Adopted by the Cabinet of Ministers on 06.12.2022.

Informative Report

Strategy of Latvia for Pursuing the Status of a Full-fledged Member State of the European Organization for Nuclear Research

In accordance with Task 57.1 of Cabinet Order No. 210 of 7 May 2019, Regarding the Government's Action Plan for Implementing the Declaration on the Intended Actions of the Cabinet of Ministers under the Leadership of Arturs Krišjānis Kariņš: "Preconditions have been prepared for Latvia to become an Associate Member State or Member State of the European Organization for Nuclear Research (CERN), the European Space Agency (ESA), and the European Spallation Source (ESS)", having concluded the ratification process, on 2 August 2021, Latvia became an Associate Member State of CERN.

The future strategy for the CERN membership of Latvia should be developed in a way that effectively, meaningfully, and sustainably ensures their involvement in CERN, particularly in its scientific, training, and educational programmes, and to stimulate collaboration between the industries of Latvia and CERN and facilitate successful participation in procurements. CERN membership opens up opportunities for Latvia to engage in a wide range of programmes, events, procurements, and activities in the long term. To make full use of these opportunities, an integrated approach at the national level is necessary, involving all stakeholders: institutions, businesses, and social partners. The fundamental principles of the **CERN Strategy** of Latvia (hereinafter – the *strategy*) are based on the Sustainable Development Strategy of Latvia (Latvia 2030) and the National Development Plan of Latvia (NAP2027),[1] thus facilitating the implementation of the direction of fundamental changes "Knowledge Society" and the compliance with the set priorities:

- Science for societal development, economic growth, and security.
- High-quality, accessible, and inclusive education.
- Productivity, innovation, and exports.

The *strategy* contributes to the fulfilment of the tasks specified in the Guidelines for Science, Technology Development, and Innovation for 2021–2027,[2] particularly the Course of Action 1.2 – R&D Infrastructure for Research Excellence and Innovation:

- "To continue ensuring the engagement of Latvia in international research infrastructure platforms and consortia".
- "To ensure participation as an Associate Member State of CERN, in accordance with the Action Plan of the Latvian National Contact Point for CERN."

[1] https://likumi.lv/ta/id/315879
[2] http://tap.mk.gov.lv/lv/mk/tap/?pid=40492546&mode=mk&date=2021-04-13

Report on the current participation of Latvia as an Associate Member State of CERN

The CERN membership of Latvia encompasses various areas of impact, including the development of human resources, educational activities and promotion of STEM, scientific publications, infrastructure, and development of the commercial sector.

1. Development of human resources – by ensuring scientific capacity for societal development and economic growth.

The scientific institutions of Latvia are currently participating in a number of CERN experiments and scientific projects, including CMS, MEDICIS, AEGIS, ISOLDE, FCC, I.FAST, HITRIplus, NIMMS, PRISMAP, etc. CERN membership enables Latvian scientists and businesses to successfully engage in previously closed and inaccessible high-level consortia, projects, and collaboration platforms, including significant projects such as *Horizon 2020* and *Horizon Europe*. In addition to unique collaboration and networking opportunities, it has provided a significant financial contribution to the field of science in Latvia, e.g., through projects such as I.FAST. HITRIplus, and PRISMAP.

The membership of Latvia as an Associate Member State of CERN and the funding allocated by the Latvian government (including the State Research Programme "High-Energy Physics and Accelerator Technologies")[3] have allowed Latvian students and scientific personnel to conduct independent research at CERN in 2021 and 2022:

Table 1: Persons supported within the scope of CERN Student Programmes

Programme	2021	2022
CERN-Latvian Doctoral Programme	3	3
CERN Doctoral Student Programme	–	2
Technical Student Programme	–	1
Summer Student Programme	4	4

Table 2: Supported CERN-associated members of the scientific personnel (MPAs),[4] including engineers

Programme	2021	2022
Cooperation Associates (COAS)	1	2
Project Associates (PJAS)	1	1
Users	5	8
Fellowship	–	1

Furthermore, a total of 16 researchers, doctoral and master's degree students from 6 scientific institutions are currently working on CERN research in Latvia. In addition, the following institutions have been admitted to and have been successfully operating in the CERN Baltic

[3] https://lzp.gov.lv/programmas/valsts-petijumu-programmas/augstas-energijas-fizika-un-paatrinataju-tehnologijas/
[4] https://cds.cern.ch/record/2799211/files/Administrative%20Circular%20No11%20Rev%207.pdf

Group:[5] Riga Technical University (hereinafter – the RTU), University of Latvia (hereinafter – the LU), Riga Stradiņš University, Daugavpils University, and Ventspils University of Applied Sciences.

A total of 10 doctoral theses are currently developed at CERN, in all cases with supervisors from CERN and the RTU or LU, accordingly. In the academic year 2021/2022, 2 master's theses were developed and defended, while three master's degree students are currently working on their theses on CERN-related topics.

The total direct financial benefit for science in Latvia, involving Latvian scientific personnel in CERN projects and participating in student programmes, amounted to EUR 175 000 in 2021 and 2022 (data for the first half of the year). Furthermore, in this time period, CERN membership has allowed Latvian scientific institutions to participate in the H2020 projects coordinated by CERN – I.FAST, HITRIplus, and PRISMAP – by attracting EU funding with a total direct financial benefit of EUR 445 500.[6]

2. Educational activities and promotion of STEM – by contributing to high-quality, accessible, and inclusive education.

Engagement of pupils

In order to raise interest in physics and STEM fields in general, CERN implements a series of highly sought-after activities. The most direct interaction with CERN is experienced by pupils who visit CERN to "shadow" Latvian scientists, learn about the work of Latvian scientists and engineers, as well as gain an overall understanding of CERN. The youngest pupils can participate in CERN activities remotely through telepresence. There are also educational activities and events for pupils that focus on particle physics and CERN-related topics.[7]

CERN Teacher Programmes[8]

The CERN Teacher Programme promotes the teaching of modern physics in schools and provides an opportunity for 12 Latvian teachers to participate in the CERN Baltic Teacher Programme on an annual basis, which includes exchange visits to CERN to acquire physics teaching skills relevant to the 21st century, and gain additional motivation for their teaching profession, including by networking with colleagues from the Baltic region and other countries. Through an open competition, Latvian teachers have also participated in the CERN International Teacher Programmes. Latvian teachers are also offered virtual lectures and training opportunities in Latvian, with the participation of Latvian scientists working at CERN.

