MINISTRY OF LABOUR AND SOCIAL AFFAIRS

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GUIDANCE NOTE

for the Czech Republic on developing integrated data systems and oversight procedures for the **Early Childhood Education** and **Care sector**

@UNICEF Czech Republic

For the project *"Developing a Comprehensive Framework for the Monitoring and Evaluation of Early Childhood Education and Care in the Czech Republic"*

Guidance Note for the Czech Republic on developing integrated data systems and oversight procedures for the Early Childhood Education and Care sector

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This guidance note has been developed as part of the project entitled “Developing a Comprehensive Framework for the Monitoring and Evaluation of Early Childhood Education and Care in the Czech Republic”, funded by the European Union through the Technical Support Instrument (TSI) and implemented by UNICEF in co-operation with the European Commission.

Prague,
May 2025

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LIST OF ACRONYMS:

APIs	Application Programming Interface
DIA	Digital and Information Agency
ECEC-MIS	Early Childhood Education and Care Management Information System
EMIS	Education Management Information System(s)
GDPR	General Data Protection Regulation
ICT	Information and Communication Technologies
ID	Identity
ISCED	International Standard Classification of Education
M&E	Monitoring and Evaluation
MIS	Management Information System
MoLSA	Ministry of Labour and Social Affairs
MoEYS	Ministry of Education, Youth and Sports
ECEC	Early childhood education and care
OLAP	Online Analytical Processing
SAAS	Software as a service
SLAs	Service Level Agreements
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund

1 INTRODUCTION

This guidance note was developed as part of the ***"Developing a Comprehensive Framework for the Monitoring and Evaluation of Early Childhood Education and Care in the Czech Republic"*** project led by the Ministry of Labour and Social Affairs (MoLSA) in close partnership with the Ministry of Education, Youth and Sports (MoEYS). The project is funded by the European Union via the Technical Support Instrument and implemented by UNICEF in cooperation with the European Commission.

Based on the project's objectives, this document was developed to provide support for the Czech Republic in designing integrated data systems and oversight procedures to monitor and evaluate Early Childhood Education and Care. It is aligned with the newly developed project output – the Monitoring and Evaluation Framework – and follows the latest international trends and recommendations.

The first two chapters by Jessica Katharine Brown present international trends and recommendations for the Czech context based on her many years of international experience in early childhood education and care. The third chapter, written by a team from the Faculty of Education of Charles University, describes the current situation and makes recommendations specific to the Czech Republic. The recommendations are based on previous project outcomes. Despite the effort to be as specific as possible, some recommendations remain general in nature. This is because this report is being produced at a time when both ministries (MoEYS and MoLSA) are in the process of introducing legislative changes that will fundamentally alter the way data on ECEC facilities are collected and managed, and the first steps towards implementation are currently underway. The legislative changes are very likely to address some of the issues we raised in the initial project reports, but it is not yet clear how or which issues will remain unaddressed. For this reason, some aspects of the recommendations focus only on general principles that should be implemented in any case.

To support the practical and targeted monitoring and management of data system development, implementation, and functionality, two checklists have been developed and are included as Annexes 1 and 2 of this document. These checklists draw on international experiences and the recommendations outlined in this guidance note. They are also closely aligned with the new Framework for the Monitoring and Evaluation of Early Childhood Education and Care in the Czech Republic, developed under this project.

The first checklist addresses specific aspects of system functionality and technical configuration. The second checklist takes a broader perspective, focusing on the overarching context of monitoring and evaluation, as well as the general principles underpinning the data system. This second checklist is primarily intended for use by officials from the relevant Early Childhood and Education and Care (ECEC) departments of both ministries.

1.1 Why ECEC data systems matter

Effective decision-making in Early Childhood Education and Care (ECEC) relies on quality data managed through efficient information systems. The EU Working Group on ECEC who undertook a year-long assessment of M&E in ECEC found that to improve the ECEC system as a whole, both the structural quality and the process quality of ECEC services need to be made visible and interpretable to all stakeholders involved. Setting up robust data systems can generate information on the strengths and weaknesses of the sector, support coherency, and strengthen infrastructure for research on ECEC[1]. An ECEC Management Information System (ECEC-MIS) goes beyond a technical and operational processes, serving as a critical tool for strategic decision-making, policy development, budgeting, and, when relevant, routine local-level management to support ECEC settings.

High-quality data and well-functioning databases are essential for developing evidence--based ECEC policies and implementing targeted interventions that maximize impact. They enable robust monitoring and evaluation (M&E) processes to ensure program effectiveness[2*], equitable resource allocation, and continuous improvement[3]. Transparent data systems build trust among stakeholders, reveal inequities in access and outcomes, and support efforts to make ECEC inclusive and fair for all children.[4][5] The UNICEF Build to Last Framework for ECEC calls for "a coherent approach to quality assurance balances external and internal monitoring mechanisms and establishes a process for acknowledging and rewarding quality achievements or improvements. Standardized data collection processes and appropriate tools are in place to encourage improvements across providers and settings."[6] The EU ECEC Quality Framework also identifies Monitoring and Evaluation as a critical factor for ECEC and encourages EU states to have ECEC systems where "monitoring and evaluating produces information at the relevant local, regional, and/or national level to support continuing improvements in the quality of policy and practice[7]" also stating that M&E should be done in the best interest of the child.

Reliable data also supports predictive analysis, guiding long-term planning for early childhood needs and strengthening the system's crisis response through informed, timely actions. Functional systems enhance collaboration across institutions, especially in decentralized systems, and drive innovation by identifying and scaling successful practices.[8] On a global scale, quality ECEC data systems enable alignment with international benchmarks,

1 European Commission (2023). ***Improving the governance of monitoring and evaluation of quality in Early Childhood Education and Care (ECEC)***, Working Group on Early Childhood Education and Care. Available at: https://wikis.ec.europa.eu/spaces/EAC/pages/48761832/ECEC+Documents?preview=/48761832/99419303/ECEC%20WG%20-%20M%26E%20-%202nd%20report%20(Governance%20of%20M%26E)%20-%20August%202023.pdf

2 *In this document programme refers to the combined provision of ECEC services and the different systemic levels of operation and oversight required to deliver these services.

3 UNESCO (2024), ***Why We need Effective Education Management Information Systems.*** UNESCO Blog, https://uis.unesco.org/en/blog/why-we-need-effective-education-management-information-systems.

4 UNESCO (2019), The Use of UIS Data and Education Management Information Systems to Monitor Inclusive Education, Information Paper, No 60, UNESCO Institute of Statistics, Montreal.

5 UNESCO (2019), The Use of UIS Data and Education Management Information Systems to Monitor Inclusive Education, Information Paper, No 60, UNESCO Institute of Statistics, Montreal.

6 United Nations Children's Fund (2020). Build to Last: A framework in support of universal quality pre-primary education, UNICEF, New York.

7 European Commission (2019). Council Recommendation on High-Quality Early Childhood Education and Care Systems. Official Journal of the European Union. Accessed from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019H0605(01)&from=EN

8 OECD (2015), ***Starting Strong IV: Monitoring Quality in Early Childhood Education and Care***, Starting Strong, OECD Publishing, Paris, https://doi.org/10.1787/9789264233515-en.

