



riigikontroll
National Audit Office of Estonia

State activities to ensure the next generation of engineers

Does the Engineering Academy help reduce the shortage and ensure the next generation of engineers?

Report of the National Audit Office to
the Riigikogu
Tallinn, 6 March 2026

Summary of audit results

Why is the next generation of engineers crucial?

As the general population and the working age population are declining, the development of the Estonian economy depends more on increasing productivity and the use of technology and knowledge-based solutions.

To boost competitiveness, we need enough skilled engineers to create and apply new solutions and to develop industry, energy systems, infrastructure and digitalisation.

The shortage of engineers is a persistent problem in Estonia, limiting growth in economic productivity and making it difficult to achieve the state's strategic goals. This is also illustrated by the fact that Estonia ranked last among European countries in terms of the availability of engineers in 2023.¹ In order to address the shortage of engineers, the Ministry of Education and Research has launched the Engineering Academy programme, channelling an additional €37 million of European Union funding from 2023–2029 to develop the next generation of engineers.

The Engineering Academy is an important initiative and will help increase the number of engineering students in the short term. However, the programme is unlikely to achieve its objective of matching the number of graduates with labour market demand. The programme focuses mainly on strengthening and popularising engineering education in vocational and higher education, but the problem is rooted in general and non-formal education: science teaching is uneven, there is a shortage of teachers and young people do not develop sufficient interest in the field. Unless these problems are resolved, matching the next generation of engineers with labour market needs is not realistic in the long term. Therefore, the Engineering Academy in its current form is not enough, and the Ministry of Education and Research needs to act more effectively in the development of general and non-formal education to increase the number of engineers.

Main observations

- **To effectively alleviate the shortage of engineers, the state must have a clear and up-to-date picture of labour needs, but the Ministry of Education and Research does not have such an overview.** The Engineering Academy was launched on the assumption that demand for engineers would increase in any case, without analysing which disciplines are most in needed or over what timeframe the education system could alleviate labour shortages. An analysis of the sector's labour demand was included in the 2026 work plan of the Estonian Qualifications Authority, but by that time the Engineering Academy will already be halfway through its implementation.
- **The Engineering Academy focuses on strengthening the quality of higher and vocational education in engineering and promoting engineering studies. This is necessary, but not sufficient, as the root causes of the shortage of engineers lie at the early stages of education.** The uneven quality of science

The Engineering Academy

is a cooperation programme between the state, educational institutions, companies and professional associations launched in late 2023 to improve the quality of engineering education and ensure the next generation of engineers.

The goal of the programme is to ensure that vocational and higher education correspond to the labour market needs, to match the number of higher education graduates with the labour market needs and to increase the popularity of engineering.

¹ Kaasik, Ü., Männasoo, K., Vahter, P., Varblane, U. (2024). Situation and outlook of the Estonian economy. Report of the Competitiveness Expert Panel to the Riigikogu.

and mathematics education, the shortage of teachers and the limited capacity of non-formal education to foster interest in technology mean that the activities of the Ministry of Education and Research and the Education and Youth Board mostly focus on mitigating the consequences rather than addressing the root causes of the problem.

Problems related to the next generation of engineers

In 2024 and 2025, 24.5% and 23% of students, respectively, failed to reach the 50% threshold in the compulsory final mathematics exam in basic school.

Source: Education and Youth Board

The accessibility of non-formal education in science, technology, engineering, and mathematics (STEM) is uneven.

Source: [Estonian STEM Non-formal Education Union](#)

Support for non-formal education allocated to local authorities decreased from €14.25 million in 2018 to €9.25 million in 2025.

Source: Ministry of Finance

- **The programme's objectives, targets for performance indicators and funding logic do not support lasting change.** Many of the activities funded through the Engineering Academy (e.g. modernising teaching, training teachers, supporting learners) are core functions of vocational and higher education institutions. Additional funding has created extra capacity, but without clear priorities and governance, its impact is not sustainable. The programme's performance indicators are largely formal and allow targets to be met without substantive change.
- **The Engineering Academy has helped highlight the problems in the field and has created a platform for cooperation, but in its current form the programme does not expand the pipeline of future engineers.** Ensuring a steady supply of new engineers requires a more systematic approach to addressing shortcomings in general and non-formal education that hinder the development of young people's interest and aptitude in engineering. The steering council of the Engineering Academy should play an important role in shaping the strategic direction, but the Ministry of Education and Research and the Education and Youth Board have not made full use of its potential. Officially, the steering council is responsible for shaping education and labour policy for engineering sector, but so far its role has been limited to coordinating the activities and reports of programme partners.

