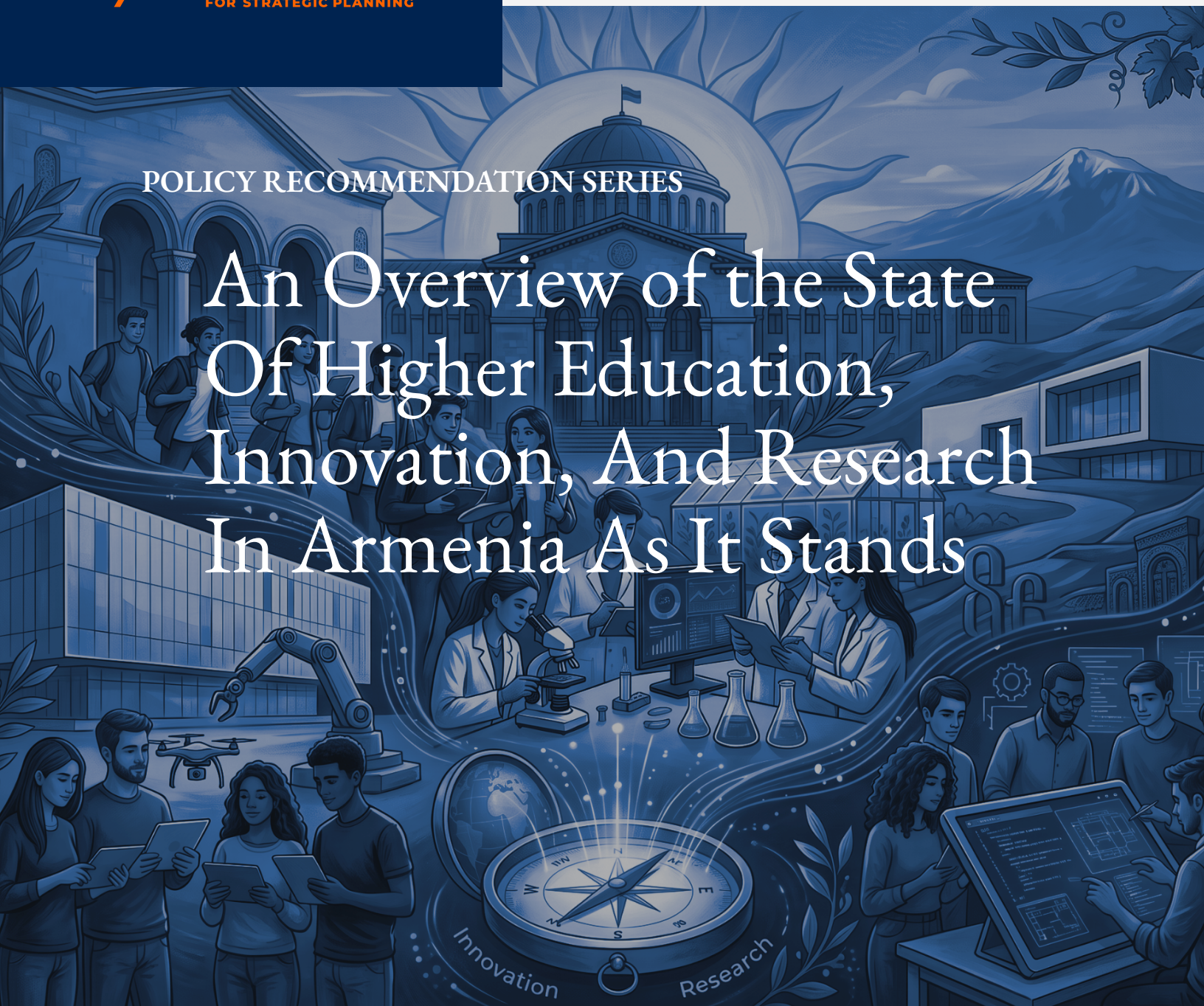




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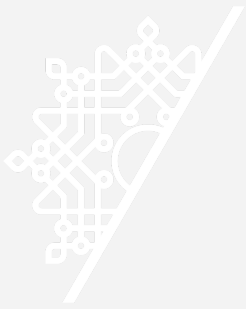
An Overview of the State Of Higher Education, Innovation, And Research In Armenia As It Stands



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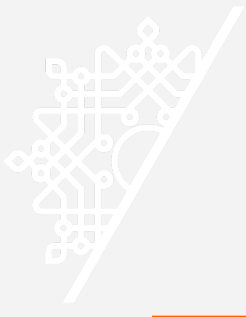




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Abstract

Armenia's higher education, research, and innovation system is undergoing a critical transition, shaped by demographic decline, brain drain, chronic underfunding, institutional fragmentation, weak university–research integration, and limited links between academia and industry. This report maps the sector's institutional, regulatory, financial, and innovation landscape; assesses current reforms, including the proposed Academic City; and compares Armenia with small-nation models in Ireland, Singapore, and Finland. While Armenia possesses important assets, including a highly educated diaspora, a growing technology sector, international partnerships, and expanding investment in science, its current structure does not fully translate these strengths into national capability. The report argues for a distributed, research-integrated, industry-linked model centered on differentiated institutional missions, performance-based funding, priority STEAM domains, modern pedagogy, shared research infrastructure, technology transfer, and structured diaspora engagement. It concludes that Armenia's long-term competitiveness and resilience will depend less on physical consolidation than on institutional autonomy, accountability, talent retention, commercialization, and measurable national outcomes at scale.

Introduction

Armenian Higher Education: A Comprehensive Sector Overview

Armenia's higher education system stands at a critical inflection point, caught between ambitious European integration commitments and deep structural legacies of Soviet centralization, post-independence

fragmentation, and chronic underfunding. With approximately 80,840 students enrolled across some 53 to 65 institutions as of the 2022–2023 academic year¹, the sector has contracted sharply from its 2009 peak of 114,629 students and 102 institutions, driven by demographic decline, emigration, and quality-driven consolidation. The government's Education Development Strategy 2030² envisions reducing the system to just 8 state and 8 private universities³, while the flagship Academic City mega-project aims to physically merge Yerevan's universities into a new \$3 billion campus⁴ by 2030, an initiative that international observers have called unprecedented, infeasible, and potentially dangerous⁵. This overview provides an authoritative mapping of every significant entity in the Armenian higher education landscape, from flagship universities and the National Academy of Sciences to quality assurance bodies, diaspora-linked institutions, and the evolving international partnerships that shape the system's trajectory.

Historical Arc and System-level Foundations

From Seminary to Soviet System to European Aspiration

Armenia's higher education tradition predates its modern university system. The Gevorgian

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<https://erasmus-networks.ec.europa.eu/book-page/country-page-armenia>

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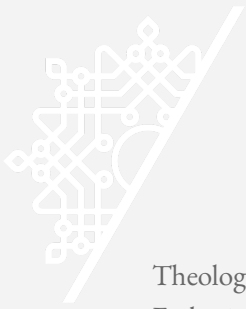
<https://www.primeminister.am/en/press-release/item/2023/03/16/Cabinet-meeting/>

³ Ibid.

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<https://www.timeshighereducation.com/news/uk-universities-links-repressive-mega-campus-condemned>

⁵ Ibid.



Theological Seminary, founded in 1874⁶ at Holy Etchmiadzin⁷, functioned as a proto-university, teaching philosophy, logic, psychology, and Armenian literature⁸, and produced graduates including the composer Komitas and the poet Avetik Isahakian. The Lazarian Seminary (1815) in Moscow trained Armenian teachers and civil servants for over a century.

Modern higher education began with the founding of Yerevan State University on May 16, 1919^{9,10}, during the First Republic. Inaugurated on January 31, 1920¹¹, with one faculty, 262 students¹², and 32 lecturers, YSU became the nucleus from which the entire Soviet-era system grew. In 1922, the Pedagogical University branched off from Yerevan State University. By 1930, specialized institutes for medicine, agriculture, and construction had been carved out of YSU's faculties¹³. The Yerevan Polytechnic Institute followed in 1933¹⁴. The Soviet model established free, universal education, centrally controlled curricula from Moscow, and a strict separation between teaching (at universities) and research (at the Academy of Sciences, established in Armenia in 1935)¹⁵. By the late 1980s, Armenia

reported near-universal literacy and 301 students per 10,000 of the population enrolled in higher or specialized secondary education.

Independence in 1991 brought both freedom and chaos. Armenia inherited 14 HEIs and quickly liberalized the sector. Private institutions mushroomed; by 1997, the country had 102 HEIs¹⁶ with 56,154 students, many of dubious quality. The government introduced centralized admission examinations to combat corruption in university admissions¹⁷. Some institutions adopted the two-tier bachelor's/master's system experimentally as early as 1995¹⁸, anticipating the Bologna Process reforms by a decade.

Armenia signed the Bergen Communiqué in 2005, joining the European Higher Education Area^{19,20,21}. Key reforms followed: the three-cycle degree structure (bachelor's 4 years/240 ECTS, master's 2 years/60–120 ECTS, doctoral 3 years) was formally introduced by 2007²²; ECTS adoption occurred in 2007–2008^{23,24}; the Diploma Supplement was introduced in 2011. Armenia hosted the Bologna

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<https://www.armenianchurch.org/en/gevorkian-theological-seminary/>

⁷ https://en.wikipedia.org/wiki/Gevorgian_Seminary

⁸ https://infogalactic.com/info/Gevorgian_Seminary

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<https://armeniadiscovery.com/en/articles/education-in-armenia-educational-institutions-for-foreign-students>

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<https://www.topuniversities.com/universities/yerevan-state-university>

¹¹ https://gropedia.com/page/Yerevan_State_University

¹² Ibid.

¹³ https://en.wikipedia.org/wiki/Education_in_Armenia

¹⁴ Karakhanyan, S. (2018). Armenia: Transformational Peculiarities of the Soviet and Post-Soviet Higher Education System. In: Huisman, J., Smolentseva, A., Froumin, I. (eds) 25 Years of Transformations of Higher Education Systems in Post-Soviet Countries. Palgrave Studies in Global Higher Education. Palgrave Macmillan, Cham.

https://doi.org/10.1007/978-3-319-52980-6_3

¹⁵ Ibid.

16

<https://www.insidehighered.com/blogs/world-view/armenian-higher-education-european-higher-education-area>

17

<https://documents1.worldbank.org/curated/en/836691592826609834/pdf/SABER-Tertiary-Education-Country-Report-Armenia-2019.pdf>

¹⁸ Ibid.

¹⁹ <https://borgenproject.org/higher-education-in-armenia/>

20

<https://erasmus-networks.ec.europa.eu/book-page/country-page-armenia>

21

<https://www.anqa.am/en/accreditation/accreditation-process-and-documents/anqa-accreditation-manual/>

²² <https://www.euroeducation.net/prof/armenco.htm>

23

<https://www.etf.europa.eu/sites/default/files/document/Armenia.pdf>

²⁴ Fljyan, L. (2024). The Role of Erasmus+ Capacity Building Projects in the Internationalization of Armenian Higher Education. In: Curaj, A., Háj, C.M., Pricopie, R. (eds) European Higher Education Area 2030: Bridging Realities for Tomorrow's Higher Education. FOHE-BPRC 2024. Springer, Cham. https://doi.org/10.1007/978-3-031-75140-0_7



Follow-Up Group Secretariat from 2012 to 2015 and organized the landmark 2015 Yerevan Ministerial Conference^{25,26}, which established learning and teaching as an explicit EHEA priority.

The 2018 “Velvet Revolution,” in which students played a leading role²⁷, brought PM Nikol Pashinyan to power with explicit promises of education reform²⁸. High-level politicians were removed from heading university boards of trustees²⁹. The Ministry of Education and Science was merged with the Ministry of Culture into the current Ministry of Education, Science, Culture, and Sport (MESCS) in June 2019³⁰. The Education Development State Program, valid until 2030, was adopted by the National Assembly in November 2022, with an implementing action plan approved in March 2023³¹.

Legal and Regulatory Framework

The sector operates under three principal laws: the Law on Education (1999, HO-297), the Law on Higher and Postgraduate Professional Education (2004, HO-62-N), and the Law on General Education (2009, HO-160-N). Key government decrees include the adoption of the National Qualifications Framework³² (Decree No. 332-N,

2011, revised by Decree No. 714-N, 2016)³³ and the Statute on State Accreditation (Decree No. 978-N, 2011)³⁴. Public HEIs were reclassified as State Non-Commercial Organizations in 2002–2003³⁵, while several have since converted to Foundation status for greater financial autonomy. On October 9, 2025, the RA Law on Higher Education and Science (LO-285-N) was adopted, effectively repealing the 2009 Law HO-160-N.

A critical structural problem is the incompatibility between education laws, the SNCO law, and the Foundation law³⁶, which the World Bank flagged in 2019 as creating contradictions that favor government control and confuse governance. A new comprehensive Law on Higher Education and Science, merging the HE and science laws, has been drafted³⁷ since 2016 and underwent parliamentary hearings in 2020³⁸, but legislative progress has stalled as of 2025³⁹.

National Qualifications Framework

Armenia’s NQF, adopted in 2011 and revised in 2016, has 8 levels aligned conceptually with the European Qualifications Framework⁴⁰, with levels

²⁵

<https://www.insidehighered.com/views/2015/05/26/essay-what-next-european-higher-education>

²⁶ <https://armenic.am/bologna-process/?lang=en>

²⁷

<https://armenianweekly.com/2018/05/15/depoliticizing-of-armenias-universities/>

²⁸

<https://lossi36.com/2020/03/20/the-changes-and-challenges-of-the-armenian-higher-education-system-after-the-velvet-revolution/>

²⁹

<https://documents1.worldbank.org/curated/en/836691592826609834/pdf/SABER-Tertiary-Education-Country-Report-Armenia-2019.pdf>

³⁰

<https://www.devex.com/organizations/ministry-of-education-science-culture-and-sports-mescs-armenia-148862>

³¹

https://www.etf.europa.eu/sites/default/files/2024-01/Country%20Fiche_Armenia_2023_EN_web.pdf

³² <https://www.rgnews.am/?p=3592>

³³

<https://www.etf.europa.eu/sites/default/files/document/Armenia.pdf>

³⁴ Ibid.

³⁵

<https://documents1.worldbank.org/curated/en/836691592826609834/pdf/SABER-Tertiary-Education-Country-Report-Armenia-2019.pdf>

³⁶ Ibid.