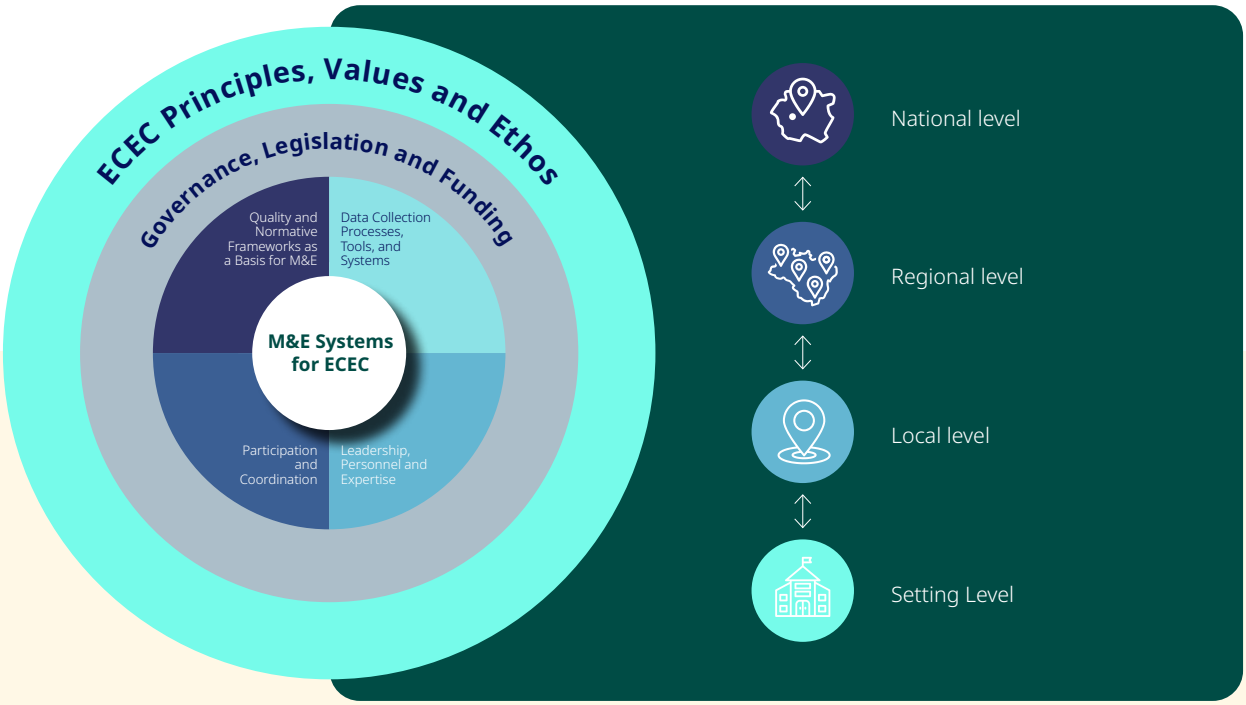
sharing of best practices, and advancement of global knowledge to improve early childhood education and care opportunities and outcomes worldwide.

1.2 Data systems for ECEC

The development of a robust ECEC system requires a well-functioning approach to quality assurance and monitoring and evaluation, and having sound data infrastructure and processes that can support evidence-based policymaking and foster accountability across diverse stakeholders. In a split system, where responsibilities for ECEC are divided among multiple ministries, building an effective data system is both challenging and essential and may require a long-term vision of systematically bringing systems closer before eventually being consolidated into one.

The framework for the monitoring and evaluation of early childhood education and care aims to enhance the quality and accessibility of ECEC by systematically monitoring and evaluating structural and process indicators. It promotes evidence-based decision-making through robust data collection and analysis, ensuring transparency, accountability, and continuous improvement. By involving stakeholders such as parents, children, and staff in evaluations and using the findings to inform policies and processes, this framework supports an inclusive and responsive system. Additionally, it emphasizes professional development and feedback mechanisms to support staff and drive systemic growth, creating a sustainable, high-quality ECEC environment tailored to community needs.

In order for this to happen, different components of the system that relate to monitoring and evaluation need to come together, as demonstrated below in the Components Framework for ECEC M&E Systems.[9]



Source: Brown, J (2024a). M&E Components Framework

9 Brown, J. (2024a). Report on the Analysis of European Good Practices in the Monitoring and Evaluation of Early Childhood Education and Care. UNICEF, Prague.

1.3 Integrating ECEC into existing systems

It is important to stress that there does not necessarily need to be a stand-alone ECEC Management Information System (ECEC-MIS) data system/database. Ideally, this could be housed within an existing system of the most suitable ministries or agencies and could easily become a component(s) of an existing Education Management Information System (EMIS), or could have modules embedded into different ministry systems, but with data read and analysed together. However, numerous systems for collecting, managing, and reporting education data have emerged over the past decade across different countries. As a result, selecting the right system has become a complex and challenging task, requiring careful consideration to ensure that the system's capabilities align with a country's specific objectives and priorities.

Ideally, countries should move away from operating multiple disparate data systems that are not interconnected towards a more efficient way of managing data. Informed by the global EMIS workshop in August 2018, and a series of discussions with countries at side events of the UN General Assembly in 2019,[10] UNESCO developed robust and practical materials to support countries in the development, strengthening and management of their EMIS systems.[11] Much of the procedures in the second chapter of this document is adapted from the report developed. This guidance was developed with the formal education system in mind, but also including pre-primary classes in cases where they are part of the education system. A review of the guidance was conducted with an ECEC lens and it was found to still be relevant for ECEC settings outwith the formal education system. Chapter 3 provides information and recommendations specific for the Czech Republic.

10 See: https://www.globalpartnership.org/content/outcomes-education-data-solutions-roundtable

11 Van Wyk, C., & Crouch, L. (2020). Efficiency and Effectiveness in Choosing and Using an EMIS . UNESCO Institute for Statistics, Montreal.

2 EARLY CHILDHOOD EDUCATION AND CARE MANAGEMENT INFORMATION SYSTEMS

Definition of Education Management Information System (EMIS) according to UNESCO:

"An EMIS can be defined as 'a system for the collection, integration, processing, maintenance and dissemination of data and information to support decision-making, policy analysis and formulation, planning, monitoring and management at all levels of an education system. It is a system of people, technology, models, methods, processes, procedures, rules and regulations that function together to provide education leaders, decisionmakers and managers at all levels with a comprehensive, integrated set of relevant, reliable, unambiguous and timely data and information to support them in completion of their responsibilities'." **(UNESCO 2019)**

In this document the term "Early Childhood Education and Care Management Information System or ECEC-MIS" is introduced. This is referring to an EMIS system for the early childhood education and care, or the integration of component and modules relevant for ECEC within a larger EMIS system. The two terms will be used interchangeably throughout this paper, as will the term "ECEC data system."

EMIS systems are traditionally used for basic education (for which some years of 'ECEC' may be included, especially if they are housed under the ministry of education). However, an EMIS is not restricted to the older age groups, and it makes sense to integrate ECEC data into an EMIS, especially if a well-functioning system already exists which can be expanded to include additional ages/ phases and/or system modules.

The guidance provided in this document can apply to a range of existing education management systems/ platforms regardless of whether they are officially referred to as "EMIS".

2.1 Core Principles for an Effective ECEC Data System

Before going into technical details, there are some important overarching principles of effective ECEC data systems which should be considered.

Comprehensive data collection: A successful data system captures detailed, granular data on all aspects of ECEC services, including programme types, enrolment figures, staffing qualifications, child outcomes, and infrastructure. Comprehensive data enable a holistic understanding of the ECEC sector, revealing gaps and disparities and guiding targeted interventions. It should be able to handle both process and structural quality indicators and different levels/intensity/regularity of data collection.

Standardization: Consistency in definitions and classifications across programmes and jurisdictions is critical. Implementing internationally recognized standards, such as the International Standard Classification of Education (ISCED), ensures comparability of data and alignment with global benchmarks.

Interagency coordination: In a split system, effective collaboration among the various agencies responsible for ECEC is crucial. Mechanisms for data sharing and integration should be established to eliminate duplication, harmonize processes, and address gaps in the information landscape.

Data quality assurance: Reliable data is the cornerstone of informed decision-making. Countries should establish rigorous quality assurance protocols, including regular audits, validation checks, and timeliness standards, to ensure the accuracy and credibility of the data.

Accessibility and transparency: An open and transparent approach to data dissemination fosters trust and accountability. Policymakers, ECEC staff, researchers, and the public should have access to relevant data in user-friendly formats, ensuring its utility for decision-making and advocacy.

Capacity building: The success of any data system depends on the skills of the people managing it. Investing in the training of personnel responsible for data collection, entry, and analysis is essential to maintain high standards and leverage the system's full potential.

