to increase motivation to learn through the development of specific knowledge, skills and competences", "Children, pupils and young people from marginalized	"Reduction of early school leavers from education" "Children, school students, youth from ethnic minorities (including Roma) integrated into the education system"	Findings were taken into account in the preparation of PE 21-27.	13

Priority axis	IP	Findings of evaluation and comments (if any)	Related output indicators (1)	Related result indicators (2)	Actions taken (3) (optional)	Identifier(s) of evaluation (4)
			communities (including Roma) involved in educational integration and reintegration measures"			
All	All	The evaluation found that some of the Programme indicators need to be changed, some of which should be dropped, others need to change the milestone and target value. New indicators are proposed to be included in the Programme, replacing some existing indicators.	See p. 4	See p. 4	Modified and redefined indicators by the MA and approved Programme amendment.	14
PA2, PA 3	All	The evaluation focuses on problems that are at risk for the implementation of the projects, focusing generally on three specific strands: indicators, budget(s) and activities and which could negatively affect the quality implementation of projects. The assessment is committed to specific recommendations in minimizing risk factors at project level.	all under PA2	all under PA2	1. Division of the MA in a separate administrative structure from the Specific beneficiary MES. 2. Optimized project budgets by the MA. 3 Taking into account the evaluation recommendations in the programming of subsequent procedures/second phases of projects.	15
All	All	Evaluation recognizes that the Programme is well-founded and motivated, the main weaknesses being the need to complement the analyses and address all the problems analyzed through appropriate measures. The system of indicators has been improved, for which, however, there is no	all	all	All recommendations were taken into account and included in the Programme as a result of which it was adopted by the EC.	16

Priority axis	IP	Findings of evaluation and comments (if any)	Related output indicators (1)	Related result indicators (2)	Actions taken (3) (optional)	Identifier(s) of evaluation (4)
		methodology for calculating target and intermediate values. The allocation of budgetary commitments does not risk automatic loss of funds.				

3. General conclusions

A key point in the implementation of the recommendations established by the evaluations is the division of the MA into an administrative structure separate from the Specific beneficiary (the Ministry of Education and Science), which resulted in increased capacity for management of the Programme. The budgets of the systemic projects have been optimized and the system of indicators has been updated in sync with the reformist nature of the changes in the regulatory framework and more specifically the adopted Pre-school and School Education Act. As a consequence of the findings of the evaluations, the decision-making process in the MA has been supported, as many of the foreseen second phases of some procedures have been redefined, and entirely new procedures have been programmed, corresponding adequately to the implemented policies at the European and national level in the field of education. An essential element is also the minimization of risk factors for decommitment at project level and non-fulfillment of the milestones and targets of the Programme indicators. One of the key findings of the evaluations is the lack of a methodology for calculating the indicators. As a result, the MA has prepared a methodology, which has been fine-tuned for the 2021 – 2027 programming period.

Some of the evaluations, as the internal evaluation of the projects implemented under PA1 of OPSESG, is ongoing and findings and conclusions based on it will be available at the end of 2023.

Evaluation of the effectiveness, efficiency and impact of grant award procedures aimed at active inclusion and social economic integration of marginalized groups, including Roma, under Priority Axis 3 of OPSESG is also under implementation and results are expected at the second half of 2023.

One of the main conclusions of the evaluations is that projects with a Specific beneficiary achieve a much higher efficiency and effectiveness in achieving the objectives of the Programme compared to competitive selection procedures, which have an existing risk of not fulfilling the indicators and significantly more – small and narrow range of participants and territorial scope. Internal evaluation of systemic projects implemented with concrete beneficiary MES under OPSESG carried out by MA during 2021 – 2022 reaffirms that conclusion.