CERN Student Programmes[9]

An essential contribution to the training of highly qualified specialists is provided through the summer schools offered by CERN for bachelor's and master's degree students, as well as the opportunity to work at CERN laboratories for a specified period of time. CERN also has an excellent doctoral student programme. CERN offers a wide range of internship opportunities of varying levels and durations (technical and administrative training programs, short-term

[5] https://indico.cern.ch/category/10023/
[6] The actual scientific benefit of Latvia is even greater through other indirect CERN activities funded from budgets of other programmes
[7] https://www.rtu.lv/lv/aef/par-mums-aef/aef-aktualitates/atvert/rtu-inzenierzinatnu-vidusskolas-skoleni-iepazist-cern-copy?highlight=izv+cern
[8] https://teacher-programmes.web.cern.ch/latvian-teacher-programme
[9] https://careers.cern/join-us/students

internships, including programmes for students with special needs) that are based on acquiring knowledge directly at the CERN facility and practical work on experiments.

In collaboration with CERN, the RTU and LU have established a joint doctoral study programme – Particle Physics and Accelerator Technologies. The programme is competitive and in high demand, with 7 doctoral degree students currently studying in it, including 2 from foreign countries. The development of an appropriate master's degree programme is also planned.

The CERN training and education programmes allow to acquire knowledge that has no alternative sources, thus providing a significant contribution to high-quality, accessible, and inclusive education. This encompasses not only high-energy particle physics but also a wide range of engineering and ICT fields that are crucial for the functioning of society and economic growth. CERN pays special attention to particle accelerators and related technologies, including innovation and technology transfer for societal applications, such as medicine (diagnostics and cancer treatment) and addressing environmental pollution issues.

The membership of Latvia as a full-fledged Member State of CERN serves as a magnet for attracting the brightest minds and an effective tool for retaining young talents in higher education and the economy of Latvia. This is confirmed by the long-standing experience and research of the 23 existing full-fledged Member States of CERN.[10] Indeed, it should be noted that Lithuania and Estonia, as Associate Member States of CERN, are also nurturing their national capacity in the field of high-energy physics and consistently developing relevant technologies and competences. On a Baltic scale, successful cooperation is taking place within the framework of the CERN Baltic Group,[11] the representatives of which provided a comprehensive overview at a joint conference of the Baltic Assembly and the Baltic Council of Ministers on 13 May 2022. They informed that a concept is being developed for the establishment of a unique Advanced Particle Therapy Center for Baltics, which utilises a CERN-based technology for the treatment of challenging tumours.

3. Scientific publications

CERN-based publications provide a significant contribution to the implementation of the Guidelines for Science, Technology, and Innovation for 2021–2027, specifically in terms of the indicator "percentage of publications (%) in Q1 (top 25%) scientific journals (CiteScore)". In collaboration with CERN during the period of 2018–2022, Latvian scientists have contributed to 403 publications, of which 383 (94.8%) were published in Q1 scientific journals. Thus, collaboration with CERN accounts for more than 10% of Q1 publications, which is the highest achievement in collaboration with a specific international scientific organisation.

Given that one of the sub-objectives of the Guidelines for Science, Technology, and Innovation for 2021–2027 is to develop research excellence and international collaboration, the contribution of CERN scientific publications has directly contributed to increasing the number of joint scientific publications[12] between Latvian institutions and foreign scientific institutions, with the percentage of such collaborations increasing from 38% in 2016 to 62% in 2020 (significantly surpassing the average level of EU countries).

[10] https://scnat.ch/en/uuid/i/a359102a-b69d-5e1c-9421-aab17544722e-The_Importance_of_Physics_to_the_Economies_of_Europe
[11] CERN Baltic Group · Indico
[12] Information from the Web of Science database.

4. Infrastructure

CERN provides Latvian scientists, engineers, and industries with access to world-class scientific infrastructure. Neither in Latvia nor in the immediate region is such infrastructure available, and the majority of CERN facilities are unique on a global scale. This directly opens up opportunities for Latvian research groups to work with state-of-the-art and unique scientific equipment and utilise CERN engineering infrastructure, facilities, and machinery, and tap into the expertise of experts to fulfil their specific scientific and technological tasks. CERN infrastructure, facilities, and measuring equipment are also accessible to Latvian businesses for the development, testing, and validation of their products and services.

5. Development of the commercial sector – with a focus on productivity, innovation, and exports.

Within the framework of the CERN Latvia Group,[13] active support is provided for the establishment of a CERN ecosystem of businesses. Considering the CERN's extremely high requirements for supply quality, priority is given to preparing successful supplier audits, followed by their inclusion in the CERN Supplier Catalogue. The goal is to ensure a well-balanced country, where 60% of the benefit from CERN membership are directed to scientific activities and 40% to the commercial sector. Special attention is given to knowledge transfer and the involvement of Latvian businesses that have significant R&D potential and input. Being a supplier to CERN is a prestigious and recognisable quality mark that opens up broader market opportunities for businesses. By fulfilling orders, businesses can receive direct support from CERN in the form of knowledge and consultations to enhance their technological performance and quality. Businesses have direct access to CERN technologies and knowledge, which can be transferred to production in Latvia. The collaboration of Latvian businesses with CERN and their involvement in CERN procurements is coordinated by the Industrial Liaison Officer (hereinafter – the ILO) representing Latvia.

In 2021 and 2022, the following Latvian companies were awarded CERN contracts:

1) SAF Tehnika

2) SIA Allatherm

3) Creative Alliance "Colortime"

4) CNC SAAN

5) SIA Proximus

6) AS Helmes

7) SIA Primekss (pre-procurement stage)

The total benefit obtained by Latvian companies through participation in CERN procurements amounted to CHF 10 887 in 2021 and CHF 170 305 in 2022 (data for the first half of the year).[14]

[13] https://indico.cern.ch/category/11669/

[14] The actual benefit for companies is even greater through other CERN activities funded from budgets of other programmes.