Privacy and confidentiality: Protecting the personal information of children and families is non-negotiable. Adhering to national and international data protection regulations, such as GDPR, is essential to build trust and ensure ethical use of the data. The Council of Europe's Convention 108+ emphasizes safeguarding personal data, particularly children's, recognizing their vulnerability and limited understanding of data processing implications. In November 2020, the "Guideli-

nes on Children's Data Protection in an Education Setting" were adopted to help educators, policymakers, and organizations uphold children's data rights in digital environments. These guidelines reinforce core principles such as transparency, fairness, purpose limitation, security, and data minimization, emphasizing age-appropriate implementation. Key recommendations include processing children's data strictly for legitimate purposes, ensuring transparency for children and guardians, and employing privacy-by-design in educational tools.[12]

2.2 ECEC-MIS architecture

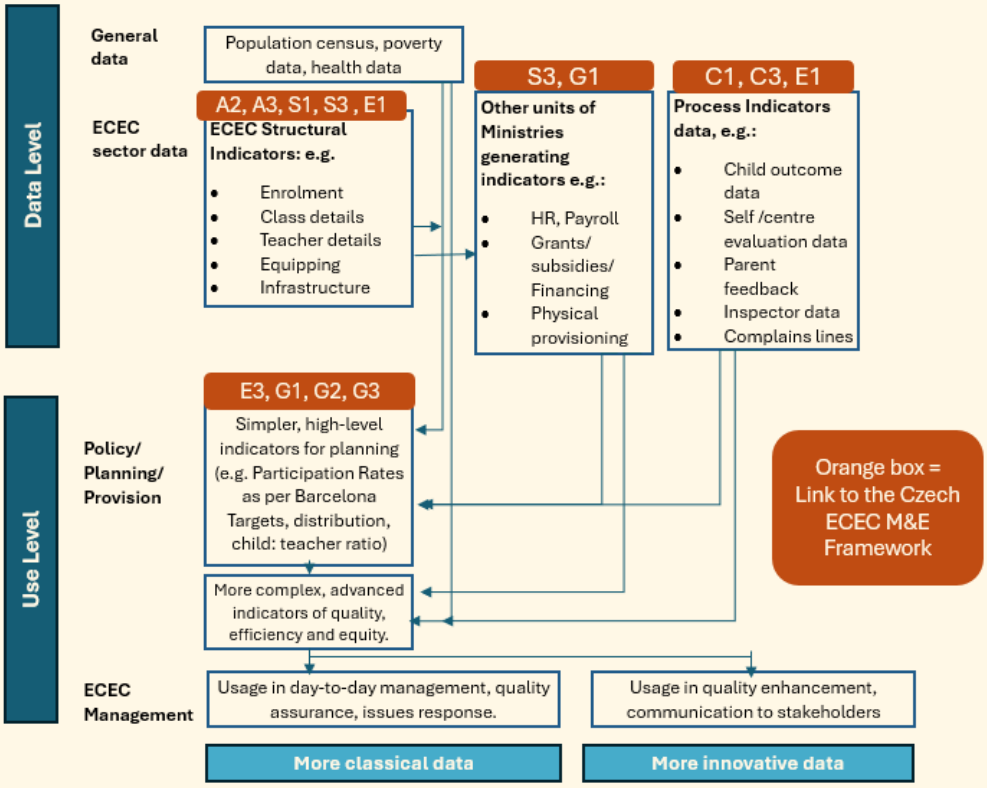
ECEC-MIS architecture (ideally within an existing EMIS system) is the foundation for how data is collected, stored, managed, and utilized. Key layers of EMIS data architecture include:

Data collection layer *(methods of gathering data)*

Data management and storage layer *(systems for organizing and storing data)*

Data utilization layer *(tools for analysis, reporting, and dissemination)*

The visual below shows the relationship between the data and how it is used, as well as typical data sources:



Source: Adapted by Jessica K. Brown from Van Wyk, C., & Crouch, L. (2020)

12 Council of Europe. (2020). Children's data protection in an education setting: Guidelines. Retrieved from https://edoc.coe.int/en/children-and-the-internet/9620-childrens-data-protection-in-an-education-setting-guidelines.html

2.3 Database and Software Considerations – Functionality Standards

There are general technical and operational standards for the software and databases that underpin a national ECEC data system. These are:

Interoperability and scalability:

The database should seamlessly integrate with existing systems used by various agencies, supported by open standards and APIs to facilitate secure data sharing and compatibility. Relevant data-sharing legislation should be in place to ensure smooth inter-agency operations. For scalability, a cloud-based or modular software solutions that can handle increased enrolment, new programmes, and evolving policy demands without overhauling the system should be adopted. These options offer flexibility and cost-effectiveness, ensuring the system grows alongside organizational needs.

Usability and customization:

A user-friendly interface is essential for users with varying technical expertise. Features like intuitive navigation, clear instructions, and visual dashboards simplify data handling and interpretation. The system should also provide customization options to allow for tailored workflows, data fields, and reporting formats that address the unique requirements of different regions, institutions, or programmes. These elements make the system adaptable and enhance its overall functionality.

Security and data quality:

Robust data security measures should include encryption for both storage and transmission, role-based access controls to limit unauthorized access, and strict adherence to GDPR or equivalent data protection standards. Furthermore, maintaining high data quality requires built-in mechanisms like automated validation checks and cleaning processes. Audit trails and error-logging features are crucial for accountability, ensuring that any discrepancies are identified and resolved promptly.

Advanced analytics and reporting:

The database should enable sophisticated analysis with tools such as customizable templates, visualizations (charts and graphs), and longitudinal data capabilities. These features allow policymakers and administrators to identify trends, evaluate programme effectiveness, and derive actionable insights. Advanced analytics also support data-driven decision-making by transforming raw data into meaningful, policy-relevant outputs.

Maintenance and future-proofing:

Long-term sustainability requires ongoing support from vendors/ in-house solutions, including reliable customer service and well-defined Service Level Agreements (SLAs) for timely updates and issue resolution. Future-proofing the system involves using modular architectures that can be updated or expanded as needs change. Regular consultations with stakeholders ensure the system evolves to meet new technological and legislative

requirements. Additionally, smooth data migration from legacy systems, with rigorous accuracy checks and staff training, is critical for a successful transition.

Additionally, UNESCO defines some key considerations for functionality at different levels for the "buyer" to keep in mind/look for when deciding on data systems relevant for Education.[13]

2.4 Using ECEC-MIS systems – key components required

Once a suitable data system is in place for ECEC, there are still critical considerations required to optimise the use of the system and the data.[14]

2.4.1 Staff skills and requirements

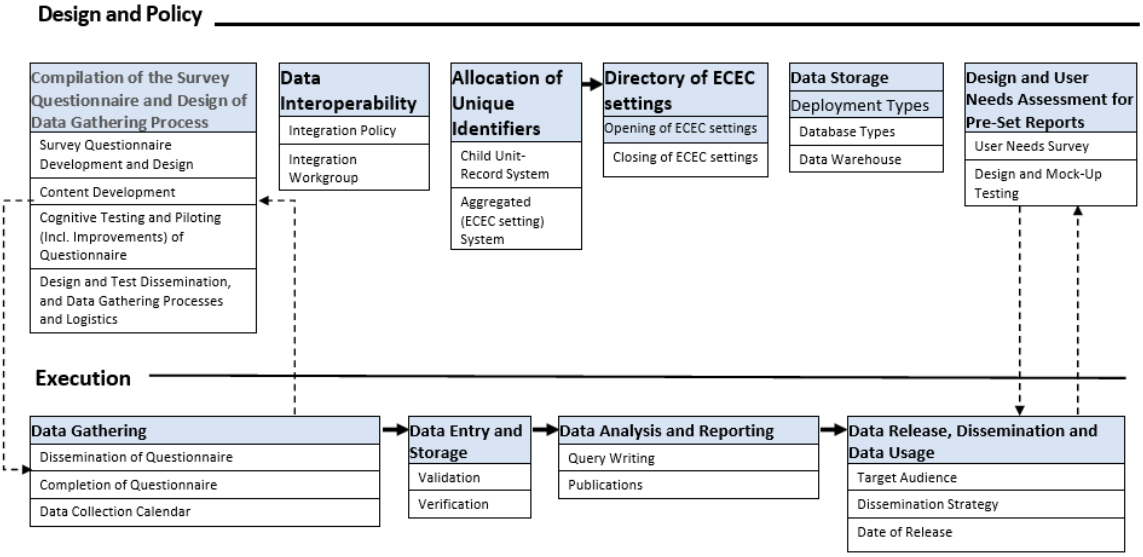
To effectively operate an ECEC-MIS, countries must ensure their teams at the national, subnational, and facility levels have the necessary technical expertise and management skills. Staff at the national level responsible for data should be proficient in ICT and data management, including the operation of database systems, maintenance of hardware, and use of software tools for data processing. In addition, they should understand data collection and entry processes, whether through manual methods or digital platforms, to ensure consistency and accuracy. Skills in statistical analysis are also crucial, enabling staff to interpret data for evidence-based decision-making. Beyond technical expertise, interpersonal and communication skills are necessary to facilitate collaboration with other departments and stakeholders. Continuous knowledge and skills improvement through training programmes, workshops, and mentorship ensures that staff are well-prepared to adapt to evolving demands and technologies. At the level of the setting and local authority staff should be competent in data capturing and basic analysis of their own data. Staff should also be trained on using specific digital tools for data provision and to access data availed to them.