Main recommendations of the National Audit Office

Recommendations of the National Audit Office to the Minister of Education and Research:

- **Create a clear framework for linking labour demand in engineering with education provision. This should include** preparing an overview of labour demand, setting national training priorities and assessing the training capacity of higher and vocational education institutions. When shaping education provision and planning the measures of the Engineering Academy, greater emphasis should be placed on fields where labour shortages are most critical.
- **Develop a comprehensive approach to support the future supply of engineers across all levels of education. This should include** strengthening teaching of mathematics and science in general education and linking STEM education and non-formal science and technology education with clear objectives and teacher preparation.

- **Ensure systematic and continuous governance of measures supporting the pipeline of engineers beyond the end of the current programme period.** Clarify objectives and performance indicators and establish clear links between them so that management and funding decisions are based on sound foundations. Develop governance arrangements that enable effective steering of education and labour policy for the engineering sector. Start planning follow-up measures well in advance to ensure that support for the pipeline of engineers continues beyond the end of the EU funding period in 2029.

Recommendations of the National Audit Office to the Director General of the Education and Youth Board:

- **Strengthen the management and monitoring of the Engineering Academy.** Ensure adequate capacity for effective programme management and establish consistent and comparable reporting on action plan implementation and budget execution to enable timely and evidence-based management decisions.

Responses of
auditees

Response of the Minister of Education and Research: The Engineering education policy is based on the OSKA general labour market forecast for 2022–2031, which shows a shortage of higher-education-qualified specialists in almost all engineering disciplines in industry. This is also why the Engineering Academy aims to increase admissions, expand teaching capacity and reduce drop-out rates. The growing number of upper secondary school graduates up to 2030 will create conditions for increasing the number of engineering graduates.

Decisions on opening study places and updating curricula are made by higher education institutions in cooperation with employers. The state supports priority fields through funding decisions and plans to introduce a new lump-sum funding for higher education, considering the number of graduates and the priority fields. To meet labour market demand, more students will be directed to high-demand fields and foreign students will be attracted through talent policy.

The vocational education reform updated the principles of funding and state-commissioned training: in adult vocational education, free study is available only in priority professions, and the volume of vocational education for young people is planned based on OSKA labour market forecasts.

Within the framework of the Engineering Academy, STEM non-formal education will be made more systematic: a framework curriculum for non-formal education will be developed and non-formal education providers will be supported in replacing short courses with longer programmes.

The Ministry of Education and Research sets objectives, activities and indicators in accordance with Education Strategy 2035. From 2026, the share of engineering graduates in higher education will be monitored as a separate indicator. Progress will be assessed by a steering committee involving representatives of employers and professional associations. A STEM strategy covering different levels of education is also prepared.

Response of the Director General of the Education and Youth

Board: In 2025, the Education and Youth Board strengthened the management and monitoring of the Engineering Academy by clarifying the division of roles between the managing authority, the intermediate body, the implementing body and the steering council, in cooperation with the Ministry of Education and Research and the steering council.

The Engineering Academy covers two interlinked grant schemes – Engineering Academy and IT Academy in Higher Education and Development of the IT Academy and Engineering Academy in Vocational, General and Non-formal Education. Therefore, the management and monitoring system at the Education and Youth Board has been designed as an integrated system covering both academies across all levels of education.

A new management structure was also created, as the previous model, based on programme managers had led to problems with the verification of expenditure, suspension of payments and lack of information. Positions were redesigned and additional staff were recruited. A dashboard was developed to support management decisions, providing an overview of the budget and its execution both at project level and across projects. The current system will be further developed to enable operational monitoring and reporting of performance and output indicators.