Many of the conclusions of the evaluations were taken into account when preparing Programme "Education" 2021 – 2027 (PE), which was adopted by the EC. On the basis of OPSESG evaluations and lessons learned from 2014 – 2020 programming period, PE is structured as to implement a balanced approach of funding according to needs, through a systemic approach and support for operations of strategic importance, procedures for competitive selection of project proposals at national level, integrated territorial instruments (ITI and CLLD). Their implementation will be tailored to the identified needs and partnerships that will be implemented within the ITI concepts and CLLD strategies. In areas with a significant community of marginalized people, including Roma, CLLD/ITI should include actions addressing the needs and development potential of that community.

Due to the complex character of measures implemented under OPSESG and taking into account that visibility of effects and changes in education take time, evaluation of the effects on education will be feasible at the earliest after completion of all project implemented under OPSESG.

Annex: Evaluations undertaken in respect of the OP concerned

Identifier	Brief description of measures/intervention subject of evaluation	Title	Fund(s) concerned by the eval.	TOs	Link to report
1.	Evaluation of the effectiveness, efficiency and impact of grant award procedures aimed at active inclusion and social economic integration of marginalized groups, including Roma, under Priority Axis 3 "Educational environment for active social inclusion" of Operational Programme "Science and Education for Smart Growth" 2014 – 2020.	Извършване на оценка на ефективността, ефикасността и въздействието на процедури насочени пряко или косвено към маргинализирани групи като ромите по Приоритетна ос 3 „Образователна среда за активно социално приобщаване" на Оперативна програма „Наука и образование за интелигентен растеж" 2014 – 2020	ESF	TO9 and TO10	To be finalized by July 2023
2.	Internal evaluation of the projects implemented under PA1 of OPSESG	Оценка на функционирането, изпълнението и представянето на Центровете за върхови постижения и Центровете за компетентност и ефектите от COVID-19 кризата	ERDF	TO1	To be finalized at the end of 2023
3.	Internal evaluation of systemic projects implemented with concrete beneficiary MES under OPSESG	Вътрешна оценка на системни проекти с Конкретен бенефициент МОН, в процес на изпълнение по ОПНОИР	ESF	TO9 and TO10	http://opnoir.bg/?h=downloadFile&fileId=3072
4.	Agreement between MES, EA OPSESG and the International Bank for Reconstruction and Development (World Bank). PILLAR 2 – Support for Building Evidence-based Approach for the National Strategic Framework in Education 2030 – funded through OPSESG's TA Output 4.1: Three reports on situation analysis of education outcomes with trends and international comparisons; Output 4.2: Assessment and recommendations on the learning environments in preschool,	Образование и грижи в ранна детска възраст, общо образование и приобщаване: анализ на ситуацията и препоръки за насоката на политиките	ESF	TO9 and TO10	http://opnoir.bg/?h=downloadFile&fileId=2763
5.		Професионално образование и обучение и учене през целия живот в България: Ситуационен анализ и препоръки за основни насоки на бъдещи политики	ESF	TO9 and TO10	http://opnoir.bg/?h=downloadFile&fileId=2765
6.		Висшето образование в България: Ситуационен анализ и препоръки	ESF	TO9 and TO10	http://opnoir.bg/?h=downloadFile&fileId=2767