³⁷

https://www.etf.europa.eu/sites/default/files/2024-01/Country%20Fiche_Armenia_2023_EN_web.pdf

³⁸

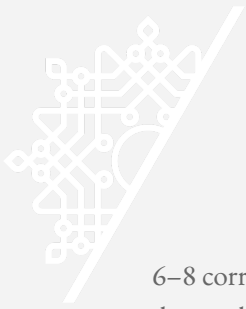
<https://documents1.worldbank.org/curated/en/836691592826609834/pdf/SABER-Tertiary-Education-Country-Report-Armenia-2019.pdf>

³⁹

<https://erasmus-networks.ec.europa.eu/book-page/country-page-armenia>

⁴⁰

<https://www.insidehighered.com/blogs/world-view/armenian-higher-education-european-higher-education-area>



6–8 corresponding to bachelor's, master's, and doctoral degrees⁴¹. Level descriptors follow EQF categories and Dublin Descriptors for higher education⁴². However, Armenia has not yet self-certified its NQF against the QF-EHEA⁴³, the self-certification process has been postponed until 2030, with a program for organizing it approved by MESCS decree only in February 2025⁴⁴. This gap risks Armenia's exclusion from certain EU educational initiatives⁴⁵.

Funding, demographics, and systemic challenges

Armenia's higher education funding model centers on the state-order system, in which the government funds a limited number of student places. Only about 16.2% of students receive state-funded scholarships; the vast majority are fee-paying⁴⁶. Public universities derive only 15–20% of their budgets from the state, with tuition fees serving as the primary source of revenue. The Ministry sets a tuition fee ceiling via a formula adopted in 2015. Annual tuition for Armenian citizens ranges from approximately \$500 to \$5,625⁴⁷.

Government education spending stood at approximately 2.4% of GDP in 2023 (around \$580 million), well below the global average of 4.3%⁴⁸. Higher education receives only 7–8% of the total education budget⁴⁹. R&D expenditure increased

from 0.24% of GDP in 2018 to an estimated 0.36% in 2025⁵⁰, remaining well below the OECD average. State science funding has tripled since 2018⁵¹, reaching approximately AMD 40.2 billion in 2025.

Demographically, Armenia faces severe headwinds. The population declined from 3.63 million (1992) to approximately 3.08 million (2025)⁵², with medium-variant projections suggesting further decline to 2.37 million by 2050⁵³. The total fertility rate has fallen below replacement to 1.7–1.9 children per woman^{54,55}. Student enrollment dropped by 31% between 2009 and 2018 and has continued to decline. The gross tertiary enrollment ratio paradoxically rose to 61.19% in 2023⁵⁶, reflecting the shrinking denominator of the eligible age cohort.

Brain drain remains the sector's most corrosive challenge. Armenia has the highest brain drain index in the South Caucasus (6.7 out of 10)⁵⁷. An estimated 53% of labor emigrants possess specialized secondary or higher education⁵⁸. Faculty numbers fell from 12,196 in 2009 to 10,937 in 2018. The academic corruption legacy, selling grades, plagiarism services, and politicized appointments, has been partially addressed through centralized entrance exams and post-2018 governance reforms, but structural

⁵⁰

<https://tradingeconomics.com/armenia/research-and-development-expenditure-percent-of-gdp-wb-data.html>

⁵¹

<https://www.primeminister.am/en/press-release/item/2024/02/20/Nikol-Pashinyan-Report/>

⁵² <https://armenpress.am/en/article/1224635>

⁵³ Ibid.

⁵⁴ <https://civilnet.am/en/news/991177>

⁵⁵

<https://eeca.unfpa.org/en/news/government-armenia-approves-new-demographic-strategy-developed-unfpa-support>

⁵⁶

<https://tradingeconomics.com/armenia/research-and-development-expenditure-percent-of-gdp-wb-data.html>

⁵⁷

<https://chaikhana.media/en/stories/1418/to-take-ones-head-and-leave-brain-drain-in-armenia>

⁵⁸ https://www.etf.europa.eu/sites/default/files/m/9D759BA5148D99FBC1257B730046F443_Migration&skills_Armenia.pdf

⁴¹

<https://www.etf.europa.eu/sites/default/files/document/Armenia.pdf>

⁴² Ibid.

⁴³ Ibid.

⁴⁴

https://cepacso.am/storage/files/documents/2025-09-07/Full%20Report_Higher%20education.pdf

⁴⁵ Ibid.

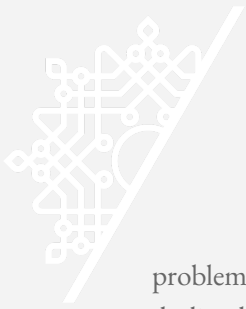
⁴⁶ Ibid.

⁴⁷ <https://www.jeduka.com/study-in-armenia>

⁴⁸ <https://www.worlddata.info/asia/armenia/education.php>

⁴⁹

https://cepacso.am/storage/files/documents/2025-09-07/Full%20Report_Higher%20education.pdf



problems persist⁵⁹. The Academic Freedom Index declined from 0.84 (2019) to 0.64 (2024), driven partly by continued political influence over university boards⁶⁰.

Government Oversight and Quality Assurance Architecture

Ministry and Regulatory Bodies

The Ministry of Education, Science, Culture and Sport (MESCS), created in June 2019 from the merger of the Ministry of Education and Science with the Ministry of Culture⁶¹, is the central executive authority for education policy.

In May 2023, the Higher Education and Science Committee (HESC) was established within MESCS⁶² by merging three previously separate bodies: the Science Committee (est. 2007)⁶³, the Higher Qualification Committee, and the Department of Higher and Postgraduate Vocational Education. The HESC implements unified policy for higher education and science⁶⁴, manages the science budget, runs competitive grant programs, and awards the Candidate of Science and Doctor of Science degrees⁶⁵. The National Center for Education Development and Innovation (NCEDI), created in July 2019 from the dissolved National Institute of Education, handles

curriculum development⁶⁶, STEM reform, and teacher professional development.

Parliamentary oversight rests with the Standing Committee on Science, Education, Culture, Diaspora, Youth, and Sport of the National Assembly, which conducts legislative scrutiny and hearings on education policy. Armenia participates in the ENIC-NARIC network through ArmENIC (Armenian National Information Center for Academic Recognition and Mobility)⁶⁷.

ANQA and the Quality Assurance Regime

The National Center for Professional Education Quality Assurance (ANQA), established on November 7, 2008, by Government Decree No. 1486⁶⁸, is Armenia's sole recognized external quality assurance agency. Governed by a 12-member Board of Trustees, ANQA operates as an independent, non-commercial, state-funded foundation^{69,70}.

ANQA's accreditation process encompasses mandatory institutional accreditation⁷¹ (granted for 4 or 6 years, with a 2-year conditional accreditation) and voluntary program accreditation⁷² (5-year term), which is compulsory only for medical programs⁷³. Decisions are made by an independent Accreditation Committee⁷⁴ following self-evaluation, external review, and site visits⁷⁵. ANQA has been a full

⁵⁹

<https://agbu.org/bordering-change/learning-new-ways-learn-education-reforms-bring-armenia-consistency-international>

⁶⁰

https://cepacso.am/storage/files/documents/2025-09-07/Full%20report_Higher%20education.pdf

⁶¹

<https://www.devex.com/organizations/ministry-of-education-science-culture-and-sports-mescs-armenia-148862>

⁶² <https://www.enic-naric.net/page-Armenia>

⁶³ <https://escs.am/en/static/scienccom?s=edu>

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<https://erasmus-networks.ec.europa.eu/book-page/country-page-armenia>

⁶⁵ <https://escs.am/en/static/scienccom?s=edu>

⁶⁶

<https://mkuzak.am/%D5%B4%D5%A5%D6%80-%D5%B4%D5%A1%D5%BD%D5%AB%D5%B6/?lang=en>

⁶⁷ <https://www.enic-naric.net/page-Armenia>

⁶⁸ <https://www.ceenqa.org/members/full-members/armenia/>

⁶⁹ Ibid.

⁷⁰

<https://www.enqa.eu/membership-database/anqa-national-centre-for-professional-education-quality-assurance-foundation/>

⁷¹ <https://www.anqa.am/en/accreditation/>

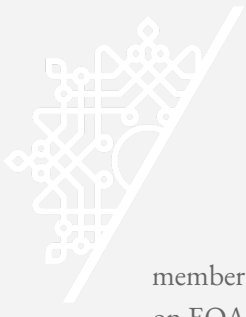
⁷² <https://www.enic-naric.net/page-Armenia>

⁷³

<https://www.enqa.eu/membership-database/anqa-national-centre-for-professional-education-quality-assurance-foundation/>

⁷⁴ <https://www.ceenqa.org/members/full-members/armenia/>

⁷⁵ <https://www.anqa.am/en/accreditation/>



member of ENQA since 2017 and has been registered on EQAR since February 1, 2017 (renewed in October 2022; valid until June 30, 2027), demonstrating substantial compliance with the European Standards and Guidelines⁷⁶. ANQA is also a full member of INQAAHE⁷⁷ (since 2011) and CEENQA.

As of recent data, approximately 30 higher education institutions have undergone ANQA accreditation⁷⁸, with 57 reports across institutional and program reviews documented in the EQAR database. Key accreditation gaps remain: several private and cross-border institutions have not applied for ANQA accreditation, and the voluntary nature of program accreditation (except for medicine) limits quality oversight across the system.

Two Armenian institutions are members of the European University Association (EUA): Brusov State University (full member) and Yerevan Haybusak University (associate member)⁷⁹. The European University of Armenia is the sole Armenian member of EURASHE (since 2018)⁸⁰.

Flagship State Universities

Yerevan State University, the mother university

Yerevan State University (YSU), founded on May 16, 1919, is Armenia's oldest and most prominent

university⁸¹. Located at 1 Alex Manoogian Street, Yerevan, it operates as a Foundation (restructured in 2014). YSU comprises 17 faculties spanning physics, mathematics, informatics, chemistry, biology, geography, philosophy, sociology, theology, history, Armenian and Russian philology, Oriental studies, European languages, journalism, economics, law, and international relations⁸², plus 2 institutes (Physics, Pharmacy) and over 10 research centers, including the Synopsys VLSI Design Lab and Innovation Center for Microbial Biotechnology.

Enrollment stands at approximately 14,000–17,000 students⁸³ across roughly 60 bachelor's, 110–130 master's, and 70–80 doctoral programs⁸⁴, with about 470 international students. The university employs approximately 2,200 academic staff, including 207 professors and 581 associate professors, with 23 NAS academicians and 26 corresponding members involved. YSU published roughly 600 Scopus articles and 320+ Web of Science articles in 2024⁸⁵, with its strongest research output in physics, chemistry, and engineering.

YSU holds ANQA institutional accreditation for 6 years (until June 2028)⁸⁶ and ranks #1001–1200 in the QS World University Rankings 2026⁸⁷, #1501 in the University Guru Rankings⁸⁸, and #1 nationally on Webometrics. The university maintains 270+

⁷⁶ <https://www.eqar.eu/register/agencies/agency/?id=13>

⁷⁷ <https://smarti-erasmus.eu/national-centre-for-professional-education-quality-assurance-foundation-anqa/>

⁷⁸ Ibid.

⁷⁹ <https://www.eua.eu/our-membership/member-directory.html>

⁸⁰ <https://www.timeshighereducation.com/world-university-rankings/european-university-armenia>

⁸¹

<https://www.topuniversities.com/universities/yerevan-state-university>

⁸²

<https://www.iau-hesd.net/university/yerevan-state-university-ysu>

⁸³ Ibid.

⁸⁴ <https://posig.info/yerevan-state-university/>

⁸⁵ Ibid.

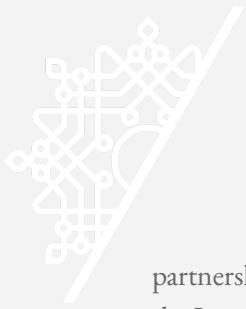
⁸⁶

<https://www.anqa.am/en/institutional-accreditation-state-register/yerevan-state-university-1/>

⁸⁷

<https://www.topuniversities.com/universities/yerevan-state-university>

⁸⁸ <https://www.universityguru.com/universities-yerevan>



partnerships in 50+ countries⁸⁹ and is a member of the International Association of Universities, EUA, and the Black Sea University Network⁹⁰. The Ijevan Branch serves the Tavush Province.

National Polytechnic University of Armenia

NPUA, founded on March 1, 1933, as the Yerevan Polytechnic Institute and renamed in 2014, is Armenia's leading engineering institution⁹¹. The NPUA operates through 3 institutes and 2 faculties covering information technology, telecommunications, electronics, energy, electrical engineering, mechanical engineering, mining, metallurgy, chemical technologies, and applied mathematics. With 8,000–11,000 students and 750+ faculty members, NPUA operates branch campuses in Gyumri, Vanadzor, and Kapan, giving it the broadest regional footprint of any Armenian university⁹².

NPUA's Armenian National Engineering Laboratories (ANEL), established in 2013, houses 30+ state-of-the-art research labs⁹³, including facilities for aerial robotics and neurotechnology. Industry partners include Synopsys, Microsoft, Kaspersky Lab, Siemens, and Schneider Electric⁹⁴. The university holds 175+ international cooperation agreements and received the UI GreenMetric ranking of #903 globally (#1 in Armenia) in 2024⁹⁵. In 2024, NPUA launched a STEM-focused primary school and received International Baccalaureate authorization for its high

school⁹⁶, creating Armenia's first integrated preschool-to-university educational pathway.

Other Major State Universities

Yerevan State Medical University (YSMU), founded in 1920 as a YSU faculty and independent since 1930⁹⁷, enrolls 8,000+ students across 7 faculties⁹⁸ and 102 departments, with approximately 24% international students from 26–28 countries (roughly 900 from India). The YSMU operates three hospital complexes (Heratsi, Muratsan, Mikayelyan) and the COBRAIN research center. It holds ANQA accreditation and a WHO listing, though alignment with ECFMG/WFME accreditation remains an ongoing challenge.

Armenian State University of Economics (ASUE), founded as an independent institution in 1975, enrolls approximately 7,000 students⁹⁹ across 6 departments covering management, economics, finance, marketing, accounting, and informatics. The AMBERD Research Center¹⁰⁰ (est. 2013) has been ranked 94th globally among university-affiliated think tanks. ASUE maintains branches in Gyumri and Yeghegnadzor.