The main benefits for Latvia as a full-fledged Member State of CERN, compared to its previous membership are as follows:

- Full CERN membership is a testament to a developed country and serves as a prestigious quality mark. Having the Latvian flag raised at CERN is an important instrument in shaping the international image of Latvia.
- In the CERN Council (institution responsible for shaping the global agenda of particle physics and related technology policies and further development), Latvia will transition from being an observer to a decision-maker.
- Latvia will become an integral part of the European and global scientific community, particularly in the fields of particle physics, detector and accelerator technologies. It will also actively engage in the circulation of top-tier talents in the field of global nuclear research.
- Full voting rights and full say in the CERN Council, including participation in closed Council sessions where significant strategic and financial decisions regarding CERN and the future of high-energy physics and technology in Europe are made.
- The most significant economic benefit – there will be no procurement thresholds for Latvian companies. Currently, the total amount of procurements (including the salaries of Latvian scientific and technical personnel employed by CERN) may not exceed Latvia's contribution to CERN, which is 1 024 850 Swiss francs (in 2022). At the same time, several companies (such as SAF Tehnika, Primekss, Baltic Scientific Instruments, MikroTik, etc.) with a clear potential to provide services and products to CERN in the range of several million Swiss francs have been identified in Latvia. The current procurement thresholds do not allow Latvian businesses to participate in CERN tenders and procurements of such magnitude.
- There will be no limitations on the number of fixed-term contracts for Latvian scientific and technical personnel at CERN (i.e., an unlimited number of scientific and technical employment contracts) – see the previous point. It is strategically important for Latvia to ensure the involvement of its scientific and technical personnel in CERN structures as members of the personnel (hereinafter – the MPs). Such opportunities are currently not available.
- Wide and balanced collaboration opportunities in the Baltic region:
    - Estonia is already an Associate Member State of CERN and actively works towards a programme that would allow it to become a full-fledged Member State of CERN by 2023/2024.
    - Lithuania, being aware of the limitations of industrial procurement thresholds, has also expressed its desire to become a full-fledged Member State of CERN in the foreseeable future.

  NB: Lithuania and Estonia became Associate Member States of CERN well before Latvia (in 2018 and early 2021, respectively), and they have already completely filled their CERN industrial procurement baskets, with their citizens becoming temporary CERN employees.
- The status of a full-fledged Member State of CERN is an effective tool in shaping the science and research policy of the EU.
- Full participation as a full-fledged Member State of CERN entails not only leadership in fundamental sciences but also development tools for the scientific community of Latvia, as well as a technology transfer platform that provides long-term growth opportunities for manufacturing, ICT, and the national economy.

Strategy of Latvia for future collaboration with CERN

To fully use the opportunities and collaboration potential provided by CERN, the ***strategy*** **sets the following overarching goals**:

1. **Meaningful and coordinated membership** of Latvia as an Associate Member State of CERN.
2. **Becoming a full-fledged Member State of CERN** within 2–3 years.[15]

The following legal framework is applicable to the collaboration between Latvia and CERN:

- Law On the Agreement between the Republic of Latvia and the European Organization for Nuclear Research (CERN) on Granting the Status of an Associate Member State of CERN.[16]
- Memorandum of Understanding No. CERN-RRB-2002-033/2018 between CERN and the Ministry of Education and Science of the Republic of Latvia on Participation in the CMS Experiment.
- Memorandum of Understanding No. KM3384/KT/EN/180C between CERN and the Ministry of Education and Science of the Republic of Latvia on Participation in the MEDICIS Experiment.

To achieve the overarching goals of national importance within the existing legal framework, this *strategy* entails the following interrelated tasks and operational principles:

Meaningful and coordinated membership of Latvia as an Associate Member State of CERN

I. To use the opportunities provided by CERN optimally and at all levels.
II. To provide a sustainable contribution to the fulfilment of the country's set priorities in the fields of education, science, economic growth, and R&D.
III. To support the creation of an environment for scientific excellence.
IV. To promote collaboration between Latvia and CERN, scientific groups and entrepreneurs.
V. To concentrate available human resources and attract new ones, and to use the financial instruments reasonably.
VI. To ensure the status of a well-balanced country of Latvia in the upcoming years, while adhering to the 60/40 principle in terms of the benefit for science and industry from CERN membership.

[15] The timeframe depends on how fast Latvia will meet the required pre-requisites, which may extend to a period of 4–5 years, depending on circumstances.
[16] https://likumi.lv/ta/id/323511

Tasks for Latvia to become a full-fledged Member State of CERN within 2–3 years

VII. Engagement of decision-makers and partners

- To ensure support from CERN management and Member States.
- To actively participate in the work of the CERN Council and committees by forming a positive opinion about Latvia's eligibility for the status of a full-fledged Member State.
- To coordinate the participation of Latvia in the work of the CERN Council and its committees.
- To promote coordination at the level of the Baltic States, which involves speaking with one single voice in the context of CERN at the level of the CERN Baltic Group and Baltic Assembly.
- To ensure unwavering support from the Latvian government, Parliament, scientific community, entrepreneurs, and social partners.
- To promote indirect support from the European Commission.

VIII. Scientific and technical measures

- To ensure stable State funding for CERN activities in Latvia – *in accordance with the appended indicative cost estimate.*
- To increase the capacity and competence in the field of high-energy physics and accelerator technologies, which involves the establishment of a powerful scientific institute associated with CERN in Latvia and a stable team of scientists at CERN, and the development of the relevant master's degree study programme "High-Energy Physics and Accelerator Technologies".
- To promote the awarding of industrial contracts by CERN, including through the organisation of outreach seminars and discussions in collaboration with the Investment and Development Agency of Latvia and business associations.
- To build a positive image of collaboration with CERN in Latvia *#LatvijaCERN*.

To fulfil the aforementioned tasks, the Ministry of Education and Science will, by 30 November 2022, develop the Action Plan for the Implementation of the CERN Strategy by outlining the main means, collaboration mechanisms, and methods of fulfilling the specific tasks.