1. EMIS Production Life Cycle

The EMIS production life cycle outlines the stages involved in collecting, managing, and disseminating ECEC data. It begins with the design of questionnaires/data collection forms that are user-friendly, structured and comprehensive enough to capture all relevant metrics, while being suitable for collecting process quality data as well as more traditional structural quality measures. Unique identifiers, such as standardized IDs for ECEC settings and children, are allocated to maintain data consistency across years and systems. Regular updates to the directory of ECEC settings are essential to reflect changes like new establishments or closures. Data entry and storage processes must be secure, accessible, and equipped with control mechanisms to minimize errors. Interoperability is another critical aspect, i.e. ensuring that the EMIS integrates with other systems through standardized formats or APIs. The final step is to transform the raw data into concrete findings and conclusions through analytical tools. These are then disseminated to the various stakeholders through effective and accessible channels, thus completing the life cycle of the system. This is demonstrated in the graphic below:

13 Van Wyk, C., & Crouch, L. (2020). Efficiency and Effectiveness in Choosing and Using an EMIS . UNESCO Institute for Statistics, Montreal.

14 Van Wyk, C., & Crouch, L. (2020). Efficiency and Effectiveness in Choosing and Using an EMIS . UNESCO Institute for Statistics, Montreal.



Note: While the production process in the bottom panel – execution – is relatively linear, the top panel – design and policy – is relatively nonlinear, with only a few of the steps being sequential. For example, it is difficult to have a proper directory of ECEC settings unless unique ECEC setting IDs have been assigned. Not all theareas that are linearly related in the top panel are depicted, to keep the diagram uncluttered. Just one of the arrows is drawn in as illustration. There is interaction between the two panels, as design is of course necessary for execution and there are feedback loops from execution to design; indeed, there are far more feedback loops than are depicted here. Note also that "usage" refers more to an everyday or managerial usage than usage for policy and planning. Usage in the latter sense would happen outside of the life cycle depicted here, in other units of the ministry (see Section 4 on data architecture).

Source: Van Wyk, C., & Crouch, L. (2020)

2. Data collection tools

Effective data collection depends on well-designed tools, such as reports and ECEC questionnaires. These tools must be clearly structured, intuitive, and include metadata to enhance reliability and ease of use. Detailed instructions and guidelines for these tools are needed to ensure that the stakeholders responsible for writing the reports or completing questionnaires do so accurately and consistently. Countries are increasingly adopting national digital platforms for data collection, including web-based systems and mobile applications, which reduce manual errors and enhance efficiency and allow for more nuanced tools (such as the Valssi system in Finland[15]). These technological advancements streamline the process, enabling timely data collection and allowing for real-time validation during entry. The development of advanced and online data collection tools also allows for increased availability of real-time data.[16] It is important to consider what key data is needed in real time and how best to collect it. The Brookings Institute provides more detailed guidance on real-time data here.

15 https://www.karvi.fi/en/evaluations/early-childhood-education-and-care/valssi-national-quality-evaluation-system-ecec

16 Gustafsson-Wright, E., Osborne, S., & Aggarwal, M. (2022). Digital tools for real-time data collection in education. Brookings Institution. Retrieved from https://www.brookings.edu/articles/digital-tools-for-real-time-data-collection-in-education/

3. Unique identifiers

Unique identifiers are a cornerstone of an effective EMIS, and should also apply for ECEC data collection, ensuring consistent data management across systems and years. Child identifiers allow seamless tracking of individual children's progress and transitions within and between ECEC and onto primary school. Similarly, ECEC setting identifiers maintain an accurate directory of institutions and facilitate the linking of datasets. To be effective, these identifiers must be generated and managed using standardized algorithms that ensure consistency and scalability. A robust system of unique identifiers supports the creation of longitudinal datasets, enabling policymakers to analyse trends and make informed decisions when enacting legislative and other measures.

4. Quality assurance

Maintaining high data quality is essential for the reliability of an ECEC-MIS/EMIS. Validation mechanisms are necessary to identify anomalies or inconsistencies during data entry. Automated processes can flag outliers, while error logs and audit reports help address discrepancies efficiently. Continuous monitoring of data ensures it remains timely, accurate, and relevant to the needs of policymakers and stakeholders. This ongoing commitment to quality ensures the credibility of the system and the data it produces, strengthening its role in decision-making and policy formulation. The table below shows dimensions of data quality that should be upheld.

Dimension	Description
Completeness	Data for all data elements for all reporting entities (e.g. ECEC settings, children, parents, ECEC staff) should have been submitted. Data are complete when data values are present for all records, occurrences or logical entities.
Relevance	There is no point in collecting data unless it is put to some meaningful use in ECEC decisions and quality enhancements. Excessively long questionnaires should be avoided.
Accuracy	Accuracy should be prioritized in the data capturing methods, data validation methods and data verification processes, possibly at the expense of time and money. Data should be within the normal range for data collected for that specific data element and entity. Check for outliers – the capacity to check for automatic detection of most outliers upon entry should be part of the user specifications.
Timeliness	Data should be updated in real time or on a regular basis. Data must be available in time and when they are required, otherwise the credibility of the information system diminishes. Data from all the reporting institutions should be submitted at the appointed time.
Accessibility	Data should be accessible to the relevant users at all levels of early childhood education and care. The user should know what data are available, as well as where to find and retrieve the data. Metadata and data dictionaries are important to enhance the accessibility of data within an organization. Data should be available when-needed, as-needed in a manner that is as open as is consistent with broader privacy and security concerns as well as with the country's multisectoral data policy.

Source: Van Wyk, C., & Crouch, L. (2020)

5. Data dissemination strategy

Effective dissemination is crucial for ensuring that data is accessible and actionable for all stakeholders (including policy makers at all levels, ECEC personnel, municipal representatives, researchers and academia, parents and wider public). Dissemination plans should outline clear timelines for data collection, analysis, and release, allowing stakeholders to anticipate and plan around these schedules. The formats in which data is presented must be user-friendly, including visualizations such as dashboards and reports that simplify interpretation. Engaging stakeholders through consultations and updates ensures that dissemination strategies align with their needs, improving the overall utility of the ECEC-MIS. The data management and dissemination strategy should also consider the specific needs of different stakeholders (need-to-know), relevance (focusing on important and pertinent data for each entity), usability, and associated costs. By making data widely accessible, countries can support transparency, accountability, and informed decision-making across the ECEC sector.

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3 IMPLEMENTATION STEPS FOR THE CZECH REPUBLIC

3.1 Current data systems used

The current practice of monitoring and evaluation in ECEC is described in detail in the ***Report on Current Monitoring and Evaluation System and Practices in ECEC in the Czech Republic***[17]***.*** This chapter summarizes only basic information regarding the data collected.

3.1.1 ECEC facilities under the MoLSA

Children's group registers

All registered children's groups are captured in the electronic Register of Children's Groups[18] on the basis of the authorization to provide childcare service in the children's group, after meeting all legal requirements.

The electronic register provides information about the total number of children's groups of one provider and their capacity, legal form, and address, any suspension or revocation of authorisation. This information is freely available to the public.

Data transmitted by children's groups

Information on the number of children who actually attend children's groups could theoretically be obtained from applications for operational cost subsidies for children's groups. The application for the subsidy is submitted for a calendar year, each month a statement is submitted about the occupancy of the capacity places under contract in the previous month. It is based on contracts concluded with the parents of the children, which contain information about the occupancy of a capacity place according to contract (incl. the date of birth of the child and the schedule of their attendance of the children's group). It is thus theoretically possible to obtain information from the applications for subsidies not only about the participation of children of different ages in ECEC, but also about the amount of time they spend in the facility based on the contract. This information is only approximate, as the absence of a child need not be reported unless another child replaces them in the children's group. However, according to information provided by MoLSA staff, this data is not available for monitoring and evaluation purposes. Funding is also covered from various sources, i.e. only a part of the providers apply to MoLSA. In addition, some children's groups do not apply for operational cost subsidies at all.