Armenian National Agrarian University (ANAU), founded in 1930 and the country's sole institution specializing in agri-food¹⁰¹, enrolls approximately 5,054 students¹⁰² across 5 faculties. Its flagship partnership with Texas A&M University¹⁰³ (since

⁸⁹

<https://www.iau-hesd.net/university/yerevan-state-university-ysu>

⁹⁰ <https://posig.info/yerevan-state-university/>

⁹¹ <https://whed.net/institutions/IAU-007109>

⁹² Ibid.

⁹³

<https://www.eif.am/eng/projects/armenian-national-engineering-laboratory-anel/>

⁹⁴ <https://polytech.am/en/polytechnic/>

⁹⁵ <https://stemnews.am/en/1314>

⁹⁶ Ibid.

⁹⁷

<https://ysmu.am/en/applicant-guide/epbh-hamarot-patmutyuny/>

⁹⁸ <https://www.eclbs.eu/post/list-of-universities-in-armenia>

⁹⁹

<https://www.topuniversities.com/universities/armenian-state-university-economics>

¹⁰⁰ <https://amberd.asue.am/en/amberd/>

¹⁰¹ <https://anau.am/en/anau/historical-review/>

¹⁰² <https://www.afishe.eu/armenian-national-agrarian-university/>

¹⁰³ <https://arotner.am/en/3982/.html>



2000) includes the Agribusiness Teaching Center¹⁰⁴, which offers English-medium instruction and dual certification. ANAU also partners with Geisenheim University (Germany) in wine education and with Weißenstephan-Triesdorf in agrarian management. The university's Shushi branch closed in 2023 following the displacement of Artsakh's Armenian population.

Armenian State Pedagogical University (ASPU), founded in 1922¹⁰⁵, is the primary teacher-training institution, with approximately 5,500 students across 10 faculties¹⁰⁶. It is the only institution in Armenia training specialists in pedagogy, speech therapy, and art therapy. In some areas, approximately 70% of regional teachers are ASPU graduates.

Brusov State University, established in 1935 as a Russian-language teacher-training institute¹⁰⁷ and now a university of languages and social sciences, enrolls over 4,000 students across linguistics, philology, translation, journalism, political science, and tourism programs¹⁰⁸. It maintains 125+ international agreements and is a full member of the EUA, one of only two Armenian institutions in the association¹⁰⁹.

Yerevan Komitas State Conservatory, founded in 1921, is Armenia's sole higher music education institution, with over 1,000 students (including approximately 130 international students) and 450 faculty members¹¹⁰. It is a member of the Association Européenne des Conservatoires.

¹⁰⁴ <https://anau.am/en/anau/rector/>

¹⁰⁵ https://aspu.am/en/page/about_aspu/

¹⁰⁶ <https://desire-project.com/khachatur-abovyan-armenian-state-pedagogical-university-aspu/>

¹⁰⁷ <https://free-apply.com/en/university/1005100049>

¹⁰⁸ https://brusov.am/en/page_list/internationalapplicant/

¹⁰⁹ <https://www.eua.eu/our-membership/member-directory.html>

¹¹⁰

http://pianoteachersfederation.org/Yerevan_Komitas_State_Con_servatory

Armenia's four regional state universities, Vanadzor State University (est. 1969, ~2,400 students), Shirak State University in Gyumri (est. 1934, ~1,900–2,500 students), Goris State University (est. 1967/2006, ~2,000 students), and Gavar State University (est. 1993, ~2,400 students), serve as essential access points for students outside Yerevan but face enrolment pressure from demographic decline and urban migration.

Additional specialized state institutions include the State Academy of Fine Arts (est. 1945, ~955 students)¹¹¹, the Yerevan State Institute of Theatre and Cinematography (est. 1944, ~795 students)¹¹², and the State Institute of Physical Culture and Sport (est. 1945, ~500–2,500 students)¹¹³.

The National Academy of Sciences and Research Ecosystem¹¹⁴

Structure and scale of NAS RA

The National Academy of Sciences of the Republic of Armenia (NAS RA), founded on November 10, 1943, is the country's "highest state scientific self-governing organization" and the official scientific consultant to the government. The NAS RA comprises five scientific divisions: Mathematical and Technical Sciences; Physics and Astrophysics; Natural Sciences; Chemistry and Earth Sciences; and Armenology and Social Sciences, overseeing 34–45 research institutes with approximately 3,500–4,000

¹¹¹

<https://desire-project.com/state-academy-of-fine-arts-of-armenia-safaa/>

¹¹² <https://www.iti-unesco-network.org/yerevan.html>

¹¹³ <https://www.4icu.org/reviews/11743.htm>

¹¹⁴ After the adoption of the Law on Higher Education and Science, the fate of the National Academy of Sciences of the Republic of Armenia is also unclear.



employees, including 63 academicians, 61 corresponding members, approximately 335 Doctors of Sciences, and 1,080 candidates of sciences. It maintains 150+ cooperation agreements with international scientific centers.

Among the most notable institutes are the Byurakan Astrophysical Observatory (founded 1946 by Viktor Ambartsumian; UNESCO Memory of the World designation for the Markarian Survey), the Institute of Molecular Biology, the A.B. Nalbandyan Institute of Chemical Physics, the Institute of Archaeology and Ethnography, and the Armenology and Social Sciences division housing the Institute of History, Institute of Philosophy and Law, the Armenian Genocide Museum-Institute, and the H. Acharian Institute of Language. The Matenadaran (Mesrop Mashtots Institute of Ancient Manuscripts), which houses approximately 20,000 manuscripts and 30,000 archival documents and has UNESCO Memory of the World status since 1997, operates as a separate state institution but collaborates closely with NAS.

The A.I. Alikhanyan National Science Laboratory (formerly Yerevan Physics Institute), though technically a separate Foundation, is Armenia's most productive research entity, generating approximately 30% of the country's scientific publications in high-impact journals and over 60% of all citations to Armenian papers. It participates in the ATLAS, CMS, and ALICE experiments at CERN through Armenia's membership in JINR (Joint Institute for Nuclear Research, Dubna). Armenia has been a JINR member state since 1956.

University-research integration

The persistent structural separation between teaching and research, a Soviet legacy, remains a fundamental challenge. NAS's International Scientific-Educational

Center (ISEC), established in 1997 and expanded in 2004, provides the primary integration vehicle, offering master's and doctoral programs embedded within NAS research institutes¹¹⁵. Many NAS researchers serve as part-time faculty at universities, particularly at YSU. State science funding has tripled since 2018¹¹⁶, reaching 1.1% of the state budget in 2024 (up from 0.7% in 2020), though R&D expenditure remains at approximately 0.36% of GDP, below OECD averages of over 2%.

Specialized State Academies and Professional Schools

Armenia maintains several sector-specific higher education and training institutions outside the traditional university framework.

The Vazgen Sargsyan Military Academy (originally founded in 1994, redesignated as an academy in 2023 after merging with the Armenak Khanperiyants Military Aviation University) offers a 4-year bachelor's officer training program and the Marshal Baghramyan Command and Staff Master's program. Funded by the Ministry of Defense and supported by a \$5 million donation from the Izmirlian Foundation for campus modernization, it joined the International Association of Military Academies in 2024. The National Defense Research University (est. 2016) conducts defense research and offers master's and postgraduate programs, partnering with the US National Defense University and Harvard.

The Educational Complex of the Ministry of Internal Affairs, formed in December 2024 by merging the Police Academy¹¹⁷ (established in 1966) with the Crisis Management State Academy (established in

¹¹⁵

<https://euraxess.ec.europa.eu/information/centres/international-scientific-educational-center-national-academy-sciences-armenia>

¹¹⁶ <https://www.hesc.am/en/category/newsfeed/>

¹¹⁷ <https://www.edupolice.am/en/educational-complex/aboutus.html>



1992), provides training in law enforcement, criminal justice, and civil defense. The Academy of Justice (est. 2014) offers professional training for judges, prosecutors, and investigators¹¹⁸ and serves as a non-degree-granting body with strong support from the EU and the Council of Europe. The Diplomatic School of Armenia (est. 2009), operating under the Ministry of Foreign Affairs, runs a 10-month International Relations and Diplomacy program for 25–27 competitively selected students annually¹¹⁹, awarding a certificate rather than a university degree¹²⁰. The Public Administration Academy (established in 1994 with assistance from the EU TACIS program)¹²¹ offers master's degrees in public administration, management, law, and political science¹²², and trains civil servants for government bodies.

Private and International Universities

The Three Flagships of International Engagement

American University of Armenia (AUA), founded on Armenia's independence referendum day (September 21, 1991) by the Armenian General Benevolent Union (AGBU), the University of California system, and the Armenian government, is the country's premier private institution. With an endowment of

\$118 million, AUA offers¹²³ 9 bachelor's and 12 master's programs across four colleges (Business and Economics, Science and Engineering, Humanities and Social Sciences, Health Sciences), as well as research centers, including the Acopian Center for the Environment and the Turpanjian Institute of Social Sciences¹²⁴. Fall 2025 enrollment reached 2,823 students with 350 faculty members (50.6% holding doctoral degrees). AUA is accredited by WSCUC through Spring 2033¹²⁵, the maximum 10-year term, making it the first US-accredited institution in the former Soviet Union, and by ANQA within Armenia.

The Russian Armenian (Slavonic) University (RAU), established in 1997¹²⁶ under an intergovernmental agreement, enrolls approximately 3,800 students across 8 institutes covering law, politics, mathematics, physics, high technologies, economics, humanities, media, oriental studies, and international relations¹²⁷. The graduates receive dual Armenian and Russian state diplomas. RAU ranks #801–1000 in QS World Rankings and maintains partnerships with Kaspersky Lab and Moscow State University for AI and data science programs.

The French University in Armenia (UFAR), founded in 2000, enrolls approximately 1,450¹²⁸ students and offers dual-degree programs in law, management, finance, marketing, and informatics in partnership with Université Jean Moulin Lyon 3 and Université Toulouse III, Paul Sabatier. The UFAR uses an innovative language model where students begin in

¹¹⁸

<https://napawash.org/academy-studies/armenian-criminal-justice-system-enhanced-training-to-improve-performance>

¹¹⁹

<https://www.diplomacy.edu/actor/diplomatic-school-of-armenia/>

¹²⁰

<https://www.diplomaticacademy.am/en/faq/>

¹²¹

<https://test.ecbe.eu/index.php/24-memberinfo/263-member-info-public-administration-academy-of-the-republic-of-armenia>

¹²²

<https://armacad.info/organizations/public-administration-academy-of-the-republic-of-armenia>

¹²³ <https://admissions.aua.am/>

¹²⁴ <https://www.aacu.org/american-university-of-armenia/>

¹²⁵

<https://www.wscuc.org/institutions/american-university-of-armenia/>

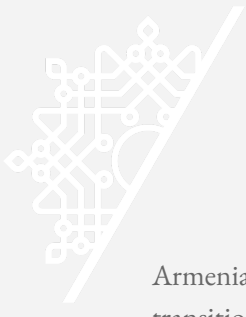
¹²⁶

<https://education.stateuniversity.com/pages/69/Armenia-HIGHER-EDUCATION.html>

¹²⁷ <https://rau.am/en/content/about>

¹²⁸

<https://www.univ-lyon3.fr/ufar-universite-francaise-en-armenie>



Armenian, receive intensive French instruction, and transition to French-medium studies by year 3, with 90% achieving proficiency. The institution will anchor the EU TUMO Convergence Center, a €25 million mixed-use STEM campus¹²⁹.

Other Operating Private Institutions

Beyond the three flagships, ANQA's accreditation register lists several additional private HEIs: the European University (formerly EREA, est. 2001; a EURASHE member with branches in five cities)¹³⁰, Yerevan Haybusak University (est. 1990; the largest private institution with 3,000–5,400 students, offering medical and other programs)¹³¹, Eurasia International University (est. 1996), Yerevan Gladzor University (est. 1990), the Armenian Medical Institute (est. 1990), the University of Traditional Medicine (est. 1991), Northern University (est. 1996)¹³², and the Mkhitar Gosh Armenian-Russian International University in Vanadzor (est. 1996).

The private sector has undergone dramatic consolidation. From a peak of over 100 HEIs in 1997¹³³, the system contracted through closures and license revocations¹³⁴; seven private universities lost their licenses in 2010 alone¹³⁵. Several institutions market medical programs (MBBS) aggressively to international students, particularly from India,

¹²⁹

<https://www.convergence.center/the-eu-tumo-convergence-center-kickoff/>

¹³⁰

<https://www.timeshighereducation.com/world-university-rankings/european-university-armenia>

¹³¹ <https://medical.gladzor.am/>

¹³² <https://uni24k.com/u/336/>

¹³³ <https://borgenproject.org/higher-education-in-armenia/>

¹³⁴

<https://documents1.worldbank.org/curated/en/836691592826609834/pdf/SABER-Tertiary-Education-Country-Report-Armenia-2019.pdf>

¹³⁵ <http://arka.am/en/news/society/21035/>

raising quality concerns that have prompted advisories from the Indian Embassy. The Education Strategy 2030 targets maintaining only up to 8 private/international universities¹³⁶, signaling further planned consolidation.

Theological and Religious Higher Education

The Gevorgian Theological Seminary, founded in 1874 at the Mother See of Holy Etchmiadzin, is the oldest continuously operating educational institution founded in Armenia¹³⁷ and the only theological institution with full state recognition as a higher education institution¹³⁸ (granted 2001–2002). It offers bachelor's, master's, and doctoral (Candidate of Theology) programs under the Bologna system, enrolling approximately 150 students. The seminary's Academic Council is headed by Catholicos Karekin II, who personally teaches the "Preaching" course. The Vaskenian Theological Academy on Lake Sevan (est. 1990) operates as a branch where students complete their first four years before transferring to Gevorgian for advanced studies.

The Evangelical Theological Academy of Armenia (est. 1997)¹³⁹ provides pastoral training for Armenian Evangelical churches but does not appear to hold formal HEI accreditation. No Catholic seminary with HE status currently operates in Armenia. The Gevorgian Seminary remains the sole theological

¹³⁶

<https://erasmus-networks.ec.europa.eu/book-page/country-page-armenia>

¹³⁷

<https://www.armenianchurch.org/en/gevorkian-theological-seminary/>

¹³⁸ Ibid.

¹³⁹

<https://amaa.org/the-evangelical-church-of-armenia-in-eastern-armenia/>



institution recognized within the national higher education framework.