The Ministry of Education and Science, in collaboration with the Ministry of Foreign Affairs and the Ministry of Economics, is responsible for the implementation of the strategy.

Strategic courses of action for collaboration with CERN to be included in the Action Plan:

In the human resources domain:

1) To use CERN as an integrated base for human resource development from school to doctoral studies. To raise interest in physics and STEM disciplines, visits to CERN for students, teachers, and the target audience, virtual laboratory work, promotional and communication activities for school youth, teachers, and the general public.
2) To strengthen and enhance the capacity of Latvia in the fields of high-energy physics, accelerator physics.

3) To provide opportunities for students and promote their involvement in all CERN programmes open to them, including engaging in scientific research at CERN, enhancing their qualifications, and facilitating networking and collaboration with emerging scientists from other countries, thus creating a vibrant knowledge community.
4) To ensure research visits to CERN focused on doctoral students and researchers by implementing the preparation phase in Latvia.
5) To provide CERN with high-level guest lectures in Latvia and co-supervision of doctoral theses.
6) To include CERN experts in Latvian educational programmes, particularly in disciplines related to high-energy physics and accelerator technologies.
7) Collaboration between industrial doctoral students and holders of doctoral degrees with the CERN industry sector.
8) Further education for industry specialists in an effective format by enabling the opening of new business niches and scale-up of the existing ones.
9) Other priorities specified by the MoES.

In the technology domain:

1) To consolidate the knowledge base in high-energy particle and accelerator technology, innovative materials, solutions, and ICT applications for the Latvian economy.
2) To enhance the availability of innovative treatment methods and particle therapy, and expand the development and application possibilities of theranostic agents based on regional collaboration.
3) To enhance the value chain security by ensuring a technological base in Latvia to meet the needs of the economy.
4) Other priorities specified by the MoES.

Table 3: Indicative timeline for Latvia to become an Associate Member State of CERN in the pre-stage to the full membership

Time period	Activity	Outcome
First half of 2023	Submission of an application for discussing the granting of the status of an Associate Member State of CERN in the pre-stage to the full membership in the CERN Council (level of the Cabinet of Ministers).	CERN accepts the application, and the CERN Council decides to establish a working group to conduct an audit to verify whether Latvia meets the criteria of a full-fledged Member State of CERN.
Second half of 2023	CERN audit in Latvia to assess the conformity with the status of an Associate Member State of CERN in the pre-stage to the full membership.	Positive report of the CERN working group is submitted to the CERN Council, confirming Latvia's readiness for the status of an Associate Member State in the pre-stage to the full membership. The CERN Council delegates the CERN Director-

		General to negotiate the terms of the agreement with Latvia.
First half of 2024	The CERN Council decides on the final text of the agreement and delegates the CERN Director-General to sign the agreement.	Final text of the agreement.
Second half of 2024	The Cabinet of Ministers takes decision to sign the agreement between CERN and Latvia as an Associate Member State in the pre-stage to the full membership (presenting it as a draft law).	The Prime Minister may sign the agreement after it has been accepted by the CoM.
Second half of 2024	Official signing of the mutual agreement between CERN and Latvia as an Associate Member State in the pre-stage to the full membership takes place.	The agreement between CERN and Latvia as an Associate Member State in the pre-stage to the full membership is signed.
First half of 2025	The Parliament (*Saeima*) ratifies the agreement.	The agreement enters into force.

Planning of Latvian-CERN finances for 2023–2027

This is an indicative[17] financial plan for the implementation of the CERN Strategy of Latvia. The calculations have been made based on the information provided by CERN External Relations Department and the Finance Department.

Latvia must follow the 50/50 principle, meaning that the national investment related to CERN (CERN national budget) should be equivalent to or greater than the amount of the membership fee paid to the CERN budget (membership fee).

I. CERN membership fee

Year 2023

For Latvia as an Associate Member State (AMS) of CERN, the contribution to CERN amounts to 10% of the full theoretical contribution of a Member State. However, it is not less than CHF 1M/year + indexation. The calculation based on Latvia's GDP is below the minimum threshold, therefore the minimum AMS annual fee is applied:

$$AMS_{2023} = 1\,000\,000 + indexation_{2023} = CHF\ 1\,024\,850$$

[17] Depending on the annual indexation and the exchange rate of the Swiss Franc against the Euro.

Year 2024

Upon becoming an Associate Member State in the pre-stage to the full membership(hereinafter – the AMS), after completing the relevant legal procedures, the following calculation will be applicable to Latvia:

In the first year after becoming an Associate Member State in the pre-stage to the full membership, the AMS fee (as mentioned previously) will be applied, along with a sequentially increasing annual membership fee between the AMS fee and the full annual membership fee (MS). The specific timeline and amount of the AMS fee within this interval will be agreed upon during the accession negotiation process. Examples from other countries show that this usually involves a yearly increase of 25% to 75%.

Therefore, in 2024, the indicative CERN membership fee of Latvia will be:

$$AMS_{pre-stage\,2024} = AMS + 25\% \approx CHF\ 1\ 281\ 250$$

Year 2025

Year II after becoming an Associate Member State in the pre-stage to the full membership – in 2025, the indicative CERN membership fee of Latvia will be:

$$AMS_{pre-stage\,2025} = AMS + 75\% \approx CHF\ 1\ 793\ 750$$

Year 2026

Latvia becomes a full-fledged Member State of CERN. In accordance with the existing legal framework, the membership fee of Latvia as a full-fledged Member State (MS) (according to the prices of 2023) will, in theory, amount to CHF 1 843 600. Taking into account inflation forecasts, the rounded indicative membership fee will amount to:

$$MS_{annual\ fee} \approx CHF\ 1\ 900\ 000$$

As soon as Latvia becomes a full-fledged MS, it will be subject to a one-time accession fee (hereinafter – the AF) – $MS_{annual\ fee}$ + index 1.25.

$$AF = MS_{annual\ fee} \times 1.25 = 1\ 900\ 000 \times 1.25 \approx CHF\ 2\ 375\ 000$$

This AF is applied to all new Member States to compensate for their joining the infrastructure that has already been developed over several decades. However, this one-time accession fee (AF) (diplomatically agreed during the accession negotiations) can be divided into, e.g., four annual payments, as follows:

$$AF_{1/4} = \frac{237500}{4} \approx CHF\ 594\ 000$$

In 2026, the indicative CERN membership fee of Latvia will be:

$$MS_{2026} = MS + AF_{1/4} = 1\ 900\ 000 + 594\ 000 \approx CHF\ 2\ 494\ 000$$

Year 2027 and onwards
The same way as in 2026, the indicative CERN membership fee of Latvia will be:

$$MS_{2027} = MS + AF_{1/4} = 1\,900\,000 + 594\,000 \approx CHF\ 2\,494\,000$$

The same goes for 2028 and 2029. However, in 2030, the Latvia's contributions to CERN will accordingly decrease to a level of CHF 2M and is expected to remain at this level in the following years.