17 Straková, J., Simonová, J., Holečková, P., Brožová, K. (2024). Report on Current Monitoring and Evaluation System and Practices in ECEC in the Czech Republic, UNICEF, Prague.

18 evidence.mpsv.cz/eEDS

The current situation therefore does not allow for monitoring of the composition of children in children's groups, identifying needs, or planning the necessary capacities. However, this is now changing. MoEYS and MoLSA have started to work together on capacity analyses with regard to the demographic situation and its trends. Data on the approximate number of free capacity places in children's groups will be published soon.

Information on process quality

The quality criteria are divided into three areas: (1) childcare and fulfilment of the child's needs, (2) area of staff provision and (3) operational security.

Information on the process of quality evaluation of CGs is not available and the results of inspections are not publicly available. Inspections of adherence to the standards of quality of care for children in children's groups take place both on the basis of received requests and through a random selection of children's groups. The inspections are conducted by MoLSA employees. Considering the increasing number of children's groups, the inspection staff capacity of the MoLSA is insufficient. According to the new legislation, inspections will fall under the responsibility of the Labour Offices.

3.1.2 ECEC facilities under the MoLSA

School registers

The MoEYS maintains the ***Register of Schools*** with capacity data. The register is publicly available. It can be searched, and school lists can be exported from it.[19]

Data transmitted by kindergartens and schools

Data on kindergartens and preparatory classes in primary schools that may be used for the construction of structural indicators comes from the documentation kept by the schools and kindergartens, the data from which is transmitted in aggregated form to the MoEYS regularly twice a year (with data accurate as of 31 May and 30 September).

Data is collected on

- the number of regular and special classes;
- the number of children by type of disability diagnosed by a school counselling facility;
- the number of children by disadvantages related to socio-economic and cultural grounds of the child that hinder the fulfilment of their educational opportunities on an equal basis with other children;
- the number of children by citizenship, in the case of foreigners by residence regime;
- and the age composition of the children.

The data on the kindergarten admission process is collected, i.e. on submitted applications and the number of children admitted and enrolled by age.

Additional data is collected about the personnel. The database contains data on pedagogical staff performing specialized, or methodological activities, on the number of teachers in total, senior managers, other educational staff, and computer and other ICT equipment in schools.

19 https://isv.gov.cz/rssz/prehled

Reports are completed for the individual separate facilities of the kindergarten where the enrolment took place. The number of women/girls is reported in all indicators related to persons.

A wealth of useful information is obtained from ECEC institutions operating under the MoEYS. However, as stated in the ***Report on current monitoring and evaluation system and practices in ECEC in the Czech Republic***, some important information is missing, and some data is not provided in sufficient quality. For example, data on attendance is missing, as is data on fees associated with attending ECEC facilities and fee reductions or waivers, and on unmet demand because only the number of applications is available, not the number of children.[20]

Data provided by kindergartens and schools is available in the form of predefined tables in the Statistical Information System of the Ministry of Education, Youth and Sports.21 Collection of statistical data of kindergartens and preparatory classes is carried out systematically, and a large dataset is collected on children and their teachers, making it possible to systematically monitor and evaluate a range of aspects of structural quality. However, data collection can be further improved so that even more aspects of ECEC can be monitored and evaluated in higher-quality. It would also be beneficial to ensure that reporting data is publicly available for further analytical use at different levels of management, together with relevant documentation (for more detailed recommendations, see Chapters 6 and 7 of the ***Report on current monitoring and evaluation system and practices in ECEC in the Czech Republic).***

Process information collected by the Czech School Inspectorate

The process quality in kindergartens is monitored primarily by the CSI according to the Quality School criteria. These are divided into six areas: concept and framework of the school, pedagogical leadership of the school, pedagogical staff, education process, educational outcomes, and support for children in education (equal opportunities).

The inspection takes place in individual facilities once in six years on average. Inspection reports are publicly available in the inspection report register.[22] The Czech School Inspectorate also publishes thematic reports in which it elaborates its findings on selected topical issues.

Selected datasets are publicly available on the Czech School Inspectorate website.[23] However, the data is only of limited usefulness, as it is not user friendly and lacks identifiers that would make it possible to connect individual data sets with each other.

3.1.3 Other facilities

There is currently no data available for other facilities that provide ECEC that could be used for systematic monitoring and evaluation. The partial information that is available about these facilities is given in the ***Report on current monitoring and evaluation system and practices in ECEC in the Czech Republic*** in Chapter 2.3.

20 Parents often submit more applications [several applications for the same child or submit applications to different settings for the same child].
21 https://statis.msmt.cz/rocenka/rocenka.asp
22 https://csicr.cz/cz/Registr-inspekcnich-zprav.
23 https://opendata.csicr.cz/

3.2 New legal frameworks for data systems in Czech Republic

3.2.1 Children's groups

The amendment to Act No. 247/2014 Coll., on the provision of care for children in a children's group, which was promulgated in the Collection of Laws as Act No. 84/2025 Coll. on 27 March and will become effective as of 1 May 2025, is set to bring significant changes to the system of data collection in children's groups.

Under the proposed version of the Act, there are no material changes to the Register of Children's Groups and the data collected and contained within it. However, a significant change should occur in the collection of data for subsidy allocations, specifically in that children's national identification numbers ***(rodné číslo)***, if assigned, or European health insurance numbers, if assigned, are to be reported when reporting the occupied capacity places in children's groups. As this is a unique identifier, it will allow the tracking of children who are attending two or more children's groups and ensure that the subsidy for this child will be adequately paid to the providers according to the child's real attendance. Thus, the possibility of the full subsidy being allocated to two or more children's groups for the same child should be eliminated (§20j).

Secondly, and of most importance for the monitoring and evaluation of children's groups, there is the newly added section 13c, which establishes the duty for children's group providers to supply anonymized data on the children, waiting lists, and staff in their children's groups. Specifically, this means reporting:

- the total number of children
- the number of children of the same age
- the occupancy rates according to the currently valid contracts
- the number of children who were denied admission to the children's group because of full capacity (as of 1 September of the year)
- the number of staff working directly with children
- the employment type and number of hours worked of staff working directly with children
- the qualification status of staff working directly with children
- the number of other staff and their job classification

This data is to be reported to the MoLSA by 15 October of each year through the same application used to report data for the purpose of subsidy allocation. This change is to come into effect starting with the year 2026 (§ 13c of Act No. 247/2014, Coll.).

3.2.2 Kindergartens

An amendment to the Education Act (No. 561/2004 Coll.), which is in its second reading in the Chamber of Deputies (as of February 2025), would bring several changes to the operation of kindergartens which would have a positive impact on their monitoring and evaluation.

A major change is proposed to the process by which catchment areas for kindergartens are established. Currently, catchment areas are established through a municipal ordinance without the obligation to report the established catchment area to any other institution

or municipality or provide a graphic representation of the exact area. Some municipalities, particularly those that themselves do not possess a kindergarten, do not have a catchment area established at all. This means the information about catchment areas is rarely accessible remotely and at times is unclear or does not correspond to the real situation. While the Czech School Inspectorate has managed to compile data from 2066 individual municipal ordinances on elementary school catchment areas and publish this data in a map in the form of so-called statistical catchment areas[24], no analogous remotely accessible information on kindergarten catchment areas exists (§ 178-179).

The proposed change would change the mode of establishing a catchment area from publishing a municipal ordinance to creating an entry in the registry of territorial identification, addresses, and real estate (RTIARE) operated by the State Administration of Land Surveying and Cadastre. This would mean that catchment areas would be established and entered into the register in the same way that electoral districts are, which is a process municipalities are already familiar with, leading to a lesser administrative burden. For monitoring and evaluation this would mean that data on all catchment areas would be available for monitoring at any point in time and accessible electronically. It would also allow for the generation of data sets for any specific catchment area from other state administration agencies such as the Czech Statistical Office census data. This would be fundamental, for example, for monitoring segregation tendencies when establishing catchment areas. If this amendment is passed, the change should come into effect on 1 September 2025.