Diaspora, International, and Innovation Networks

Diaspora Institutional Engagement

The Armenian General Benevolent Union awards over \$1 million annually in scholarships¹⁴⁰ to 1,100+ students in nearly 40 countries¹⁴¹, operates the Armenian Virtual College for online language and culture education, and partnered with TUMO to establish centers in Gyumri and the former Stepanakert. The Calouste Gulbenkian Foundation's Armenian Communities Department distributes approximately €1 million annually in university scholarships (~150 new awards/year)¹⁴² from an annual budget of approximately \$4 million, with a particular focus on the preservation of Western Armenian (UNESCO-classified as endangered).

Innovation Ecosystem Connections

The TUMO Center for Creative Technologies (est. 2011), serving 32,000+ active teenage students for free across 14 centers in 12 countries¹⁴³, has become Armenia's most internationally recognized educational brand. Though focused on ages 12–18, TUMO bridges into higher education through 42 Yerevan (a free peer-to-peer coding school for 18+)¹⁴⁴, TUMO Labs (applied science programs collaborating with YSU's master's in Applied Statistics and Data Science), and the planned EU TUMO Convergence

Center funded by a €12.5 million EU grant matched by equal partner contributions¹⁴⁵.

Teach for Armenia (est. 2013), with a 6% acceptance rate¹⁴⁶, co-designed a Master's in Teacher Leadership at YSU, Armenia's first graduate degree focused on educational justice, and received a \$2.6 million World Bank grant for mental health support in 225 schools serving displaced Nagorno-Karabakh children. The FAST Foundation, co-founded by Moderna's Noubar Afeyan¹⁴⁷, runs the ADVANCE STEM Research Grant Program, pairing international scientists with Armenian teams, offers PhD fellowships to top STEM students, and operates AI and biotechnology commercialization platforms¹⁴⁸. Synopsys Armenia has embedded education programs across five universities¹⁴⁹, producing approximately 100 graduates annually, while the Enterprise Incubator Foundation (est. 2002 with World Bank support) anchors the tech sector, whose turnover has reached \$2.3 billion (~7% of GDP) and averaged 23% annual growth¹⁵⁰.

Erasmus+ and Horizon Europe participation

Armenia's Erasmus+ engagement has grown steadily: 764 International Credit Mobility applications were submitted between 2015 and 2020 (638 funded, 77% success rate)¹⁵¹, with total annual mobilities reaching 1,200 by 2022. Capacity Building in Higher

¹⁴⁰ <https://accessscholarships.com/scholarship/agbu-scholarships/>

¹⁴¹ <https://agbu.org/support-scholarships>

¹⁴²

<https://gulbenkian.pt/armenian-communities/priorities-and-activities/university-scholarships/>

¹⁴³ <https://astana.tumo.kz/en/about-us/>

¹⁴⁴

<https://www.42network.org/blog/whos-behind-42-pegor-papazian-tumo-center-for-creative-technologies/>

¹⁴⁵

<https://www.convergence.center/the-eu-tumo-convergence-center-kickoff/>

¹⁴⁶ <https://www.teachforarmenia.org/en/how-to-apply>

¹⁴⁷ <https://am.linkedin.com/company/fast-foundation>

¹⁴⁸ <https://fast.foundation/en/programs/all>

¹⁴⁹

<https://www.synopsys.com/company/contact-synopsys/office-locations/armenia/educational-programs/cooperation-with-universities.html>

¹⁵⁰

<https://armenian-lawyer.com/business-immigration/why-international-investors-should-consider-partnering-with-business-incubators-and-accelerators-in-armenia/>

¹⁵¹ <https://erasmusplus.am/statistics/>



Education projects were implemented from 2015 to 2022¹⁵², with 11 coordinated by Armenian HEIs. Under the Jean Monnet Actions, 2 networks, 2 projects, and 4 modules were approved, as well as Eurasia International University's first Jean Monnet Chair in EU Law (2022).

Armenia became fully associated with Horizon Europe on February 11, 2022¹⁵³, building on its earlier Horizon 2020 association (May 2016). Armenian entities have secured approximately €8 million under Horizon Europe and €4.2 million under Horizon 2020, with Marie Skłodowska-Curie Actions as the leading area of participation. The Scientific and Innovation Partnership Assistance Center (SIPAC) coordinates National Contact Points, while EURAXESS Armenia (launched in November 2021) supports researcher mobility¹⁵⁴.

Five branches of foreign universities operate in Armenia, primarily Russian institutions, including the Plekhanov Russian University of Economics Yerevan Branch (1999) and the Moscow State University Yerevan Branch.

¹⁵²

https://www.researchgate.net/publication/390607251_The_Role_of_Erasmus_Capacity_Building_Projects_in_the_Internationalization_of_Armenian_Higher_Education

¹⁵³

https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/europe-world/international-cooperation/association-horizon-europe/armenia_en

¹⁵⁴

https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/europe-world/international-cooperation/association-horizon-europe/armenia_en

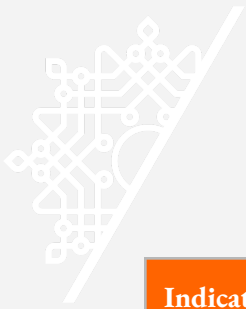
Key Data and System Metrics

Institutional Landscape

Category	Count
State (domestic) universities	~23
Interstate/international universities	4 (AUA, RAU, UFAR, European University)
Branches of foreign universities	5
Accredited private HEIs	~8–10
Total operating HEIs (all types)	~53–65
HEIs located in Yerevan	~32 of 39 accredited

Enrollment and demographics (2022–2023)

Indicator	Figure
Total student enrollment	~80,840
Bachelor's students	72,058
Master's students	8,037
PhD students	745
International students	7,413 (39% from India)
Gross tertiary enrollment ratio	61.19% (2023)



Indicator	Figure
Gender parity index	1.31 (female dominant)
Student-teacher ratio	6.9:1

Financial indicators

Indicator	Value
Education spending (% of GDP)	2.4% (2023)
Education (% of government expenditure)	9.44% (2024)
State education budget (2024)	AMD 231 billion (~38% increase over 2023)
HE share of education budget	~7–8%
R&D expenditure (% of GDP)	~0.36% (2025 planned)
Students receiving state support	~16%
Annual tuition range (citizens)	\$500–\$5,625

Rankings (2025–2026)

University	QS World	THE World	Domestic Rank
Yerevan State University	#1001–1200	#1501+	1

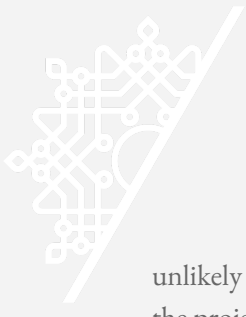
University	QS World	THE World	Domestic Rank
Russian Armenian University	#801–1000	-	3
American University of Armenia	-	-	2
ASUE	-	-	5

The Education Strategy 2030 sets a target of placing at least 4 Armenian universities in the top 500 of international rankings, an ambitious goal given that no Armenian institution currently ranks within the top 800 globally.

Reform Trajectories and International Program Engagement

The Academic City Gambit

The government's most transformative proposal is the Academic City project, first announced in 2021 and formally presented in September 2022. The plan envisions consolidating Yerevan's state universities into six thematic clusters: Classical, Technological, Educational, Military, Arts, and Medical, on a new campus near Yerevan, (originally planned to be located near the city of Ashtarak.) designed by German firm GMP for 50,000 people. International partners include the UCL Institute of Education, the University of the Arts London, and the Technical University of Munich. An Academic City Foundation was established in April 2023. Critics, including the EUA's Thomas Estermann, have called the merger of 16 universities "unprecedented and



unlikely to succeed," while civil society groups argue the project lacks strategic focus and could suppress campus activism by relocating universities outside the capital.

International Development Programs

The World Bank has been the most consequential international partner. The Education Improvement Project (approved 2014, \$30 million) and its Additional Financing (approved 2022, \$25 million) fund the Competitive Innovation Fund for HEIs, STEM curriculum revision, and education management systems. The World Bank also administers the EU4Innovation Trust Fund for STEM education reform.

The European Union's engagement spans multiple channels: the CEPA framework (fully in force since March 2021), €32 million for the education sector (2023–2025), the €270 million Resilience and Growth Plan (2024–2027), Erasmus+ CBHE projects, and Horizon Europe association. The EU has disbursed €70 million for humanitarian and socio-economic inclusion following the September 2023 displacement from Nagorno-Karabakh. Between 2022 and 2024, 2,555 Armenian students and academics participated in Erasmus+ exchanges.

USAID has supported the establishment of American Studies programs at YSU, workforce development initiatives, and the STEP Science and Technology Entrepreneurship Program (since 2006). AUA has been a longstanding USAID beneficiary. The Asian Development Bank, partnered with Armenia since 2005 with \$1.6 billion in total commitments, funded a \$750,000 distance education platform during COVID-19 and an \$89.3 million seismic safety program for school infrastructure. UNDP Armenia focuses on VET reform, digital skills training, and youth employment, including a 2024 career guidance

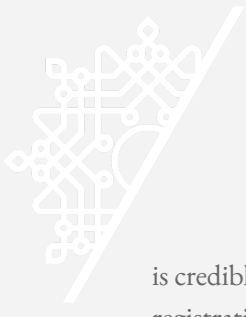
program reaching all vocational institutions. The Council of Europe has been instrumental in supporting the Bologna Process, implementing the recognition convention, and developing quality assurance, with the 2015 Yerevan Ministerial Conference marking a high point of Armenia's EHEA engagement.

The Displacement Crisis of 2023

The September 2023 Azerbaijani military offensive and subsequent ethnic cleansing displaced the entire Armenian population of Nagorno-Karabakh, approximately 101,848 refugees, including 30,000 children. Artsakh State University (est. 1969, ~3,000 students, 200 faculty) ceased operations; its building was appropriated by Azerbaijan. The government allocated tuition scholarships of 400,000–700,000 AMD per displaced student, and by November 2023, 79% of displaced children were enrolled in Armenian schools. Over 500 displaced teachers were integrated into Armenian educational institutions. Students campaign for the university to resume operations in exile, while some face difficulties obtaining international recognition for Artsakh diplomas.

Conclusion: A System in Consequential Transition

Armenia's higher education sector confronts a rare convergence of pressures, demographic contraction, fiscal constraints, brain drain, post-conflict displacement, and an ambitious European integration agenda, which make the coming decade decisive. The institutional landscape retains remarkable breadth for a country of 3 million: from a medieval seminary to a US-accredited university, from Soviet-era polytechnics to an EU-funded convergence center, from NAS research institutes tracing cosmic rays on Mount Aragats to TUMO teaching animation to 32,000 teenagers. The quality assurance architecture



is credible, ANQA's ENQA membership and EQAR registration place Armenia among the more advanced Bologna Process adopters in the post-Soviet space.

Yet the system's structural fissures are equally clear. The separation of research from teaching, the chronic underfunding (2.4% of GDP for all education; 0.36% for R&D), the concentration of resources in Yerevan while regional universities starve, the unreformed governance despite revolutionary rhetoric, and the unfinished NQF self-certification all represent concrete obstacles to the European integration that government rhetoric prioritizes. The Academic City vision, whether it materializes as planned or not, signals recognition that incremental reform may be insufficient. Whether Armenia's higher education system can consolidate quality while maintaining the access, diversity, and cultural distinctiveness that its 150-year institutional tradition represents will depend on sustained political will, realistic resource allocation, and genuine partnership between Yerevan and the international community.

In the Republic of Armenia's current policy, higher education and science have been declared guarantors of national competitiveness and security. The state has set as a primary objective the transition from a model based on "cheap labor" to a high-technology, knowledge-based economy. Education is viewed as a tool for improving the "length and quality of life" of individuals.

The state acknowledges that the current higher education system is disconnected from the labor market and from international standards. To address this problem, the following firm but necessary steps are proposed:

- o **University consolidation and the "Academic City."** This is the state's ambitious project. The goal is to create a consolidated environment that brings universities and research institutes

together. The expectation is the concentration of resources, the reduction of duplicated faculties, and the improvement of the positions of Armenian universities in international ranking tables.

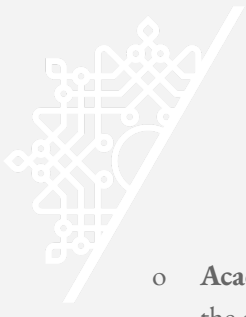
- o **A new funding model.** The state is changing the logic for allocating funds to universities. The emphasis will be placed not on the "number of students," but on results. Universities will receive more funding if they demonstrate high academic performance, publish scientific articles, and achieve high graduate employment rates (performance-based funding).

In recent years, a certain change in the state's attitude toward the scientific sector has become noticeable, reflected in concrete numbers. The science budget has more than doubled over the past three years. A system of attestation for researchers has been introduced, allowing salaries to multiply depending on scientific productivity. The state has also begun making large investments in laboratory equipment.

The state has also proclaimed the synergy between science, education, and the labor market. At the same time, this synergy remains the weakest yet most important link of the current strategy. Here, however, several problems must be noted.

In education, theoretical knowledge still dominates, while teaching methods are largely outdated. The state must revise the existing credit system and move toward student-centered learning. Science remains isolated from business, and it is necessary to commercialize scientific results. At the same time, vocational education must be aligned with the needs of the economy.

Despite optimistic programs, the situation remains complicated for several reasons:



- o **Academic freedom.** Discussions surrounding the composition of university governing councils reveal the state's aspiration to exercise greater control, which at times conflicts with the principle of academic autonomy.
- o **Generational change.** The average age in the scientific sector remains high. To attract young researchers, salary alone is insufficient; an international-level research environment is required.
- o **Institutional resistance.** Reforms, especially those related to university mergers, encounter internal resistance from academic circles.

At present, the state's approach to higher education and science in Armenia can be characterized as a stage of "radical transformation." The state has ceased to act merely as a "donor" and has begun to act as a "customer," expecting concrete outcomes that will serve the country's defense capability and economic growth.

A Critical Perspective: Risks of the "Academic City"

The situation can be described as a transitional crisis, in which the old Soviet-type inertial system is giving way to a research-based educational model built on Western standards. Success will depend on how effectively the proposed "Academic City" project is implemented and on whether scientists feel valued in their own homeland.

However, in our view, the "Academic City" project, given the Republic of Armenia's current capabilities, poses more systemic risks than it offers in terms of development prospects.

By constructing an Academic City and relocating universities from the capital, Yerevan risks losing an essential part of its civilizational character.