Table 4: The CERN membership fee of Latvia over several years (CHF)[18]

Currency	2023	2024	2025	2026	2027
	Associate Member State (AMS)	*AMS in the pre-stage to the full membership*	*AMS in the pre-stage to the full membership*	*Full-fledged Member State (MS)*	*Full-fledged Member State (MS)*
CHF	1 024 850	1 281 250	1 793 750	2 494 000	2 494 000
EUR (conv.)	1 019 553	1 274 588	1 784 423	2 481 032	2 481 032

II. Contributions for participation in CERN experiments and programmes

For further participation of Latvia in the CERN-based CMS[19] and MEDICIS[20] experiments, as well as targeted participation in CERN teacher[21] and student[22] programmes, the following funding is required (these contributions are made based on the invoices issued by CERN):

Table 5: Latvia's contributions for participation in CERN experiments and programmes over several years (EUR)

Activity	2023	2024	2025	2026	2027
CMS	222 084	350 000	360 000	450 000	450 000
MEDICIS	40 000	50 000	80 000	100 000	100 000
Teacher programmes	12 000	12 000	12 000	12 000	12 000
Student programmes	6000	6000	9000	9000	9000
Total	**280 084**	**418 000**	**461 000**	**571 000**	**571 000**
Available funding	**280 084**	**280 084**	**280 084**	**280 084**	**280 084**
Required additional funding	**0**	**137 916**	**180 916**	**290 916**	**290 916**

CMS
Participation of Latvia in the CMS[23] experiment in accordance with the Memorandum of Understanding No. CERN-RRB-2002-033/2018 between CERN and the Ministry of Education

[18] The exchange rate of CHF on 2 May 2022.
[19] https://home.cern/science/experiments/cms
[20] https://home.cern/science/experiments/medicis
[21] https://teacher-programmes.web.cern.ch
[22] https://careers.cern/join-us/students
[23] https://home.cern/science/experiments/cms

and Science of the Republic of Latvia on Participation in the CMS Experiment. Based on the invoice issued by CERN:

CMS	**2023**	**2024**	**2025**	**2026**	**2027**
Contribution to CMS M&O – Category A	3 authors with a doctoral degree	3 authors with a doctoral degree	3 authors with a doctoral degree	4 authors with a doctoral degree	4 authors with a doctoral degree
	31 247	29 400	29 400	39 200	39 200
Student accommodation expenses for CMS/CERN	2 x 5 months	2 x 12 months	2 x 12 months	3 x 12 months	3 x 12 months
	36 710	86 400	86 400	129 600	129 600
Scientific staff accommodation expenses for CMS/CERN	3 x 12 months	3 x 12 months	3 x 12 months	4 x 12 months	4 x 12 months
	154 127	151 200	151 200	201 600	201 600
Contribution to CMS M&O – category B and Phase-II Upgrade	–	83 000	93 000	79 600	79 600
Total	**222 084**	**350 000**	**360 000**	**450 000**	**450 000**

Participation of Latvia in the MEDICIS experiment in accordance with the Memorandum of Understanding No. KM3384/KT/EN/180C between CERN and the Ministry of Education and Science of the Republic of Latvia on Participation in the MEDICIS Experiment. Based on the invoice issued by CERN:

MEDICIS	**2023**	**2024**	**2025**	**2026**	**2027**
Contribution to the MEDICIS experiment, including by partially covering the student accommodation expenses for CMS/MEDICIS	2 x 6 months	2 x 7 months	2 x 11 months	3 x 9 months	3 x 9 months
	40 000	50 000	80 000	100 000	100 000
Total	**40 000**	**50 000**	**80 000**	**100 000**	**100 000**

Teacher programmes

Participation of Latvian teachers (especially physics teachers) in CERN teacher programmes[24] based on the invoice issued by CERN:

Teacher programmes	**2023**	**2024**	**2025**	**2026**	**2027**
Visit of a Latvian teacher group to CERN (10–15 participants), including CERN accommodation, meals, and transport, etc.	12 000	12 000	12 000	12 000	12 000

[24] https://teacher-programmes.web.cern.ch

Student programmes
Participation of Latvian students in CERN student programmes,[25] including the summer school, based on the invoice issued by CERN:

Student programmes	2023	2024	2025	2026	2027
Paid participation of Latvian students in CERN programmes (1–2 students), including CERN accommodation, meals, and transport, etc.	6000	6000	9000	9000	9000

III. National Contact Point for CERN

The National Contact Point of CERN operates under auspices of the Riga Technical University[26] and, in accordance with the Cabinet Order No. 246 of 14 April 2021, Regarding the Guidelines for Science, Technology Development, and Innovation for 2021–2027,[27] ensures participation as an Associate Member State of CERN, in accordance with the Action Plan of the Latvian National Contact Point for CERN. Among other responsibilities, the Contact Point coordinates the work of the CERN Latvia Group, thus actively promoting the participation of various Latvian scientific institutions and entrepreneurs in CERN and CERN-based experiments and activities.

The National Contact Point of CERN currently operates within the High-Energy Physics and Accelerator Technology Centre of the RTU. Based on the achieved scientific, research, and academic capacity, according to the *strategy*, this centre should be transformed into Particle Physics and Accelerator Technologies institute that operates as part of the RTU. The functions of the Contact Point should be separated from the functions of this scientific institute, with the Contact Point operating within the RTU Office of Vice-Rector for Science, under the direct supervision of the vice-rector for science.