A second major proposed change in the education system as a whole is the establishment of an Education Information System, eEdu (***Informační system vzdělávání eEdu***), and two key registers – a register of children, pupils, and students (register of pupils) and a register of pedagogical and academic staff. Currently, the MoEYS operates a number of information systems and registers, such as the Register of Schools and School Facilities or Education Statistics. The Education Information System should unite the existing information systems and allow for easier operation with the data contained within, as well as providing the ground for the creation of the two new key registers. The creation of this information system is included in the amendment to Act No. 111/1998 Coll., which was passed by the Chamber of Deputies in November 2024 and is currently awaiting Senate approval. If approved, the change should come into effect on 1 July 2025.

The education registers bill establishing the two key registers – the register of pupils and register of pedagogical and academic staff – is currently (April 2025) in the process of being commented on by the Office for Personal Data Protection.[25] If passed in its current form, it would, in conjunction with the Register of Schools and School Facilities, replace the current information systems based on collecting reports (aggregated data) and school documentation (individual data) at regular intervals. The scope of the data would be identical to what is currently collected, but the centralisation of this data into the eEdu system would improve the quality and efficiency of the system. This system is also a great opportunity to start integrating modules relevant to ECEC across a continuum into a strengthened data system (the same variables will allow monitoring the situation across the ECEC system, a single child identifier would allow tracking a child's passage through the system from entry into the children's group, etc.).

The key registers would allow for the tracking of individual children and staff members within the education system through the allocation of an individual identifier to each

24 Czech School Inspectorate – Map of statistical catchment districts
25 https://msmt.gov.cz/ministerstvo/novinar/msmt-a-uoou-dospeli-v-ramci-zakona-o-registrech-ve

person at the point when they are entered into one of the registers. Through the creation of a central data system, the need for periodic statistical data collection (such as the current reports) would be eliminated, as the system would always show real-time accurate data and allow its extraction and analysis. The creation of these registers is fundamental for the implementation of the Monitoring and Evaluation Framework created by the working group for this TSI project, as it should eliminate a number of the issues with data quality or availability which presently prevent thorough monitoring and evaluation (it should, for example, make demand monitoring more accurate by tracking the number of individual children rather than applications, or enable monitoring of participation of vulnerable groups). If passed, this change should come into effect on 1 September 2026.

A visual summary of the changes to data availability between the current state and the proposed legislature for each of the ECEC types can be found in the table below.

Data type	Children's groups – current	Children's groups – proposed	Kindergartens – current	Kindergartens – proposed
Facility data	✔	✔	✔	✔
Individual child data	✖	✖	✔	✔
Individual staff data	✖	✖	✖	✔
Aggregated child data	✖	✔	✔	✔
Aggregate staff data	✖	✔	✔	✔
Real-time data	✖	✖	✖	✔

3.3 Recommendations

Recommendations for the development of an integrated data system and related processes are being made in a situation where both the MoLSA and the MoEYS are developing their own data systems. The Ministry of Education is preparing the Education Information System portal (e-EDU portal), which currently contains the Register of Schools and School Facilities, and the Register of Educational Legal Entities. These registers are expected be supplemented with a key register of children, pupils and students and a key register of pedagogical and academic staff in the future. MoLSA is developing a data system that is expected to collect data on children, capacity filling and staffing from all children's groups, i.e. even those which do not receive state subsidies, once a year (as of 30 September), starting in 2026. At the same time, this data system will ensure the payment of state subsidies to children's groups receiving them, which means the system's function is distinctly different from the MoEYS data system.

Acknowledging the developments currently in progress, the members of the TSI project working group still agreed on the need to create a unified evaluation and monitoring framework. The fact that separate data systems are being created from which data for indicators will be drawn was also perceived as a shortcoming by the majority. Great emphasis was placed on ensuring the ability to easily transfer data between the two systems and gradually approximating the systems with the aim to interconnect them in the future. The following recommendations have been conceived with this vision in mind, although we are aware that the interconnection of the systems is complicated by the fact that the MoLSA system also serves other purposes than the MoEYS system, as it collects the evidence for the payment of allowances, as mentioned above.

At the same time, two important changes are taking place in the area of data management. The first is the creation of the Digital and Information Agency (DIA). This is a central administrative office that functions as an organisational unit of the state and oversees information systems of public administration. It also deals with the area of data management and data opening so that data collected by the public sector, which are not non-public, are made available to the public. The second change is the implementation of the Data Governance Act, an EU regulation to facilitate the sharing of personal and non-personal data within EU countries.

3.3.1 Data system management

Compliance with the European Data Governance Act and the Data Act

We recommend that changes introduced by these regulations are taken into account in future adaptation of the data systems (e.g. introduction of technical and organisational measures to protect data – anonymization, pseudonymization, secure processing, setting up transparent and neutral mechanisms to manage access to sensitive data).

Synergy with DIA

We recommend that any further steps planned by the MoEYS and the MoLSA in the area of data system management are consulted with the DIA.

Primary data availability

We recommend that the requirement of access to primary data be applied in the development of data systems (currently, access to primary data is not ensured in situations where systems are operated by an external entity).

Coordination of data system management between state institutions and between state and local authorities

It is necessary to ensure transparent cooperation between departments responsible for data collection in order to achieve the highest possible quality and compatibility of the data obtained and avoid duplicate data collection. In the current situation, some data are reported by some schools repeatedly for different entities, which is both discouraging and inefficient. Coordination should lead to, among other things, public administration data being entered into the system only once and made available to authorised agencies through secured access.

Here, the cooperation between the two departments may take the form of an inter-departmental working group tasked with coordinating monitoring and evaluation activities, developing common strategies and ensuring the exchange of information.

At the same time, the exchange of relevant data between all ministries and agencies is important. Typically, demographic data is necessary for the calculation of some indicators.

Ensuring the collection, management and archiving of data and metadata

The process of collecting, managing and archiving data and metadata must be organised and secured in such a way as to guarantee their integrity and availability for further analysis and evaluation. This includes ensuring the quality of data during collection and the correct processing, storage and archiving of the data.

It would be ideal if data was collected through the same application in all facilities. This is currently planned for the MoLSA data system; kindergartens have so far been using various commercially available applications for data management.

Data system compatibility

Until the data is collected and managed in a way that allows one-time data insertion into the system and its subsequent sharing by authorized persons and organizations, it is important that the data systems of individual subjects are compatible, i.e. that they allow the sharing of the collected data. This typically includes a uniform design and naming of variables and indicators in the whole age category 0-6 and the same schedule for data collection in all facilities. It is especially necessary to create a single person identifier through which the data can be linked, which will allow the monitoring of the progress of individual

children through the system, including all stages of ECEC. The ability to monitor the passage of children through the education system (including the entirety of ECEC) is necessary for a number of analyses of the functioning of the system, which are currently missing.

It is also necessary to ensure that the data in both systems are being continuously updated, especially in terms of data on capacity. For example, we are currently finding that some data on kindergarten capacity is not up to date.

When building the MoLSA system, which will collect data on children's groups, it is important to get as close as possible to the MoEYS system. Therefore, at this stage, it seems appropriate to first check whether the data collected in the education system are also relevant for the CGs and then tto use the relevant data in the MoLSA system. When developing its own data set, there is a risk that each department will collect the same or similar information, but in a slightly different way, making the resulting data incomparable. At the same time, however, there is a need to start collecting data for both types of facilities that are not yet collected (see Monitoring and Evaluation Framework), which in some cases requires a change in legislation.

Openness of data systems

The data management system should allow data collected, created or funded by public authorities (also known as public sector information) to be available free of charge for re-use for any purpose after meeting the license conditions. This availability can subsequently contribute to better informational awareness and data-based decision-making by parents, founders, operators and other stakeholders. It is also important to ensure that the data made available for further analyses is properly documented and includes all identifiers that allow data sets to be interconnected where relevant. Availability also includes user interfaces that allow easy insight into the data for a wide range of users (see 2). It is of course possible to consider more sophisticated models that provide a road into the future.

Data systems must be developed in a way that allows for updates based on future needs.

3.3.2 Data system structure

Core indicators

The development of the ECEC system should be systematically monitored through a single set of indicators. The key indicators are proposed in the document Monitoring and Evaluation Framework for Early Childhood Education and Care in the Czech Republic, including a more detailed specification and rationale for their collection. Data is already being collected and reported for some indicators (indicated in Annex 1 of the Monitoring and Evaluation Framework for Early Childhood Education and Care in the Czech Republic), while legislative changes will be needed to collect and report the data needed to construct some of the indicators. All relevant actors, such as educators, carers, parents, founders, providers and other stakeholders, should be involved in the selection of the final set of indicators.