	general schools and vocational schools in Bulgaria	относно насоката на политиките			
7.	The MA has prepared an Action Plan to reflect the recommendations presented in the approved reports, and the policy recommendations are sent to MES for taking the appropriate actions. The conclusions of the above-mentioned reports are taken into account in the process of preparation of Programme "Education" 2021 – 2027 and will also be taken into account in the preparation of the forthcoming operations during the new programming period.	Оценка и препоръки по отношение на образователната среда (ОС) в предучилищните институции, училищата в България, включително училищата, предлагащи професионално образование и обучение (ПОО)	ESF	TO9 and TO10	http://opnoir.bg/?h=downloadFile&fileId=2769
8.		*България: Подробно предложение относно система за мониторинг на развитието на политиката в областта на образованието и на трайните резултати от тази политика	ESF	N/A	for internal use only
9.	Agreement between MES, EA OPSESG and the International Bank for Reconstruction and Development (World Bank). PILLAR 1 Public Expenditure Review in Science, Technology and Innovation– funded by MES	Bulgaria Country Needs and STI Policy Mix Assessment	ERDF	TO1	http://opnoir.bg/?h=downloadFile&fileId=2715 https://web.mon.bg/en/101089
10.	Within Pillar 1 of the Agreement a detailed analysis of public spending on science and innovation in Bulgaria is planned, including recommendations and direction for new policies and investments in science.	Enhancing the Contribution of Bulgaria's Public Research to Innovation: A Survey-based Diagnostic	ERDF	TO1	http://opnoir.bg/?h=downloadFile&fileId=2712 https://web.mon.bg/en/101089
11.	The report (9) provides a comprehensive assessment of the country's research and innovation needs and an original analysis of the policies devoted to supporting STI in Bulgaria, including nearly all national-level STI-related policy instruments. The functional analysis (11) identified areas of strength, as well as many areas for improvement across the policy portfolio in implementing STI policies.	Functional and Governance Analysis	ERDF	TO1	http://opnoir.bg/?h=downloadFile&fileId=2713 https://web.mon.bg/en/101089
12.	National representative sociological research through direct standardized interviews with the target groups to measure the impact of the implemented	Провеждане на национално представително социологическо проучване за измерване на въздействието на			http://opnoir.bg/?h=downloadFile&fileId=2921

* The Report is elaborated by World Bank within PILLAR 2 – Support for Building Evidence-based Approach for the National Strategic Framework in Education 2030 – funded under OPSESG's TA and is included in table since the Report contains recommendations for OPSESG 2014 – 2020 and PE 2021 – 2027.

	information and publicity measures under the Operational Programme "Science and Education for Smart Growth" 2014 – 2020 for the period from January 2019 to December 2020.	реализираните мерки за информация и публичност по Оперативна програма „Наука и образование за интелигентен растеж" 2014 – 2020 г. за периода от януари 2019 г. до декември 2020 г. включително			
13.	A thorough and objective analysis of the system approach and competitive selection procedures within OPSESG in the context of their external and internal coherence, effectiveness, efficiency and impact.	Оценка на процедури за директно предоставяне и процедури за конкурентен подбор – 2019 г.	ESF	TO9 and TO10	http://opnoir.bg/?h=downloadFile&fileId=2380
14.	Analysis implemented under execution of contract No. Д03-8/ 14.03.2018 with the contracting authority Executive Agency "Operational Programme "Science and education for smart growth" and contractor "Econometrica" Ltd., with the subject "Analysis and evaluation of the proposed for changing indicators of the Operational Programme "Science and Education for Smart Growth" 2014 – 2020.	Оценка на предложените за промяна индикатори на ОПНОИР – 2018 г.	ERDF ESF	TO1, TO9 and TO10	http://opnoir.bg/?h=downloadFile&fileId=2381
15.	Analysis of the implementation of ongoing projects of the Ministry of education and science as a Specific beneficiary under OPSESG in 2017	Оценка на изпълнението на действащите проекти на МОН като Конкретен бенефициент – 2017 г.	ESF	TO9 and TO10	http://opnoir.bg/?h=downloadFile&fileId=2382
16.	Ex-ante evaluation of OPSESG – 2014	Предварителна оценка на ОПНОИР – 2014 г.	N/A	N/A	http://opnoir.bg/?h=downloadFile&fileId=2379
17.	The report, elaborated by Joint Research Centre (JRC) containing a set of strategic recommendations to 14 newly created research and innovation (R&I) centres, co-funded by the EU Cohesion policy in Bulgaria.	Стратегическа оценка на българските центрове за компетентност и центрове за върхови постижения и препоръки за тяхното развитие	ERDF	TO1	http://opnoir.bg/?h=downloadFile&fileId=2645