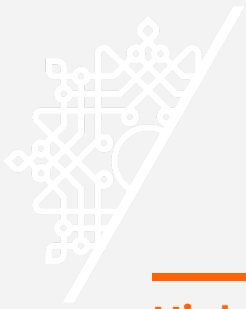
Universities are an inseparable part of Yerevan's history and culture. By removing students, the capital would lose its intellectual atmosphere and would risk becoming merely a "residential area" or business center. The relocation of arts universities would sever their connections to opera houses, museums, and other cultural institutions, thereby harming the quality of education. The concentration of universities in one location is also seen as a potential tool for restricting academic freedoms and establishing absolute control over students and faculty.

The economic feasibility of the Academic City project is also highly questionable and financially risky. One billion dollars is insufficient to create such a massive infrastructure (laboratories, hospitals, campuses), particularly when the country faces serious security challenges. The sale or repurposing of university buildings may serve narrow financial interests rather than improve educational quality. The decades-old economic ecosystem that has developed around universities in central Yerevan (food services, retail, bookstores) would collapse.

Armenia's higher education system stands at a historic crossroads. The state's current approach is viewed as a "sharp and destructive intervention" that, under the banner of reform, could undermine the foundations of national higher education.

From our perspective, the solution is not the physical relocation of universities but rather a substantive transformation grounded in autonomy, academic freedom, and the national interest.

As the saying goes, "When you have a headache, you do not cut off your head." This principle should guide educational policy, preserving Yerevan as a regional center of science and education while strengthening the chain linking universities, the labor market, and national security.



Higher Education, Research, and Innovation in Ireland, Singapore, and Finland

Ireland: Educating for a Knowledge Economy and Regional Innovation

Ireland's transformation over the past half-century demonstrates how expanding access to education and aligning higher education with economic needs can drive growth. Policy reforms since the 1960s have significantly expanded educational opportunities, laying the groundwork for a highly skilled workforce. In 1966, Ireland introduced free universal secondary education, a landmark move that “removed major financial barriers” and sharply raised secondary completion rates, especially for rural and low-income families¹⁵⁵. Building on this, the government later launched a “Free Fees Initiative” to subsidize university tuition, accompanied by grants for disadvantaged students. These policies democratized access to higher education; Ireland today boasts the highest tertiary education attainment rate in the EU, reflecting broad access and a highly educated young population. Sustained public investment underpins this success: the national education budget reached a record €11.8 billion in 2025, funding inclusive programs, teacher supports, and student wellbeing initiatives¹⁵⁶. This long-term commitment to education has been crucial in making Ireland a “global leader” in educational outcomes and in leveraging those outcomes for economic and social gains¹⁵⁷.

Ireland's higher education system and innovation ecosystem are closely intertwined with its economic strategy. In 2020, Ireland created a dedicated Department of Further and Higher Education, Research, Innovation, and Science, signaling an integrated approach to policy. The government's current strategy, Impact 2030, explicitly puts “research and innovation at the heart of addressing Ireland's social and economic” challenges¹⁵⁸. Even during recessions, Ireland maintained public R&D spending, which helped spur a tech-driven recovery and build “a network of top-class research facilities”¹⁵⁹. Today, most research is concentrated in universities, and the government aims to significantly expand research capacity. Ireland's universities collaborate with funding agencies to grow a balanced research ecosystem that supports both basic science and industry-oriented R&D¹⁶⁰. However, Ireland still lags top innovators in R&D intensity; total R&D investment is about 1.2% of GDP (1.4% of GNP), below the OECD average (~2.4% of GDP) and far behind leaders like Denmark (~2.9%)¹⁶¹. Recognizing this gap, national targets call for sustained increases in research funding and a 30% rise in PhD graduates over the next decade¹⁶². Indeed, a strong presence of research students is seen as critical to Ireland's competitiveness and economic growth. Currently, fewer than 4% of Irish higher education students pursue doctoral degrees, compared with 6% in Germany and 13% in Luxembourg, countries with larger PhD cohorts that help fuel innovation across

¹⁵⁵ Ireland's Education Revolution: How Policy, Access, and Equity Made a Global Leader - Frost & Sullivan Institute: <https://frostandsullivaninstitute.org/irelands-education-revolution-how-policy-access-and-equity-made-a-global-leader/>

¹⁵⁶ *ibid*

¹⁵⁷ *ibid*

¹⁵⁸ Impact 2030 | Policy | Higher Education Authority:

<https://hea.ie/policy/research-policy/impact-2030/>

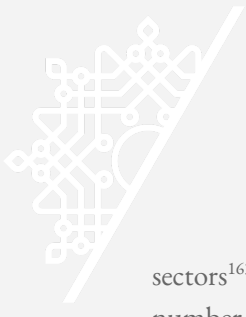
¹⁵⁹ Research & Innovation | Irish Universities Association:

<https://www.iaa.ie/ourwork/research-innovation/>

¹⁶⁰ *ibid*

¹⁶¹ *ibid*

¹⁶² *ibid*



sectors¹⁶³. Irish policymakers note that increasing the number of PhDs and researchers is necessary to build a “resilient, future-proof economy” driven by innovation¹⁶⁴.

To better leverage higher education as an engine for regional growth and innovation, Ireland has recently overhauled its tertiary landscape. The government established Technological Universities (TUs) by merging institutes of technology, aiming to create research-active institutions outside the traditional universities. The Technological Universities Agenda (a key reform in the 2020 Program for Government) is intended to “catalyze innovation and regional development”, bringing higher-level research and skills to all corners of Ireland¹⁶⁵. As of 2023, five new TUs are operational nationwide. These TUs focus on applied research and stronger industry engagement, particularly with local SMEs. They are seen as anchors to attract investment and foster local economic clusters, so that students, academics, and businesses in each region can “avail of increased opportunities in their own areas” and drive further socio-economic progress¹⁶⁶. The government, along with EU funds, has backed this with significant investments, for example, an €84 million TU Research and Innovation Supporting Enterprise (TU RISE) program (under the EU regional fund) is establishing R&I offices at the TUs to connect researchers with nearby industry needs^{167, 168}. Additional national

funding is being directed to TUs to strengthen their research capacity, human capital, and infrastructure¹⁶⁹.

Ireland’s focus on skills for the modern economy is also evident in its curriculum and enrollment trends. Over 28% of Irish tertiary students are in STEM fields (above the EU average), and Ireland produces the most STEM graduates per capita in the EU¹⁷⁰. High demand in booming sectors such as ICT and biotech has prompted universities (and programs such as Springboard+ and the Human Capital Initiative) to rapidly expand courses in areas of skills shortages¹⁷¹. The payoff is clear: Ireland boasts a 95% employment rate for recent STEM graduates, and its tech graduates are helping to attract multinational R&D operations in software, medical devices, and pharmaceuticals. At the same time, Ireland continues to prioritize equity in higher education participation, a new National Access Plan (2022–2028) sets targets to include more students from disadvantaged, minority (Traveler/Roma), and disability backgrounds, ensuring the benefits of higher education (and the innovation economy it feeds) are widely shared¹⁷². In summary, Ireland’s approach combines broad-based access to education with targeted investments in research and innovation capacity. This has yielded a talent-rich, adaptable workforce and an emerging innovation ecosystem, albeit one still catching up to higher-investing peers,

¹⁶³ iua.ie:
https://www.iua.ie/wp-content/uploads/2025/04/Building-Irelands-Competitiveness-and-Innovation-Capacity_FullProposal.pdf

¹⁶⁴ Ibid.

¹⁶⁵ National reforms in higher education
<https://eurydice.eacea.ec.europa.eu/eurypedia/ireland/national-reforms-higher-education>

¹⁶⁶ Ibid.

¹⁶⁷ Ibid.

¹⁶⁸ Ibid

¹⁶⁹ Ibid.

¹⁷⁰ Education and Training Monitor 2025
<https://op.europa.eu/webpub/eac/education-and-training-monitor/en/country-reports/ireland.html>

¹⁷¹ National reforms in higher education
<https://eurydice.eacea.ec.europa.eu/eurypedia/ireland/national-reforms-higher-education>

¹⁷² Ibid.



that together have underpinned Ireland's evolution into a knowledge economy^{173, 174}.

Singapore: A Strategic Education Hub Driving Innovation and Industry

Singapore is often cited as a model of how strategic education and R&D investment can propel economic development. Since gaining independence in 1965, this city-state of ~5.6 million has achieved an economic “miracle,” with GDP per capita soaring from third-world levels to among the world's highest¹⁷⁵. A cornerstone of this success is that the government made education at all levels a top priority from the outset¹⁷⁶. Singapore built one of the world's best-performing school systems, and its students consistently rank at the top globally in math, science, and literacy (PISA assessments)¹⁷⁷. This strong foundation feeds a vibrant higher education sector that has expanded dramatically in recent decades. In fact, the number of higher education institutions in Singapore has tripled over the past 20 years, as the government has invested heavily in new universities and programs¹⁷⁸. Two research-intensive universities (NUS and NTU) now rank among the world's top 20, and newer institutions (like SMU, SUTD, SIT, and SUSS) cater to diverse fields and practical skills. The government also aggressively courted prestigious foreign universities to establish local campuses or partnerships. Under the “World Class Universities”

program (launched in 1997) and the “Global Schoolhouse” initiative (2002), Singapore aimed to attract leading international universities and 150,000 foreign students to its shores¹⁷⁹. By 2015, Singapore had become a major education hub in Asia, often referred to as the “Boston of the East,” with around 75,000 international students and numerous overseas university programs.¹⁸⁰ While global competition and policy adjustments have tempered these ambitions (several foreign branch campuses later closed, and social concerns arose over immigration), the push undeniably raised Singapore's higher education profile and helped “firmly establish [Singapore] as one of the region's premier education hubs”¹⁸¹.



Scientists at a research lab in Singapore's Agency for Science, Technology and Research (ASTAR).

Singapore has built excellent basic research capabilities and emphasizes translating research into enterprise and economic growth¹⁸².

Beyond expanding access, Singapore deliberately directs its higher education and research system to serve economic goals. The nexus of this strategy is the national RIE (Research, Innovation and Enterprise)

¹⁷³ Research & Innovation | Irish Universities Association
<https://www.iua.ie/ourwork/research-innovation/>

¹⁷⁴ Ireland's Education Revolution: How Policy, Access, and Equity Made a Global Leader - Frost & Sullivan Institute
<https://frostandsullivaninstitute.org/irelands-education-revolution-how-policy-access-and-equity-made-a-global-leader/>

¹⁷⁵ <https://www.isc.hbs.edu/Documents/resources/courses/moc-course-at-harvard/pdf/student-projects/Singapore%20Higher%20Education%202016.pdf>

¹⁷⁶ Ibid.

¹⁷⁷ Ibid.

¹⁷⁸ Ibid.

¹⁷⁹ Ibid.

¹⁸⁰ <https://www.isc.hbs.edu/Documents/resources/courses/moc-course-at-harvard/pdf/student-projects/Singapore%20Higher%20Education%202016.pdf>

¹⁸¹ Ibid.

¹⁸² Powering Singapore's innovation economy | Singapore EDB
<https://www.edb.gov.sg/en/business-insights/insights/powering-singapores-innovation-economy.html>



plans, multi-year roadmaps that channel funding into priority research areas aligned with the country's development vision. In the current RIE2025 plan, Singapore is investing over S\$25 billion from 2021 to 2025 to advance science and innovation in fields such as manufacturing, healthcare, urban solutions, and digital technology¹⁸³. The plan explicitly ties R&D to industrial transformation initiatives (via the Future Economy Council) and the Smart Nation digital agenda¹⁸⁴. Singapore has built world-class research capacity within its universities and public institutes, and RIE2025 prioritizes sustaining this excellence. For example, it calls for continued strong support of basic research to build a "critical mass of top research talent" working on fundamental challenges, the wellspring of future innovations¹⁸⁵. At the same time, Singapore's strategy places heavy emphasis on applied research and commercialization: it takes a "portfolio approach," increasing funding for investigator-led discovery and for mission-oriented programs that drive technology translation into industry¹⁸⁶. Under previous RIE plans, Singapore established specialized innovation platforms (e.g., centers for additive manufacturing and diagnostic biotech) that have helped move research "from lab to market" in partnership with companies¹⁸⁷. The current plan aims to scale up these translational platforms and create new ones, so that promising R&D can more quickly become "market-ready products and solutions" supporting high-growth industries¹⁸⁸. Notably, to bridge the academia–industry gap, Singapore has established structures such as joint research labs with corporations and public research institutes (A*STAR)

embedded within universities¹⁸⁹. This facilitates knowledge exchange and helps align research projects with real-world needs.

A*STAR (Agency for Science, Technology and Research), Singapore's network of research institutes, plays a central role in this ecosystem. Since its establishment in 1991, ASTAR has been "at the forefront of [Singapore's] transformation into a globally competitive innovation economy", advancing scientific discovery while directly shaping industries and "growing the capabilities that underpin...economic growth"¹⁹⁰. ASTAR's mission, as its CEO describes, is to "turn scientific excellence into innovation and economic outcomes, new industries, breakthrough products, and better livelihoods"^[36]. It has pioneered R&D in semiconductors, biomedical sciences, and AI, fields that have since become pillars of Singapore's economy¹⁹¹. For example, ASTAR's long-term research in advanced chip manufacturing has led global tech firms, such as Applied Materials and GlobalFoundries, to anchor major R&D facilities in Singapore, thereby bolstering high-value job creation and enhancing Singapore's role in the semiconductor supply chain^{192,193}. Likewise, years of public research in biotechnology enabled homegrown companies to launch globally used medical innovations from Singapore¹⁹⁴. These successes reflect Singapore's whole-of-nation approach to innovation. The Economic Development Board (EDB) collaborates with education and research agencies to attract multinational research and development (R&D) investment. Meanwhile, schemes such as the Global

¹⁸³ <https://file.go.gov.sg/rie-2025-handbook.pdf>

¹⁸⁴ Ibid.

¹⁸⁵ Ibid.

¹⁸⁶ Ibid.

¹⁸⁷ Powering Singapore's innovation economy | Singapore EDB <https://www.edb.gov.sg/en/business-insights/insights/powering-singapores-innovation-economy.html>

¹⁸⁸ <https://file.go.gov.sg/rie-2025-handbook.pdf>

¹⁸⁹ Ibid.