System revisions and updates

Key indicators should be regularly revised to take into account the short- and long-term objectives of education and social policies at national and international level, and to take into account the main strategic documents for the early childhood education and care sector, including the Czech Republic's international commitments.

Inclusion of all actors providing ECEC in the data collection system

All actors providing services in this sector, regardless of their type, should be included in the monitoring and recording of ECEC. Including all types of services, regardless of whether they are public, private or not-for-profit, will provide a comprehensive picture of the state of ECEC. It is necessary to define a basic set of data to be obtained from all types of facilities without unduly burdening them and to work out how to motivate these facilities to provide the data.

Analytical tools

Basic analytical tools should be available within the data systems to enable the reporting of key indicators and support basic analyses (e.g. an estimate of future capacity demand could be a system-generated output available to the founder or decision maker).

Two levels of implementation may be considered:

Basic Scenario (Low Complexity and Cost): This approach does not require the development of a dedicated forecasting model. Instead, it relies on existing administrative data and simple year-on-year comparisons to estimate future capacity needs. It offers a quick, low-cost way to provide foundational insights.

Enhanced Scenario (Higher Complexity and Cost): This involves the integration of a purpose-built forecasting model, leveraging administrative data to produce more structured and potentially more accurate projections. While more resource-intensive, this approach supports improved planning and decision-making.

In both scenarios, tools should be available to monitor the current state and trends at the national and regional levels, as well as at the level of individual municipalities with extended responsibilities.

Naturally, it is always necessary to consider the extent to which the data needs to be anonymised and the potential negative impact of publishing some information when providing access to data (typically publishing the data on the proportion of socio-economically disadvantaged children or children for which Czech is a second language could strengthen segregation tendencies).

Imaging tools

The system should include a user interface that allows visualization and interpretation of data, making the information obtained available to a wide range of users, including the general public. The data should be part of open data, which will be provided by public administration by default.

3.3.3 Data collection system

Data quality assurance

It is important that the data collected is of the highest quality. To this end, it is necessary to define data collection tools and carefully describe the methodologies for obtaining the data, including setting the timeframe and the technical aspects of data collection. Methodological materials as well as relevant training should also be available online, and a functional helpdesk should also be available. Support and quality of data will be easier to ensure, if all facilities use the same application to collect data (see above). At the same time, automatic data checks should take place as soon as the data are entered. The establishment of automatic checks should be preceded by a thorough check by officials to help detect possible errors and set up automatic checks correctly.

Emphasis on data quality for process indicators

Data collection for process indicators should be ensured by similar inspection activities with clearly defined parameters (e.g. frequency, criteria to be assessed; see e.g. M&E framework, qualification of inspection staff) across all ECEC facilities. This is related primarily to the need to create the necessary capacities for inspection activities in children's groups and neighbourhood children's groups. Process data should become an integral part of data systems, which is currently not the case.

Use of diverse methods and approaches in data collection

Further data collection mechanisms such as parent and child surveys, self-assessment tools for ECEC staff and thematic studies focusing on specific aspects of pre-school education and care in the 0-6 age group should also be undertaken. Data should be systematically used to evaluate the impacts of educational policy measures.

Reducing administrative burden

Reporting forms should be simplified and standardised as much as possible. Mobile applications should also be available for data collection. Existing data sources (e.g. population register and school register) should be used as much as possible to reduce the burden.

Promoting self-evaluation mechanisms

Both administrative and inspection authorities should encourage the use of existing tools and data to support self-evaluation at the level of establishments and municipalities. A diverse set of quality self-evaluation tools should be available for use within individual facilities. We offer some self-evaluation tools in the information package for municipalities.

Definition of the term “children with increased support needs”

In the MoEYS sector, the concept of a “child with special educational needs” is in use. Such a child needs support measures to fulfil its educational potential or to exercise or enjoy its rights. Support measures mean necessary adaptations corresponding to the health status, cultural environment or other living conditions of the child. Support measures consist of counselling assistance, adaptation of the organisation, content, evaluation, forms and methods, use of compensation aids and special teaching aids, use of specific communication systems, use of an assistant or other worker and provision of education or services in structurally or technically adapted premises.

In the MoLSA sector, the concept of a “child with special needs” is being introduced. The methodology for children with special needs, developed by the Ministry of Labour and Social Affairs in 2022, defines specific types of special needs, but does not deal with the general definition of the concept of a “child with special needs”.

To ensure continuity and high-quality monitoring and evaluation, we recommend the preparation a unified definition of the concept in both sectors, taking into account the specific characteristics of the younger age group—such as more complex diagnoses and needs that extend beyond educational ones.3.3.4 Data security and protection

Protection of sensitive data

Data security must be ensured when handling the collected data. At the same time, it is important to implement anonymisation processes that allow data to be made available for further analysis, both in individual and aggregate form.

Access rights

It is important to appropriately set up a multi-level data access system according to the role of the relevant entity (e.g. ministry, municipal/local authority, schools, parents, research organisations, and the public). Access should be created for all relevant levels of government, meaning not only state institutions but also municipalities, so that they have the necessary data concerning facilities in their area.

3.3.5 Capacity building

To work effectively with the collected data, qualified staff at all levels is necessary. Their qualifications should provide the skills needed for effective data collection and analysis, as well as for interpreting and using the results to improve practices. Work is therefore necessary to build the capacities of the relevant actors so that they are capable of using data for daily planning, monitoring and flexible capacity provision in ECEC facilities.

3.3.6 Further recommendations for data acquisition

Naturally, building data systems for the periodic collection and processing of statistical data is not the only task associated with the construction of indicators proposed in the monitoring and evaluation framework and their use for continuous improvement of ECEC. Below we present further suggestions from the working group related to the acquisition and use of data.

Involvement in international ECEC research

International organisations (typically OECD) organise comparative international surveys focused on ECEC. For example, they focus on comparing the characteristics of staff[26] providing ECEC in individual countries, or on assessing children aged 5 years, for whom they measure initial literacy, initial numeracy, self-regulation, empathy and trust, and prosocial behaviour[27]. Involvement of the Czech Republic in these surveys would make it possible to compare the quality of ECEC in the Czech Republic with similar indicators abroad and would help monitoring and evaluation at the system level.

Regular diagnosis of children in ECEC at a certain age

We recommend considering whether systematic professional diagnosis of children in ECEC facilities should be carried out at a certain age (e.g. 5 years) to check their school readiness. The data obtained in this way would make it possible to monitor the status and development of the ECEC system. At the same time, it could be used as a basis for individual work with children, especially children in need of support. Greater individual support for children in ECEC will also be important in relation to the intention to eliminate school deferrals. This aim can only succeed if ECEC provides children (especially children in need of support) with targeted support for the transition to primary school.

Transfer of data on children between ECEC and primary school facilities

It seems useful to standardise the transfer of information on children and their needs between different facilities in order to provide more efficient care for individual children and prepare them for the start of compulsory school, typically between children's groups and kindergartens and between kindergartens and primary schools.

Public databases of ECEC facilities and nannies

It is important that information on ECEC facilities is publicly available to parents and contains detailed information on the care available (typically on specific services of some institutions, e.g. the care for children with specific special needs in some PVP facilities). There is a great demand for nanny databases. Here too there should be more detailed information on the care provided and its quality.