The Plan for the Implementation of the CERN Strategy of Latvia by the Ministry of Education and Science should be a logical continuation of the Action Plan of the Latvian National Contact Point of CERN. Therefore, in order to fully use the opportunities provided by CERN and tap into the potential for collaboration, the *strategy* should be developed and implemented in close collaboration with policymakers, involving all stakeholders, including the scientific community and the private sector.

Table 6: The programme of the Latvian National Contact Point of CERN over several years (EUR)

	2023	2024	2025	2026	2027
Remuneration for the Contact Point personnel	74 000	74 000	94 000	94 000	42 000
Administrative and indirect costs	14 435	14 800	18 800	18 800	8400
Communication activities, events, and projects to promote the collaboration between Latvia and CERN	12 500	12 500	12 500	12 500	12 500

[25] https://careers.cern/students
[26] https://tap.mk.gov.lv/mk/tap/?pid=40498233
[27] https://likumi.lv/ta/id/322468-par-zinatnes-tehnologijas-attistibas-un-inovacijas-pamatnostadnem-20212027-gadam

Official travels	8000	8000	8000	8000	8000
Educational activities and visits to CERN	20 000	30 000	30 000	30 000	30 000
Total	**128 935**	**139 300**	**163 300**	**163 300**	**100 900**
Available funding	**128 935**	**128 935**	**128 935**	**128 935**	**128 935**
Required additional funding	**0**	**10 365**	**34 365**	**34 365**	**-28 035 (balance)**

Remuneration for the Contact Point personnel

Determined in accordance with the RTU Unified Work Remuneration Procedures.[28]

	2023	**2024**	**2025**	**2026**	**2027**
Remuneration for the Latvian Representative at CERN in Geneva (as a leading researcher working abroad or as a project manager/senior expert)[29]	36.33 (h rate) x 1.2359 (DDN) x 77.95 h/month x 12 months = 42 000	36.33 (h rate) x 1.2359 (DDN) x 77.95 h/month x 12 months = 42 000	36.33 (h rate) x 1.2359 (DDN) x 96.51 h/month x 12 months = 52 000	36.33 (h rate) x 1.2359 (DDN) x 96.51 h/month x 12 months = 52 000	–
Remuneration for coordinators in Latvia (senior expert)	17 (h rate) x 1.2359 (DDN) x 126.92 h/month x 12 months = 32 000	17 (h rate) x 1.2359 (DDN) x 126.92 h/month x 12 months = 32 000	17 (h rate) x 1.2359 (DDN) x 166.585 h/month x 12 months = 42 000	17 (h rate) x 1.2359 (DDN) x 166.585 h/month x 12 months = 42 000	17 (h rate) x 1.2359 (DDN) x 166.585 h/month x 12 months = 42 000
Total	74 000	74 000	94 000	94 000	42 000

Value in 2027 if Latvia becomes a full-fledged Member State.

Administrative personnel and indirect costs

Based on best practices and the Methodology for the Application of a Flat Rate for Indirect Costs in the Recognition of Project Costs During the 2014–2020 Planning Period of the EU funds and its explanations,[30] administrative and indirect costs are calculated at a rate of 5% and 15% respectively from the personnel costs of the Contact Point of CERN.

	2023	**2024**	**2025**	**2026**	**2027**
Administrative costs, including those of the	3700	3700	4700	4700	2100

[28] https://www.rtu.lv/writable/public_files/RTU_vienota_darba_samaksas_kartiba.pdf
[29] In the case of a project manager or senior expert by applying the RTU Unified Remuneration Procedures for these positions, without exceeding the specified budget.
[30] https://www.lad.gov.lv/lv/media/2594/download?attachment

support structures, legal consultations, procurements, etc.					
Indirect costs, including those related to the use of premises and equipment, utility and communication services, office supplies, etc.	10 735	11 100	14 100	14 100	6300
Total	14 435	14 800	18 800	18 800	8400

Communication activities and events to promote the collaboration between Latvia and CERN

Communication and information dissemination to all involved parties and the Latvian society, informing about the collaboration between Latvia and CERN and the latest developments, ensuring timely and well-prepared information, as well as working with media, communication channels, and other target groups to explain the significance of CERN and the benefits for Latvia.

These activities and initiatives involve coordinating and managing the work of the CERN Latvia Group, organising regular meetings, as well as organising and coordinating official visits of CERN representatives to Latvia. Within the framework of communication, regular and high-quality information is also provided on the website of the MoES and/or the Latvian Science Council (hereinafter – the LSC), as well as other forms of communication, such as organising outreach seminars and creating, integrating, and maintaining an attractive and educational CERN exhibition at the National Library of Latvia.

	2023	**2024**	**2025**	**2026**	**2027**
Communication activities, events, and projects to promote collaboration, including the rental of premises, creation of content, coffee breaks, catering, transportation, etc.	12 500	12 500	12 500	12 500	12 500

Official travels

Regarding the personnel of the National Contact Point of CERN, in accordance with Cabinet Regulation No. 969 of 12 October 2010, Procedures for Reimbursement of Expenses Relating to Official Travels,[31] the implementation of the *strategy*, and fulfilment of the duties of the Contact Point.

	2023	**2024**	**2025**	**2026**	**2027**
Expenses of an official travel for	Airfare and other transportation	Airfare and other transportation	Airfare and other transportation	Airfare and other transportation	Airfare and other transportation

[31] https://likumi.lv/ta/id/220013-kartiba-kada-atlidzinami-ar-komandejumiem-saistitie-izdevumi

fulfilling the duties of the Contact Point – indicatively 7 official travels per year. The calculation was made based on the expenses of Belgium.	tickets 482 + daily allowance 60x3 + hotel accommodation 230x2 + other eligible expenses, incl. local transport 20.85 = 1142.85 x 7 =8000	tickets 482 + daily allowance 60x3 + hotel accommodation 230x2 + other eligible expenses, incl. local transport 20.85 = 1142.85 x 7 =8000	tickets 482 + daily allowance 60x3 + hotel accommodation 230x2 + other eligible expenses, incl. local transport 20.85 = 1142.85 x 7 =8000	tickets 482 + daily allowance 60x3 + hotel accommodation 230x2 + other eligible expenses, incl. local transport 20.85 = 1142.85 x 7 =8000	tickets 482 + daily allowance 60x3 + hotel accommodation 230x2 + other eligible expenses, incl. local transport 20.85 = 1142.85 x 7 =8000

Educational activities and visits to CERN

Organisation and coordination of educational and STEM-promoting events in collaboration with CERN, including visits to CERN for school groups, doctoral student groups, and Riga Tech Girls.