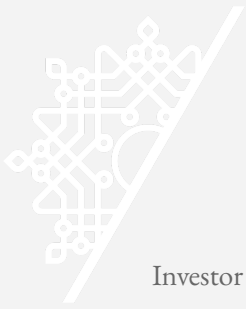
¹⁹⁰ Ibid.

¹⁹¹ Ibid.

¹⁹² Ibid.

¹⁹³ Powering Singapore's innovation economy | Singapore EDB <https://www.edb.gov.sg/en/business-insights/insights/powering-singapores-innovation-economy.html>

¹⁹⁴ Ibid.



Investor Program and various R&D tax incentives encourage companies to establish research centers locally^{195,196}. Singapore's universities are key partners in this innovation engine: "Our partnerships with local institutes of higher learning are also key to amplifying impact, from joint research and innovation to nurturing scientific talent," notes the ASTAR CEO. Indeed, the government funds a range of manpower development programs to ensure a talent pipeline for R&D, from scholarships and overseas PhD sponsorships, to "on-the-job training through internships and traineeships in A*STAR institutes and corporate labs sited in our universities"¹⁹⁷. The aim is to produce "bilingual" talent who are fluent in both research and entrepreneurship, capable of translating innovations into viable products and startups¹⁹⁸.

In summary, Singapore's higher education and innovation system is characterized by strong state direction, a global outlook, and tight integration between academia and industry. Education is highly subsidized for citizens (in return for service obligations), and admissions are merit-based, ensuring a steady flow of skilled graduates in science, engineering, and other strategic fields. The top universities not only educate students but also serve as research powerhouses linked to national goals. Singapore invests approximately 2% of its GDP in R&D (public and private)¹⁹⁹, a level comparable to that of other advanced economies, and plans to maintain or increase this level. The results are evident in the economy: today, high-tech manufacturing and knowledge-intensive industries (many of which are

the fruits of education and R&D policy) contribute over 30% of Singapore's GDP and employ half a million jobs. By continuously aligning its education and research agenda with economic strategy, Singapore has created an innovation ecosystem regarded as one of the world's most successful^{200,201}. The challenge ahead, as Singapore recognizes, is to keep innovating in education itself, for instance, adapting university programs to nurture more creative thinking and ensuring local graduates and companies remain at the cutting edge, while also addressing societal concerns (such as ensuring opportunities for locals amid a global talent influx)²⁰². Nonetheless, the Singapore model vividly demonstrates how a small nation can leverage human capital and research and development (R&D) as the twin engines of growth.

Finland: Equitable Excellence as the Foundation of Innovation

Finland is widely acclaimed as a nation where world-class education and a robust innovation system have together powered economic development and societal wellbeing. With a population of 5.5 million, Finland punches above its weight in knowledge metrics, consistently ranking among the top globally for innovation, stability, and even happiness²⁰³. At the heart of this achievement is Finland's "superpower" of education²⁰⁴. The Finnish education model is built on the principle of egalitarian excellence: every citizen should have equal access to high-quality education,

¹⁹⁵ Ibid.

¹⁹⁶ Ibid.

¹⁹⁷ <https://file.go.gov.sg/rie-2025-handbook.pdf>

¹⁹⁸ Ibid.

¹⁹⁹ Singapore - Research And Development Expenditure (% of GDP) <https://tradingeconomics.com/singapore/research-and-development-expenditure-percent-of-gdp-wb-data.html>

²⁰⁰ Powering Singapore's innovation economy | Singapore EDB <https://www.edb.gov.sg/en/business-insights/insights/powering-singapores-innovation-economy.html>

²⁰¹ Ibid.

²⁰² <https://www.isc.hbs.edu/Documents/resources/courses/moc-course-at-harvard/pdf/student-projects/Singapore%20Higher%20Education%202016.pdf>

²⁰³ Finland - a superpower of education and innovations | University of Turku <https://www.utu.fi/en/finland-a-superpower-of-education-and-innovations>

²⁰⁴ Ibid.



free of charge from primary school through university. This commitment is enshrined in policy, Finland treats education as a public right and invests accordingly, believing (in the words of a recent Finnish minister) that the country “has, for [its] entire hundred years of independence, been built on civilization, education and culture”, with a “competent and highly educated nation” as the driver of progress²⁰⁵. In practical terms, this means schools and universities are well-funded and universally accessible, yielding educational outcomes that are both high-performing and broadly inclusive. Finland routinely tops international assessments not just in basic skills, but also in equitable learning outcomes (achievement gaps between schools or social groups are among the smallest). A striking feature of the Finnish approach is its student-centered ethos: from primary to tertiary levels, learning environments prioritize creativity, collaboration, and student well-being over high-pressure testing²⁰⁶. Students stay motivated and enthusiastic to learn, and teachers (all of whom have master’s degrees) enjoy professional autonomy to innovate in their teaching²⁰⁷. This culture produces not only excellent test scores but also curious, lifelong learners, exactly the kind of human capital needed for an innovation-driven economy.

Finland’s higher education system is a dual network designed to serve both academic and industry needs. It comprises 13 research universities and 22 universities of applied sciences (UAS) spread across the country²⁰⁸. Research universities (such as the University of Helsinki and Aalto University) focus on

scientific research and theory-based education, awarding degrees up to the doctoral level. Their mission, as defined by law, is to “promote free research and provide higher education based on research,” while maintaining close interaction with society²⁰⁹. The universities of applied sciences, by contrast, are more industry-focused, offering professionally oriented bachelor’s and master’s programs and engaging in applied research and development (R&D) that supports regional economic development and workforce needs²¹⁰. This dual model has been effective in producing a broad range of expertise, from theoretical scientists and engineers to practical innovators and entrepreneurs. For example, UAS institutions work on “development projects based on working life” and serve as “innovation platforms” that link students with local employers²¹¹. Notably, both types of institutions contribute to research and innovation: Finnish universities collectively spend approximately €1.4 billion on R&D annually, while the UAS sector invests around €180 million in R&D (often in partnership with companies and EU programs)²¹². Public funding ensures baseline support (the state covers roughly one-third of university R&D costs and 40% of UAS costs, with the remainder competitively sourced from bodies such as the Academy of Finland, Business Finland, and EU Horizon funds)²¹³. This mix of block grants and competitive funding incentivizes both excellence and relevance in research.

Crucially, Finland’s innovation system is steered by a cohesive national policy framework. The Ministry of

²⁰⁵ Vision for higher education and research in Finland 2030 - Finnish Government

<https://valtioneuvosto.fi/en/-/1410845/vision-for-higher-education-and-research-in-finland-2030>

²⁰⁶ Ibid.

²⁰⁷ Ibid.

²⁰⁸ Research.fi
<https://research.fi/en/science-innovation-policy/research-innovation-system>

²⁰⁹ Ibid.

²¹⁰ Ibid.

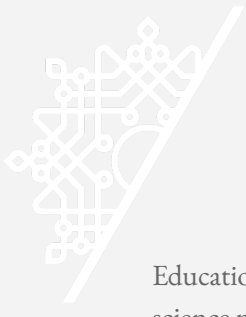
²¹¹ Policies to Promote Internationalization in Finnish Higher Education ...

https://hepo.iesalc.unesco.org/pc/static/countrydocs/cp/2025/fin/fin_HEPlanLi.pdf

²¹² research.fi

<https://research.fi/en/science-innovation-policy/research-innovation-system>

²¹³ Ibid.



Education and Culture oversees higher education and science policy, while the Ministry of Economic Affairs and Employment handles innovation and industrial policy²¹⁴. To coordinate these spheres, Finland has a high-level Research and Innovation Council chaired by the Prime Minister, which aligns education, research, and industrial strategies²¹⁵. The results of this coordinated approach are evident: Finland is one of the world's leading knowledge-based economies, regularly among the top EU performers in innovation. It has one of the highest R&D investment levels globally, currently approximately 3% of GDP (public and private combined) - with a national goal to reach 4% by 2030²¹⁶. (For comparison, Finland's R&D intensity is roughly double that of Ireland and higher than Singapore's, reflecting a long-held national consensus on funding innovation.) This spending supports a comprehensive innovation infrastructure: besides universities and UAS, Finland has 12 public research institutes (like VTT, the Technical Research Center) that focus on applied research in areas from energy to forestry, often collaborating with both academia and industry^{217,218}. Notably, companies play a key role as partners in Finland's R&D ecosystem. The government actively promotes public-private collaboration through initiatives such as the National Roadmap for RDI (2020), which introduced a new partnership model to fund innovation ecosystems that involve firms and researchers²¹⁹. This model co-invests in

targeted growth areas and testbeds (e.g., 5G, clean tech, health) selected through competitive calls, thereby "grouping national program financing with EU funding" and encouraging consortia to pilot and scale new technologies²²⁰. It addresses a known challenge: translating Finnish research from the lab to commercial application. As one analysis noted, Finland has historically excelled in research output but needs to improve incentives for researchers to pursue breakthrough innovations rather than just publish²²¹. The ongoing reforms, including a planned increase of the government's share of R&D funding to 1.2% of GDP by 2030²²², aim to make the innovation system even more impact-driven.

Finland's ethos of "predicting future needs...and steering education and research towards tomorrow's world"²²³ has yielded many success stories. The country famously gave rise to Nokia's mobile technologies in the 1990s, a triumph often credited to heavy investments in technical education and research at that time. Today, Finland continues to innovate in areas such as mobile gaming, 5G networks, clean energy, and biomedical technology. A key strength is the effective cooperation among universities, industry, and government. As a University of Turku overview puts it, "Finland has been praised for its ability to innovate... We are good at getting the finest brains of the university and industry working together, resulting in groundbreaking innovations."²²⁴. This

²¹⁴ Ibid.

²¹⁵ Ibid.

²¹⁶ Investing in innovation: How Finland supports international companies

<https://www.businessfinland.com/news/2025/investing-in-innovation-how-finland-supports-international-companies/>

²¹⁷ research.fi

<https://research.fi/en/science-innovation-policy/research-innovation-system>

²¹⁸ Finland - a superpower of education and innovations | University of Turku

<https://www.utu.fi/en/finland-a-superpower-of-education-and-innovations>

²¹⁹ Ibid.

²²⁰ Ibid.

²²¹ Finland's economy needs an innovation system that moves research ...

<https://www.lut.fi/en/artikkelit/finlands-economy-needs-innovation-system-moves-research-practice>

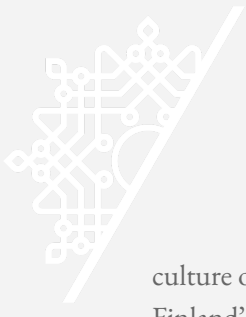
²²² The national plan to raise R&D funding - State Treasury, Finland

<https://www.treasuryfinland.fi/investor-relations/sustainability-and-finnish-government-bonds/the-national-plan-to-raise-rd-funding/>

²²³ Finland - a superpower of education and innovations | University of Turku

<https://www.utu.fi/en/finland-a-superpower-of-education-and-innovations>

²²⁴ Ibid.



culture of trust and collaboration is underpinned by Finland's social environment, characterized by high transparency, low corruption, and a tradition of consensus-building. Equally, Finland nurtures a tech-savvy population ready to embrace innovation: citizens benefit from digital literacy programs and strong STEM education, but without neglecting the arts and social sciences (which flourish under Finland's broad education curriculum). Moreover, the values of equity and inclusion in Finnish society mean the innovation boom is broadly supported. Free education has "made it possible for everyone to pursue their dreams," contributing to social cohesion and public support for R&D spending²²⁵. As a result, even as Finland pushes the frontiers of tech, it remains attuned to sustainable development and wellbeing. For instance, Finnish universities and companies are leaders in green technologies, reflecting a national ethos of solving global challenges (like climate change) for the good of all²²⁶.

In summary, Finland's system uniquely serves its population by combining egalitarian education with high-end innovation. The Finnish model demonstrates that you don't have to sacrifice inclusion for excellence; equal opportunity in education has been the pathway to both social justice and economic prosperity²²⁷. By ensuring a large, well-educated workforce and actively connecting that talent with research and industry, Finland has created a resilient innovation engine for its economy. The country continues to refine this system with an eye toward 2030, with goals including increasing the share of young adults with higher degrees to at least 50%, enhancing internationalization on campuses, and accelerating knowledge transfer from academia to

industry²²⁸. Finland's experience offers a powerful lesson in the value of long-term, consistent policy support, over decades, for education and R&D. That steadfast commitment has made Finland, truly, a "superpower of education and innovation"^{229,230}.

Similarities and Differences in the Three Systems

All three countries, Ireland, Singapore, and Finland, have leveraged higher education and research as engines of innovation and economic growth, but each in distinct ways that reflect their unique contexts. Several common themes stand out:

- o **Strategic Government Commitment:** In each country, national policy has explicitly linked education and innovation to economic development. Ireland's Impact 2030 strategy, Singapore's RIE plans, and Finland's National RDI Roadmap all demonstrate a strong government commitment to investing in research and directing it toward economic and societal objectives^{231,232,233}. High-level coordination bodies (a dedicated ministry in Ireland, a PM-chaired council in Finland, multi-agency planning in Singapore) ensure that universities and research institutes align with national priorities²³⁴. Long-term investment is a shared value: despite

²²⁸ Vision for Higher Education and Research 2030 <https://stip.oecd.org/stip/interactive-dashboards/policy-initiative/s/2023%2Fdata%2FpolicyInitiatives%2F14595>

²²⁹ Ibid.

²³⁰ Finland - a superpower of education and innovations | University of Turku <https://www.utu.fi/en/finland-a-superpower-of-education-and-innovations>

²³¹ Impact 2030 | Policy | Higher Education Authority <https://hea.ie/policy/research-policy/impact-2030/>

²³² <https://file.go.gov.sg/rie-2025-handbook.pdf>

²³³

<https://research.fi/en/science-innovation-policy/research-innovation-system>

²³⁴ Ibid.

²²⁵ Ibid.

²²⁶ Ibid.

²²⁷ Ibid.



differing budgets, each nation has sustained or increased spending on education and research and development (R&D), even through economic downturns, recognizing these as foundational investments. For example, Ireland maintained funding for research through its post-2008 recession, which “contributed to economic recovery”²³⁵, while Singapore and Finland have steadily raised R&D spending toward targets (Singapore at around 1.5–2% of GDP, Finland aiming for 4% of GDP)²³⁶.