26 See e.g. OECD TALIS – Starting Strong https://www.oecd.org/en/about/projects/starting-strong-talis.html
27 International Early Learning and Child Well-being Study (IELS) https://www.oecd.org/en/about

ANNEX 1
ECEC- MIS FUNCTIONALITY CHECKLIST

Category	Checklist
1. System architecture and infrastructure	↘ The system is designed to collect, store, and analyze structural indicators (e.g., staff qualifications, child-teacher ratios, facility capacity, barrier-free access) and process indicators (e.g., teaching practices, child engagement, parental involvement) as defined in the M&E framework. ↘ The system includes separate modules for each key area of the framework: ✓ Access and Inclusion (A1-A3 indicators, e.g., enrolment rates, capacity utilization, social disadvantage tracking) ✓ Staff Quality (S1-S5 indicators, e.g., qualifications, professional development, salary benchmarks) ✓ Curriculum and Learning Environment (C1-C4 indicators, e.g., curriculum alignment, transition support, stimulating environments) ✓ Governance and Funding (G1-G3 indicators, e.g., expenditure tracking, funding sources, strategic planning) ✓ Monitoring and Evaluation (E1-E3 indicators, e.g., data collection mechanisms, quality standards, feedback loops) ↘ The system supports multi-level data aggregation (facility, local, regional, national) to align with the framework's reporting structure. ↘ The system houses modules for diverse data types, such as: ↘ A parental engagement module which includes digital portals for parents to: ✓ Access facility performance data (E3.P.6). ✓ Provide feedback on ECEC services (E3.P.3). ✓ Track their child's developmental progress (C1.P.2, C3.P.2). ↘ A Self-evaluation and setting evaluation module. (S1. P.2)
2. Data collection and integration	↘ The system provides standardized digital forms for all indicators (e.g., A1.S.1-A3.S.8, S1.S.1-S5.S.3, C1.S.1-C4.S.2, etc.), ensuring consistency across institutions. ↘ The system integrates with national databases (e.g., labor statistics, census data, education records) to support indicators such as: ✓ A1.S.7 (employment rates of mothers with young children) ✓ S3.S.1-S3.S.3 (staff salary benchmarks) ✓ G2.S.1-G2.S.3 (ECEC expenditure tracking) ↘ The system links with primary school enrolment systems to monitor transition indicators (C2 series, e.g., C2.P.1-C2.P.5). ↘ The system includes specialized data fields for tracking vulnerable groups: ✓ Socially disadvantaged children (A3.S.1, A3.S.5) ✓ Children with special needs (A3.S.2) ✓ Children with different mother tongues (A3.S.3) ↘ The system allows real-time or periodic updates (daily/weekly for attendance, annually for structural data) to ensure timely reporting.

3. Data quality and validation	↘ The system automatically flags missing or inconsistent data (e.g., enrolment exceeding capacity, negative absenteeism rates). ↘ It includes cross-validation rules (e.g., ensuring that the number of qualified staff matches reported qualifications). ↘ It tracks data completeness for each indicator (e.g., highlighting where „vision for future" data is not yet collected). ↘ It supports approval workflows where facility managers, local authorities, and national agencies verify data before final submission.
4. Security and access control	↘ The system assigns role-based access: ✓ Facility-level users (enter attendance, staff qualifications, child enrolment) ✓ Local administrators (monitor compliance, verify data, generate local reports) ✓ National policymakers (analyze trends, allocate funding, set benchmarks) ✓ It encrypts sensitive data (e.g., child identifiers, family socioeconomic status). ↘ It maintains audit logs to track who accessed or modified data (critical for E3.P.6 on feedback transparency).
5. Reporting and decision-making support	↘ The system generates predefined reports for each framework section (Access, Staff, Curriculum, etc.). ↘ It provides interactive dashboards showing for example: ✓ Enrolment gaps (A1.S.4, A1.S.5) ✓ Staff qualification rates (S1.S.1-S1.S.2) ✓ Inclusion metrics (A3.S.1-A3.S.8) ✓ Staff Development Tracking Capabilities ✓ Tracks S2.P.1-S2.P.3 (professional development hours, training needs, self--assessment). ✓ Includes certification records (S1.S.1-S1.S.2) and links to salary benchmarks (S3.S.1-S3.S.3). ✓ Supports supervision and mentoring (S4.P.1, S5.P.4). ✓ Curriculum Implementation Tools ✓ Includes classroom observation templates for assessing process quality. ↘ It supports comparative data reading (comparing facilities, regions, or national trends). ↘ It includes forecasting tools (e.g., predicting future demand based on birth rates). ↘ Reports can be exported in multiple formats (Excel, PDF, CSV) for policy analysis.
6. System performance and optimization	↘ The system handles high-volume data entry (e.g., annual enrolment updates, daily attendance logs). ↘ It ensures fast query responses for real-time monitoring (e.g., tracking outbreaks of absenteeism). ↘ It includes automated performance tuning (e.g., optimizing database queries for large datasets). ↘ It Automates quality improvement cycles ✓ Provides actionable recommendations based on indicator gaps. ✓ Supports facility self-assessment (E3.P.1, E3.P.2) ✓ Real-Time Monitoring Alerts, flags critical issues (e.g., sudden drop in attendance, staff shortages). ✓ Sends automated notifications to relevant stakeholders for intervention.

7. Compliance and regulatory standards	↘ The system is designed in accordance with UNESCO EMIS guidelines and national education policies to ensure that data collection and reporting meet international standards. ↘ Clear data retention policies in line with GDPR principles, define how long different types of data are stored, ensuring compliance with legal requirements and preventing unnecessary data accumulation. ↘ The system allows for the secure and automated transfer of required data to international organizations (e.g., EU, UNESCO UIS, World Bank, OECD) for benchmarking and reporting purposes. ↘ The system maintains an audit trail, keeping records of who accessed or modified data to ensure transparency and accountability.
8. System maintenance and support	↘ Ministry staff responsible for ECEC data are trained in how to use the system effectively, including data entry, validation, and reporting functions. ↘ A dedicated team is in place to provide ongoing maintenance, system updates, and user support, ensuring that issues are resolved quickly. ↘ A user feedback mechanism (e.g., helpdesk, online support system) allows staff to report problems and request improvements to the system. ↘ The system follows a structured update schedule, ensuring that security patches, performance enhancements, and new features are introduced without disrupting daily operations.

ANNEX 2
NATIONAL ECEC DATA SYSTEM ASSESSMENT CHECKLIST

For use by officials responsible for ECEC in MoLSA and MoEYS

1. Data coverage and comprehensiveness

- ✔ Does the system capture structural quality data (e.g., staff qualifications, child-teacher ratios, curriculum, infrastructure)?
- ✔ Does the system collect process quality data (e.g., teaching practices, child engagement, interactions)?
- ✔ Does the system manage administrative data (e.g., enrollment, attendance, funding, workforce)?
- ✔ Are private and public ECEC providers included in the data collection?
- ✔ Does the system allow for parental feedback as well as teacher and centre self assessment?
- ✔ Does the system cover all types of facilities and relevant age group (0-6 years)?

2. Data collection and integration

- ✔ Is there a centralized digital platform for data collection and storage?
- ✔ Are data collection tools standardized across all ECEC providers?
- ✔ Is the system capable of integrating data from multiple sources (e.g., health, social services, education)?
- ✔ Does the system allow for real-time or periodic data updates?
- ✔ Are data collection methods inclusive of both urban and rural settings and at the levels of setting, local, regional and national authorities?

3. Data quality and validation

- ✔ Are there automated checks to detect missing or inconsistent data?
- ✔ Is there a data validation process to ensure accuracy before reporting?
- ✔ Does the system allow for data verification by local/regional authorities?
- ✔ Are there mechanisms to track and resolve errors in data entry?

4. Data accessibility and security

- ✔ Do authorized users (e.g., ministry officials, policymakers) have secure access to relevant data?
- ✔ Are there user roles and permissions to protect sensitive information?
- ✔ Is there a data protection policy in place (aligned with national/international privacy laws)?
- ✔ Can aggregated data be easily shared for research and policy-making?
- ✔ Are there backup and recovery systems to prevent data loss?

5. Reporting and decision-making support

- ✔ Can the system generate custom reports on key indicators (e.g., teacher qualifications, child outcomes)?
- ✔ Are there dashboards with real-time data visualization?
- ✔ Does the system support trend analysis to inform policy decisions?
- ✔ Can the data be linked to budget planning and resource allocation?
- ✔ Is the data used to track progress toward national and international goals (e.g., OECD, EU SDG 4.2 on early childhood education and care)?

6. Capacity building and sustainability

- ✔ Are ministry staff trained on data management and analysis?
- ✔ Is there a dedicated team responsible for maintaining and improving the system?
- ✔ Does the system have a long-term sustainability plan (e.g., funding, technical support)?
- ✔ Is there a feedback mechanism for users to suggest improvements?
- ✔ Does the system support periodic reviews and upgrades based on evolving needs?

Published by **UNICEF Europe and Central Asia Regional Office**

UNICEF Europe and Central Asia Regional Office
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