	2023	2024	2025	2026	2027
Educational activities, e.g., visits to CERN (3–10 participants per group, 2–4 trips), including accommodation and transportation, etc.	20 000	30 000	30 000	30 000	30 000

IV. Benefits and compensations to the Latvian Representative at CERN

The Cabinet Regulation No. 602 of 29 June 2010, Regulations Regarding the Amount of Benefits and Compensations to Officials (Employees) of a Diplomatic and Consular Service, Officials (Employees) of the State Direct Administration, Soldiers, Public Prosecutors and Liaison Officers for Service Abroad and the Procedures for Disbursement Thereof, prescribes the procedures for awarding benefits and compensations, and although this Regulation is not applicable to derived public persons, it is recommended that it be applied to the Latvian Representative at CERN while the employee of the RTU fulfils this nationally significant role in an international organisation. This expense item is periodically adjusted, considering the current cost of living index, as stipulated in Paragraph 49 of Cabinet Regulation No. 602.[32]

Table 7: Expenses of the Latvian Representative at CERN over several years (EUR)

	2023	2024	2025	2026	2027
	96 600	99 000	99 000	99 000	0
Available funding	96 600	96 600	96 600	96 600	96 600
Required additional funding	0	2400	2400	2400	-96 600 (balance)[33]

[32] https://www.mfa.gov.lv/lv/eiropas-savienibas-noteiktie-dzives-dardzibas-korekcijas-koeficienti
[33] Under the condition that, upon becoming a Member State, these expenses will no longer be covered.

The indicative subsistence allowance for the Latvian Representative at CERN is calculated in accordance with Cabinet Regulation No. 602 of 29 June 2010.[34] In accordance with the order by the RTU Rector, paragraph 39 of this Regulation is applicable.

Activity	**2023**	**2024**	**2025**	**2026**
Wage benefit (*adviser*) x cost of living index of Switzerland (1.296).	23 193 x 1.296 = 30 058.13 EUR /year	30 058.13	30 058.13	30 058.13
Benefit for the stay of a spouse abroad x cost of living index of Switzerland (1.296).	8111 x 1.296 = 10 511.85 EUR /year	10 511.85	10 511.85	10 511.85
Benefit for the stay of a child abroad x cost of living factor index of Switzerland (1.296).	4127 x 1.296 = 5348.60 EUR/year	5348.6	5348.6	5348.6
Compensation of apartment rental expenses and utility services (Switzerland)	35 202 + 5% = 36 962.1 EUR/year	36962.1	36962.1	36962.1
Benefit for covering expenses of the transport to be used for service needs	71.14 x 12 = 853.68 EUR/year	853.68	853.68	853.68
Insurance of the employee and his or her family members in accordance with Paragraph VIII of Cabinet Regulation No. 602 of 29 June 2010 (Switzerland[35])	Insurance premium for adults (6 months) 2424.00 x2 = 4848 + insurance premium for a child (6 months) 1524.00 = 6372 * 2 = 12 744 EUR/year[36]	Insurance premium in 2023 + 6.6%[37]= 13585.10	Insurance premium in 2023 + 6.6%= 13585.10	Insurance premium in 2023 + 6.6%= 13585.10
In accordance with Paragraph X of Cabinet Regulation No. 602 of 29 June 2010, the compensation of transportation expenses of the employee and his or her family members – once a calendar year	121.64[38]	Economy class flight ticket 560.18 x 3 =	Economy class flight ticket	Economy class flight ticket 560.18 x 3 =

[34] https://likumi.lv/doc.php?id=212624
[35] The calculation was made based on the actual insurance premium expenses in Switzerland for the year 2022, according to the agreement concluded between the Ministry of Foreign Affairs and the insurance company CARPS International.
[36] The limit established in Paragraph 38 of Cabinet Regulation No. 602 of 29 June 2010 is increased in accordance with Paragraph 39 of this Cabinet Regulation, taking into account the representative's application, a detailed justification of the insurance premium limit, and the amount of allocated financial resources, by order of the Rector of the RTU for the appointment of a specific person as Latvia's representative (adviser) to the European Organization for Nuclear Research (CERN) in Geneva, which is issued anew for each calendar year.
[37] In accordance with the official information of the Swiss Confederation: https://www.admin.ch/gov/fr/accueil/documentation/communiques.msg-id-90514.html
[38] These funds are partially used to cover travel expenses within the framework of the allocated funding.

leaving on vacation to Latvia and returning to Geneva		1680.54	560.18 x 3 = 1680.54	1680.54
Total	**96 600 EUR/year[39]**	**99 000**	**99 000**	**99 000**

V. National Research Programme – High-Energy Physics and Accelerator Technologies

Table 8: Investments required by the NRP over several years (EUR)

	2023	2024	2025	2026	2027
	300 000	700 000	1 000 000	1 000 000	1 200 000
Available funding	**300 000**	**300 000**	**300 000**	**300 000**	**300 000**
Required additional funding	**0**	400 000	700 000	700 000	900 000

In accordance with Cabinet Regulation No. 560 of 4 September 2018 and the CERN Strategy of Latvia, it is planned to provide governmental support measures for the sustainable development of scientific and research capacity in high-energy physics and accelerator technologies in the long term and to quadruple the scope and funding of the respective NRP by 2027 in order to meet the principle of 50/50 national/CERN funding, as specified in this report, which will enable the attainment of stable leadership in the field of high-energy physics and accelerator technologies in the Baltic region and overall in the entire Northeastern European region.