- o **High Educational Attainment and Quality:** All three countries have well-educated populations by global standards, though they have achieved this through different paths. Ireland and Finland have among the highest tertiary attainment rates in Europe²³⁷, and Singapore’s tertiary enrollment has grown rapidly, with the addition of new institutions, attracting many international students²³⁸. Quality is also exceptional: Finnish and Singaporean students excel in international assessments^{239,240}, and Irish students perform above the EU average in core skills²⁴¹. Each country’s universities produce skilled graduates in fields aligned with

²³⁵ Research & Innovation | Irish Universities Association
<https://www.iua.ie/ourwork/research-innovation/>

²³⁶ Singapore - Research And Development Expenditure (% Of GDP)
<https://tradingeconomics.com/singapore/research-and-development-expenditure-percent-of-gdp-wb-data.html>

²³⁷ Education and Training Monitor 2025
<https://op.europa.eu/webpub/eac/education-and-training-monitor/en/country-reports/ireland.html>

²³⁸ Singapore Higher Education Cluster Project.docx
<https://www.isc.hbs.edu/Documents/resources/courses/moc-course-at-harvard/pdf/student-projects/Singapore%20Higher%20Education%202016.pdf>

²³⁹ Ibid.

²⁴⁰ Finland - a superpower of education and innovations | University of Turku
<https://www.utu.fi/en/finland-a-superpower-of-education-and-innovations>

²⁴¹ Education and Training Monitor 2025
<https://op.europa.eu/webpub/eac/education-and-training-monitor/en/country-reports/ireland.html>

the country’s economic needs, especially in STEM. Notably, all three emphasize STEM education to support the high-tech industry. Ireland has the highest number of STEM graduates per capita in the EU²⁴²; Singapore’s universities are renowned for their excellence in engineering and computing; Finland ensures strong math/science fundamentals in schools and universities. This results in a plentiful talent pool for innovation, e.g., Ireland’s STEM graduates enjoy a nearly 95% employment [rate \[24\]](#), and Finnish and Singaporean tech graduates drive vibrant ICT sectors.

- o **Universities as Innovation Hubs:** The role of universities in research and innovation is central in each country. In Finland and Ireland, most of the publicly funded research is conducted in universities, forming the backbone of the national innovation system^{243,244}. Singapore’s top universities are similarly research powerhouses contributing to global science rankings. All three foster academic research excellence alongside industry collaboration. Each country has mechanisms for bridging academia and industry. Finland’s partnership funding for ecosystems and Business Finland’s programs connect firms with researchers²⁴⁵. Ireland has established innovation offices in TUs and on campuses to engage SMEs²⁴⁶. Singapore has joint labs and ASTAR institutes embedded within universities to

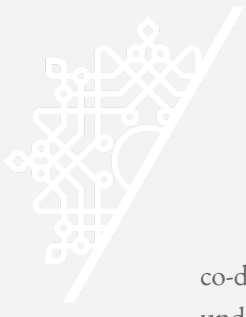
²⁴² Ibid.

²⁴³ Research & Innovation | Irish Universities Association
<https://www.iua.ie/ourwork/research-innovation/>

²⁴⁴ <https://research.fi/en/science-innovation-policy/research-innovation-system>

²⁴⁵ Ibid.

²⁴⁶ National reforms in higher education
<https://eurymice.eacea.ec.europa.eu/eurymedia/ireland/national-reforms-higher-education>



co-develop technologies²⁴⁷. The common understanding is that knowledge transfer from campus to company is crucial for economic impact. Indeed, all three have seen universities spin out startups, license patents, or attract R&D branches of multinationals (for instance, Irish universities helped lure tech giants to Dublin's Silicon Docks, ASTAR and NUS partner with pharma and chip firms in Singapore, and Finnish universities in Oulu and Espoo collaborated with Nokia and spawned new tech firms).

- o **Focus on Talent and Human Capital:** Each nation has policies to nurture research talent and highly skilled workers as drivers of innovation. Ireland is now investing in increasing PhD numbers (addressing the fact that it trails other countries in PhDs per capita)²⁴⁸. Finland traditionally produces a high number of engineers and PhDs relative to its population and continues to support doctoral training with initiatives such as the Marie Curie co-fund programs. Singapore's approach includes generous scholarships and training schemes to produce what it calls "future-ready talent" with both technical and entrepreneurial skills^{249,250}. All three recognize that research and innovation depend on people, scientists, innovators, and skilled workers, and thus invest in education-to-employment pathways, whether through internships, graduate programs, or lifelong learning for the existing workforce. Notably, lifelong learning and upskilling are

national priorities in Finland and Singapore (e.g., Singapore's SkillsFuture program and Finland's adult education culture), and Ireland is also expanding adult and vocational training (Springboard+, apprenticeships) to meet evolving skill needs^{251,252}.

Despite these similarities, the three systems also have important differences, shaped by their unique contexts:

- o **Educational Culture and Access:** Finland's system stands out for its deeply egalitarian ethos, free tuition at all levels, no tuition fees for domestic university students (and, until recently, free for all EU students), and an aversion to high-stakes testing. This has cultivated broad societal trust in education. Ireland also heavily subsidizes higher education (undergraduate tuition for EU citizens is largely covered by the state, except for a modest student contribution)²⁵³, and it targets equity through access schemes. Singapore, by contrast, charges tuition at universities, but the government provides subsidies and merit-based scholarships; students often receive grants (with a bonding requirement to work in-country) or take loans. Singapore's education culture is more competitive and exam-driven (owing to limited places at top local universities and the historical importance of high-stakes exams), whereas Finland rejects

²⁴⁷ Powering Singapore's innovation economy | Singapore EDB <https://www.edb.gov.sg/en/business-insights/insights/powering-singapores-innovation-economy.html>

²⁴⁸ https://www.iua.ie/wp-content/uploads/2025/04/Building-Ireland-Competitiveness-and-Innovation-Capacity_FullProposal.pdf

²⁴⁹ Powering Singapore's innovation economy | Singapore EDB <https://www.edb.gov.sg/en/business-insights/insights/powering-singapores-innovation-economy.html>

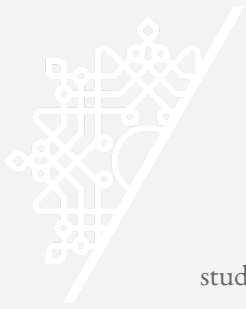
²⁵⁰ <https://file.go.gov.sg/rie-2025-handbook.pdf>

²⁵¹ National reforms in higher education <https://eurydice.eacea.ec.europa.eu/eurypedia/ireland/national-reforms-higher-education>

²⁵² Ireland's Education Revolution: How Policy, Access, and Equity Made a Global Leader - Frost & Sullivan Institute <https://frostandsullivaninstitute.org/irelands-education-revolution-how-policy-access-and-equity-made-a-global-leader/>

²⁵³ Finland - a superpower of education and innovations | University of Turku <https://www.utu.fi/en/finland-a-superpower-of-education-and-innovations>

National reforms in higher education <https://eurydice.eacea.ec.europa.eu/eurypedia/ireland/national-reforms-higher-education>



student ranking and focuses on individualized support. These cultural differences mean that, for example, Finnish students experience a less pressurized learning environment, “without putting too much pressure,” yet remain motivated²⁵⁴, while Singaporean students undergo intense preparation for national exams, reflecting two different philosophies in achieving high performance.

- o **Higher Education Structure:** Finland has a long-established binary system (academic vs applied universities) with permeability between the two. Ireland historically had a binary system (universities vs. institutes of technology), but is now merging them through Technological Universities, moving toward a more unified yet differentiated tertiary system²⁵⁵. Singapore’s tertiary structure is more stratified, comprising a few research universities, some newer specialized universities, and a separate tier of polytechnics that offer diplomas (but not full academic degrees). Many polytechnic graduates enter the workforce directly or later upgrade to degrees. This means Singapore maintains a strong vocational track at the sub-degree level (about 50% of each cohort go to polytechnics), whereas Ireland’s vocational sector is smaller (it has been expanding post-secondary “Further Education” and apprenticeship routes only recently), and Finland integrates vocational training at the secondary level and in UAS institutions. Each approach serves the population differently: Finland and Ireland aim to raise university attainment broadly (50% or more of young adults)²⁵⁶, viewing higher degrees as key to

competitiveness, while Singapore strikes a balance in which not everyone earns a degree locally (though many Singaporeans without local university spots study abroad).

- o **Role of Government vs. Autonomy:** In all three countries, universities have significant autonomy in academic matters, but the extent of government oversight varies. Singapore’s system is often described as tightly coordinated by the state; universities are autonomous in name, but their funding, major initiatives, and leadership appointments involve substantial government input to ensure alignment with national goals. For instance, the Singapore government can set enrollment targets in specific fields (such as increasing ICT or nursing graduates as needed) and launch programs, like the “Global Schoolhouse” or new schools, through top-down decisions²⁵⁷. Finland’s institutions, on the other hand, enjoy constitutional autonomy; the government sets broad strategy and performance targets (through negotiated agreements), but universities and UAS have considerable freedom in curricula and research directions, trusting that competitive funding will guide them. Ireland lies somewhere in between: its universities are autonomous but with increasing accountability (the new Higher Education Authority Act strengthens oversight), and the creation of TUs was a government-driven reform but implemented with institutional buy-in. These differences reflect governance styles: Singapore’s more centralized, technocratic planning approach versus Finland’s consensus-driven, academic self-governance model, with Ireland employing a collaborative approach within EU frameworks.

²⁵⁴ Vision for Higher Education and Research 2030

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²⁵⁶ <https://stip.oecd.org/stip/interactive-dashboards/policy-initiatives/2023%2Fdata%2FpolicyInitiatives%2F14595>

²⁵⁷ Singapore Higher Education Cluster Project.docx
<https://www.isc.hbs.edu/Documents/resources/courses/moc-course-at-harvard/pdf/student-projects/Singapore%20Higher%20Education%202016.pdf>



- o **Research Funding and Innovation Focus:** Finland invests the most in R&D (relative to its economy) and has historically had a highly research-intensive private sector (led by electronics, forestry, and engineering companies). Its innovation system is broad-based, encompassing medium-tech industries and a culture of applied innovation in everyday technologies (such as Finnish advancements in education tech and environmental solutions). Singapore's R&D funding is also sizable but more state-driven and often targeted at specific high-tech fields to build new industries (e.g., quantum computing, biotech manufacturing). Singapore's approach to innovation often centers on "anchoring" global companies and creating new deep-tech startups to diversify its economy²⁵⁸. Ireland's research funding, while growing, remains modest, and until recently, much of the innovation in Ireland's economy came from multinational companies choosing Ireland as a base (for its English-speaking talent, EU access, and tax advantages). Thus, Ireland's challenge and focus have been to boost indigenous R&D and link its universities more closely with homegrown enterprise, hence initiatives like Innovation 2020 and Impact 2030 that push for higher PhD numbers, greater commercialization, and regional innovation via TUs²⁵⁹. In contrast, Finland has long had high domestic R&D (peaking near 4% of GDP in the early 2010s) and an established culture of public-private co-invention (e.g., Nokia's success sprang from close academia-industry collaboration and state support). Singapore, being a relatively young

innovation player, has rapidly caught up in select sectors but spends slightly less of its GDP on R&D than Finland, focusing on efficiency and aligning investments to avoid waste, given its small size²⁶⁰. All three, however, are pushing for greater innovation output: Ireland to climb toward the OECD top tier, Singapore to stay ahead in Asia and move up the global value chain, and Finland to reinvigorate growth and remain an "Innovation Leader" in Europe²⁶¹.

- o **Serving Population Needs:** Each system reflects the expectations and needs of its populace. Finland's education and research serve not just the economy but a broader societal model; universities are tasked with "promoting wellbeing" and social progress alongside economic renewal²⁶². This aligns with Finnish values of welfare and equality; for instance, universities contribute to policy development and public services (education research feeding into school improvements, health science innovations supporting Finland's well-regarded healthcare, etc.). Ireland's system is increasingly focused on social inclusion and regional balance, as seen in its access programs and the mandate for TUs to spur development in their communities²⁶³. At the same time, Ireland views higher education as the path to individual social mobility, a legacy of its past, when emigration was high, and education offered a route to prosperity at home. Singapore's system, while

²⁵⁸ Powering Singapore's innovation economy | Singapore EDB <https://www.edb.gov.sg/en/business-insights/insights/powering-singapores-innovation-economy.html>

²⁵⁹ National reforms in higher education <https://eurydice.eacea.ec.europa.eu/eurypedia/ireland/national-reforms-higher-education>

²⁶⁰ [research.fi
https://research.fi/en/science-innovation-policy/research-innovation-system](https://research.fi/en/science-innovation-policy/research-innovation-system)

²⁶¹ Ibid.

²⁶² Vision for higher education and research in Finland 2030 - Finnish Government <https://valtioneuvosto.fi/en/-/1410845/vision-for-higher-education-and-research-in-finland-2030>

²⁶³ National reforms in higher education <https://eurydice.eacea.ec.europa.eu/eurypedia/ireland/national-reforms-higher-education>



certainly cognizant of social needs (e.g., recent moves to broaden university admissions beyond exam scores alone), is explicitly geared toward economic survival and competitiveness for a small nation with no natural resources. It's often said that education in Singapore is a matter of national security, given that its people are the main resource, hence a very pragmatic orientation where popular fields of study are those linked to good jobs, and research is evaluated by how it translates into economic value and national branding (such as Singapore's drive to be a biomedical hub, which even shapes university research agendas). Moreover, Singapore's higher education also serves as a hub for the region, attracting students and researchers from abroad to bolster its talent pool and soft power, a role less pronounced in Finland or Ireland (though Ireland has become a destination for many EU students due to the English language and has a growing cohort of non-EU students as well).

In conclusion, while Ireland, Singapore, and Finland differ in structure and emphasis, they share the core understanding that higher education and innovation are key to their prosperity. Each has built a system that educates its population to a high standard and then leverages that human capital to drive research, technology development, and economic growth. Ireland's journey highlights the impact of opening access and steadily building a research base to transform a developing economy into a high-tech hub^{264,265}. Singapore's experience demonstrates the power

of deliberate planning and global integration, using education as a tool to leapfrog into advanced industries²⁶⁶. Finland exemplifies how investing in people through equitable education yields not only innovation and competitiveness but also social cohesion and adaptability in a changing world²⁶⁷. These systems offer valuable lessons for any country, such as Armenia, looking to reform higher education as a catalyst for innovation: commit to quality and inclusion, align educational outcomes with economic needs, invest in research and talent, and foster collaboration between academia and industry. The exact policies may vary, but the end goal is the same, a virtuous cycle where education drives innovation, and innovation in turn drives national development^{268,269}.