VI. Establishment and maintenance of a federated Tier-2 CERN/CMS computing centre

In collaboration with the partners of the CERN Baltic Group. Assuming that the infrastructure of the centre was developed in 2022–2023.

Table 9: Funding for the maintenance of the Tier-2 CERN/CMS computing centre over several years (EUR)

	2023	2024	2025	2026	2027
	260 000	100 000	100 000	100 000	100 000
Available funding	260 000	100 000	100 000	100 000	100 000
Required additional funding	0	0	0	0	0

In accordance with the approved Tier-2 project, see the previous informative report.[40]

[39] The amount varies depending on the cost of living index (https://www.mfa.gov.lv/ministrija/eiropas-savienibas-noteiktie-dzives-dardzibas-korekcijas-koeficienti) and the family situation of the representative.
[40] https://tap.mk.gov.lv/doc/2021_03/IZMZino_16022021_CERN_papildin.313.docx

Remuneration for the Tier-2 Latvia personnel

Remuneration in accordance with the current rates of the main project partner, the RTU:

Remuneration	**2023**	**2024**	**2025**	**2026**	**2027**
Project manager	17 287	17 287	17 287	17 287	17 287
Technical expert	16 465	16 465	16 465	16 465	16 465
IT administrator	14 745	72 00	72 00	72 00	72 00
Procurement manager	12 644	–	–	–	–
Total	**61 143**	**40 953**	**40 953**	**40 953**	**40 953**

Official travels
Tier-2 project personnel:

	2023	**2024**	**2025**	**2026**	**2027**
Expenses of official travels for the implementation of the Tier-2 project	4957	900	900	900	900

Expenses of the development and maintenance of IT and technical infrastructure
Procurement of equipment and machinery:

	2023	**2024**	**2025**	**2026**	**2027**
HPC hubs – CPU; HPC hubs – CPU + GPU; commutators; cables; Infiniband network cards, etc.	64 300	4547	4547	4547	4547

Outsourcing:

	2023	**2024**	**2025**	**2026**	**2027**
SSL certificate; HPC hosting; maintenance of the HPC cloud; broker development, maintenance, etc.	62 100	33 600	33 600	33 600	33 600

Expenses of project partnership, integration, and training
The project partners include the University of Latvia, Rēzekne Technology Academy, Ventspils International Radio Astronomy Centre, the National Library of Latvia, as well as the partners of the CERN Baltic Group.

	2023	**2024**	**2025**	**2026**	**2027**
Visits and training at CERN; upskilling for the development and maintenance of a HPC environment; integration of HPC resources; use and maintenance of the HPC environment, etc.	67 500	20 000	20 000	20 000	20 000

VII. Ensuring of a sustainable and balanced CERN/national budget

Table 10: Required funding to ensure sustainable and balanced Latvian membership in CERN (EUR)

Activity	2023	2024	2025	2026	2027
CERN membership fee	1 019 553	1 274 588	1 784 423	2 481 032	2 481 032
Required national funding:					
CERN experiments and programmes	280 084	418 000	461 000	571 000	571 000
Programme of the Latvian National Contact Point of CERN	128 935	139 300	163 300	163 300	100 900
Latvian Representative at CERN	96 600	99 000	99 000	99 000	–
Tier-2 computing centre	260 000	100 000	100 000	100 000	100 000
NRP	300 000	700 000	1 000 000	1 000 000	1 200 000
Total required national funding	**1 065 619**	**1 456 300**	**1 823 300**	**1 933 300**	**1 971 900**
CERN membership fee and the required national funding	**2 085 172**	**2 730 888**	**3 607 723**	**4 414 332**	**4 452 932**
Available State budget within the MoES 05.01.00 programme	1 785 172	1 625 172	1 625 172	1 625 172	1 625 172
Available State budget within the MoES 05.12.00 programme (NRP)	300 000	300 000	300 000	300 000	300 000
Total available funding*	**2 085 172**	**1 925 172**	**1 925 172**	**1 925 172**	**1 925 172**
Additional required State budget funding	**0**	**805 716**	**1 682 551**	**2 489 160**	**2 527 760**

* In accordance with the baseline expenses of the project for the years 2023–2025 (21 June 2022)

According to the CERN Strategy of Latvia, a balanced funding for CERN-related activities, initiatives, and the development of scientific capacity in high-energy physics and accelerator technologies should be ensured in the long term. The "50/50" principle should be implemented, meaning that national funding for CERN activities should be at least at the same level as the CERN membership fee.

Proposal for further action:

1. To support Latvia's transition to full membership in CERN.
2. To appoint the Ministry of Education and Science and the Ministry of Foreign Affairs as the co-responsible parties for ensuring Latvia's progress towards full membership in CERN.
3. For the Ministry of Education and Science to prepare a letter of the Cabinet of Ministers addressed to the CERN Council/Director-General on Latvia's intention to pursue associate membership in CERN in pre-stage to full membership and to submit it to the State

Chancellery. The submission of the letter on Latvia's intention to pursue associate membership in CERN in pre-stage to full membership to the CERN Council does not create any financial obligations for Latvia.

4. For the Ministry of Education and Science to develop the Plan for the Implementation of the CERN Strategy by outlining the main means, collaboration mechanisms, and guidelines for fulfilling the specific tasks, by 15 December 2022.

5. To consider that the following funding is required for Latvia to become a Member State of CERN and to cover the CERN membership fee and support measures: in 2024 – EUR 805 716, in 2025 – EUR 1 682 551, in 2026 – EUR 2 489 160, in 2027 and onwards – EUR 2 527 760.

6. To discuss the additional funding for 2024 and onwards, which is required to cover the membership fee of Latvia as a Member State of CERN and the measures referred to in Table 6 of this report, in the process of developing the draft law On the State Budget for 2024 and the Budget Framework for 2024, 2025, and 2026, in conjunction with the priority proposals of all ministries and other public administration authorities, in line with the financial possibilities of the State budget.

Applicant:
Minister for Education and Science A. Muižniece

Endorsed by:
State Secretary L. Lejiņa

J. Paiders, 67047936
janis.paiders@izm.gov.lv
U. Berķis, 67047865 29472349
uldis.berkis@izm.gov.lv