²⁶⁴ Ireland's Education Revolution: How Policy, Access, and Equity Made a Global Leader - Frost & Sullivan Institute <https://frostandsullivaninstitute.org/irelands-education-revolution-how-policy-access-and-equity-made-a-global-leader/>

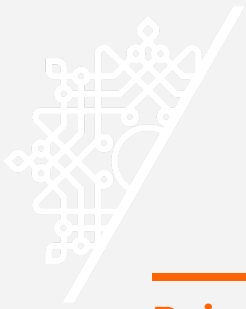
²⁶⁵ Research & Innovation | Irish Universities Association <https://www.iua.ie/ourwork/research-innovation/>

²⁶⁶ Powering Singapore's innovation economy | Singapore EDB <https://www.edb.gov.sg/en/business-insights/insights/powering-singapores-innovation-economy.html>

²⁶⁷ Finland - a superpower of education and innovations | University of Turku <https://www.utu.fi/en/finland-a-superpower-of-education-and-innovations>

²⁶⁸ Ireland's Education Revolution: How Policy, Access, and Equity Made a Global Leader - Frost & Sullivan Institute <https://frostandsullivaninstitute.org/irelands-education-revolution-how-policy-access-and-equity-made-a-global-leader/>

²⁶⁹ <https://research.fi/en/science-innovation-policy/research-innovation-system>



Reimagining Higher Education in Armenia for STEAM-Driven Prosperity

A Policy Proposal for a Distributed, Research-integrated, Industry-linked Higher Education and Innovation System (2026–2035)

Armenia's higher education system sits at the center of three national imperatives: economic competitiveness, national resilience, and societal cohesion. Yet the current model remains largely lecture-centric, fragmented across too many institutions, weakly connected to labor markets and research commercialization, and burdened by incentive structures that reward institutional survival over outcomes. At the same time, Armenia has a strategic advantage that most small states lack: a globally distributed, highly educated diaspora; a growing technology sector; and a pressing geopolitical risk that drives the development of sovereign capabilities in critical technologies. The objective of this proposal is to transform higher education from a credentialing system into an innovation engine that produces globally competitive talent, research outputs, and scalable enterprises, while also strengthening regional development and national security.

Three small-nation reference models, Singapore, Finland, and Ireland, demonstrate that higher education can be intentionally designed as an economic engine, but only when policy choices are interoperable across governance, funding, talent, pedagogy, and industry linkage. Singapore shows how to align universities and research institutes to national priorities through disciplined, mission-driven coordination and multi-year R&D investment

planning (e.g., 5-year national RIE cycles)²⁷⁰. Finland shows how autonomy-heavy systems can reliably generate deep critical thinking and adaptability, supported by strong applied RDI in Universities of Applied Sciences (UAS) that explicitly serve regional industry and problem-solving²⁷¹. Ireland demonstrates how higher education can drive employment, export earnings, and research commercialization by aligning curricula and research capacity with enterprise demand, including through Technological Universities designed to meet regional skills and innovation needs²⁷².

Armenia should not copy any one model. The proposed high-yield approach is a hybrid architecture: (1) Singapore-style priority setting and performance contracts for a small number of flagship domains; (2) Finland-style pedagogy reform that institutionalizes inquiry, writing, argumentation, and cross-disciplinary problem-solving; and (3) Ireland-style work-integrated education pathways that force curricula to stay relevant and produce graduates ready for contribution in firms, hospitals, and labs.

This proposal recommends an explicit shift away from a single-site “mega-concentration” reform logic. The current draft law debate illustrates the core risk: the “Academic City” concept, as described in public discussion, is not merely an infrastructure project; it becomes a structural constraint on distributed development. Available analysis highlights a specific concern: Article 40's framing could prohibit the construction of university academic-unit infrastructure outside the Academic City, except in narrow cases, raising concerns about proportional territorial development and regional equity.

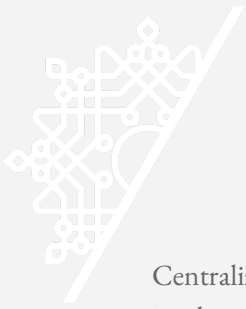
²⁷⁰ <https://file.go.gov.sg/rie-2025-handbook.pdf>

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<https://www.tandfonline.com/doi/full/10.1080/13636820.2024.2443905>

²⁷²

<https://hea.ie/policy/he-reform/technological-universities/>



Centralization also creates a single point of failure: if implementation quality is low, procurement is inefficient, or political incentives distort priorities, Armenia may spend its scarce capital on buildings rather than enhancing its capabilities. A distributed strategy, where pilots are implemented first and then scaled, reduces execution risk and increases the likelihood that reforms deliver measurable outcomes.

This proposal, therefore, advances a Distributed STEAM & Innovation Network: a small number of high-focus national domains, each anchored by a flagship hub (or “cluster”) connected to (a) universities and merged/strengthened institutions, (b) modernized Academy/NAS institutes integrated through joint governance and joint appointments, and (c) industry partners and diaspora labs. The domains should be narrow enough for excellence and deep enough for sovereignty. A practical starting set includes **AI/ML & cybersecurity, microelectronics & precision engineering, robotics & autonomous systems, biotech/life sciences & med-tech, agro-tech & climate resilience** (and, where appropriate, dual-use R&D with transparent safeguards and international compliance).

The transformation requires five interlocking reforms:

First, governance and system design. Armenia should reduce fragmentation by moving from dozens of “universities in name” to a tiered system with differentiated missions: (i) a small number of research-intensive universities; (ii) a network of applied/technological universities serving regions; and (iii) specialized institutes with clear mandates. Public debate already highlights that Armenia has a relatively high number of higher education institutions per capita and an extreme concentration in Yerevan (e.g., 53 institutions, 42 of which are in Yerevan, as cited in the analysis), which signals inefficiency rather than

capacity²⁷³. Consolidation should be incentivized and quality-driven, not purely headcount-driven. Reforms should preserve autonomy and reward outcomes (graduate employment, research quality, external grant wins, industry income, and teaching quality).

Armenia’s higher education system should be restructured around a tiered model with clearly differentiated missions, replacing the current fragmented landscape in which nearly all institutions claim “university” status regardless of capacity or function. The purpose of this differentiation is not hierarchy for its own sake, but rather strategic clarity: institutions must be designed to excel in a small number of areas, rather than struggling to perform many tasks poorly. A sustainable system requires three complementary tiers: a limited number of research-intensive universities, a regional network of applied and technological universities, and specialized institutes with narrow, accountable mandates.

At the apex of the system should be a small national core of research-intensive universities, effectively Armenia’s “R1” institutions. The objective of this tier is to concentrate doctoral training, internationally competitive research, advanced laboratories, and globally benchmarked faculty lines into a handful of institutions capable of achieving real international visibility. Given Armenia’s population size and fiscal constraints, this core should realistically consist of three to five institutions nationwide, each operating under explicit five-year performance contracts with the state. These contracts should tie continued funding and autonomy to measurable outcomes, including external grant success, PhD production, field-normalized publication impact, patenting and licensing activity, industry-sponsored research income, and graduate placement in high-skill sectors.

²⁷³ Ibid.



Several existing institutions are well-positioned to anchor this R1 tier if appropriately restructured and resourced.

- o Yerevan State University should serve as the country's comprehensive research anchor, with strengths spanning mathematics, physics, computer science, life sciences, and the social sciences.
- o The National Polytechnic University of Armenia should be consolidated and elevated to the status of the primary institution for engineering and applied physics, with a focus on microelectronics, robotics, advanced manufacturing, and systems engineering.
- o Yerevan State Medical University should serve as the nucleus of a clinical-translational research consortium that integrates biomedicine, public health, and bioengineering interfaces.
- o The Armenian National Agrarian University should anchor national efforts in agrotechnology, food systems, climate resilience, and "one-health" research.
- o In addition, a competitive private-university track, most plausibly institutions with AUA-like governance and co-funding capacity, should be allowed to enter the R1 tier if they meet research performance criteria, both to strengthen pluralism and to avoid an overly monopolistic public system.

Achieving this concentration requires difficult but unavoidable consolidation. Many small, duplicative Yerevan-based institutions that function primarily as classroom-teaching entities without credible research output should not continue as independent universities. Where quality programs exist, they should be absorbed as schools or colleges within R1 universities or reconstituted as teaching-focused units

within applied technological universities. Institutions that fail to meet minimum academic, governance, and integrity standards should be closed through orderly teach-out processes. For the R1 institutions themselves, several design principles are essential: protected research time and reduced teaching loads for research-active faculty; English-medium instruction as the default for STEM and graduate education to ensure international competitiveness; and joint appointments with national laboratories and institutes to pull discovery research directly into university training pipelines. This integration of universities, institutes, and industry, often described as a missing "Borromean ring" in Armenia's system, is central to building a functioning research ecosystem.

The second tier should consist of a distributed network of applied and technological universities serving Armenia's regions and functioning as the backbone of workforce development and practice-based innovation. The goal of this tier is not to replicate research universities, but to produce high-quality, employment-linked graduates, conduct applied research and prototyping with local industry, and reduce the risks associated with over-centralization in Yerevan. This emphasizes that Armenia needs to distinguish research and applied teaching missions rather than forcing all institutions into a single, unrealistic model.

A practical target would be six to ten applied or technological universities, or consolidated regional campuses, each located in key economic regions and built through the merger of existing regional universities and weak branch campuses. Each such institution should be required to embed work-integrated learning, operate under strong industry advisory boards with real authority over curriculum relevance, maintain shared prototyping and testing facilities, and offer stackable credentials that connect vocational education to degree



pathways. Smaller regional institutions should not maintain separate rectorates and administrative systems when the scale is insufficient; instead, they should be integrated into regional hubs that preserve educational access while enhancing quality and efficiency. This approach directly addresses warnings that indiscriminate centralization or closure of regional institutions risks exacerbating inequality, accelerating urban migration, and undermining national resilience. Regional higher education must be strengthened, not hollowed out.

The third tier should comprise specialized institutions with narrow, clearly defined mandates. Certain domains, such as arts and cultural conservatories, military and diplomatic academies, teacher-education institutes, and highly focused postgraduate entities, do not benefit from being labeled comprehensive universities. These institutions should be retained only where they meet governance and quality criteria, and they should be evaluated using mission-appropriate metrics rather than research rankings. Their charters should be explicit and limited, their outcomes transparent, and their accountability rigorous. Duplication of programs offered elsewhere should not be permitted unless there is a compelling national rationale and a demonstrable, unique capability.

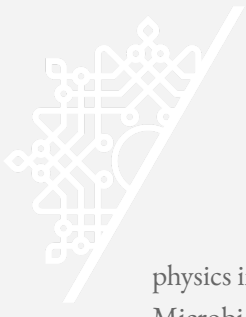
To operationalize consolidation across all three tiers, Armenia should adopt a function-based triage approach rather than making politically driven decisions. Every institution should be classified into one of five categories: R1 candidate, applied/technological candidate, specialized institute candidate, program provider suitable for absorption, or non-viable. Non-negotiable minimum standards should apply across the system, including independent governance, audited finances, academic integrity controls, faculty qualification thresholds, program-level outcome reporting, and external

quality assurance. Institutions that fail to meet these standards should either be absorbed at the program level or closed, with protected student pathways in place. Importantly, mergers should be incentivized rather than imposed, using tools such as competitive infrastructure funding, faculty salary upgrades, procurement fast-tracking, and guaranteed campus modernization support.

In parallel with university consolidation, Armenia must unify its fragmented research landscape, particularly the National Academy of Sciences, the Alikhanyan National Laboratory, the Microbiology Center, and other state research institutes. The Soviet-era separation between teaching universities and research academies has produced weak graduate training environments, duplicated infrastructure, low grant competitiveness, and limited industry translation. The solution is not abrupt dissolution, but the creation of a National Research and Innovation Network that forces interoperability while preserving scientific capacity.

Under this model, institutes and laboratories would be grouped into approximately eight to twelve thematic research networks, each jointly led by an R1 university dean and an institute or lab director. Governance would rest with an independent board composed primarily of external members, including diaspora scientists, international experts, industry representatives, and civil society. Every institute would be required to host graduate students through an R1 partner, and every principal investigator would hold a university-affiliated appointment with mentoring obligations. Graduate curricula would be housed at universities, while thesis research could take place in an institute or lab settings.

Within this framework, the Alikhanyan National Laboratory should serve as the flagship node for a national network of physics, photonics, quantum, and advanced materials, federating overlapping NAS



physics institutes and sharing core facilities. The Microbiology Center should anchor a life sciences, immunology, biodefense, and biotechnology translation network linked to medical and agrarian universities, including a national biobank and standardized biosafety infrastructure. Other NAS institutes should be rebundled into thematic networks rather than remaining as 32 standalone entities, with shared administration, shared equipment inventories, and regular external review cycles. Institutes that persistently underperform should be merged or closed, while strategically important but small units should continue as programs within larger networks, rather than as separate legal bodies.

Finally, the three tiers must be developed with operational rigor. Research-intensive universities should operate under five-year performance contracts that specify priority domains, hiring plans, graduate training targets, and international partnership goals, and be supported by professional research operations units capable of competing for EU and U.S. funding. Applied universities should focus on a limited number of regionally relevant programs with mandatory co-ops, sponsored capstones, and clear pathways from vocational education. Specialized institutes should operate under narrow charters with transparent scorecards aligned to national service outcomes. Together, these reforms would replace Armenia's diffuse and inefficient higher education system with a coherent, accountable, and future-oriented architecture.

Second, a talent strategy with credible

incentives. A small nation cannot outspend global competitors; it must out-design them. Armenia should establish a national endowment-backed talent program that funds 100 high-quality STEM faculty lines (renewable milestone contracts) and 200–300 competitive doctoral fellowships linked to the priority

domains. The endowment architecture matters because it partially insulates education and research from annual political cycles and fiscal shocks. Meanwhile, diaspora engagement should be operational, not rhetorical: “tours of duty,” joint appointments, remote co-teaching, visiting lab networks, and shared graduate supervision should become standard mechanisms with streamlined hiring and visa pathways.

A credible talent strategy must be built around clear requirements, reciprocal commitments, and durable funding mechanisms. For Armenia, the objective is not simply to attract talent, but to anchor it to national priorities and ensure that public investment translates into long-term capacity building within the country. Faculty appointments and doctoral fellowships funded through the national endowment should therefore be subject to explicit service and performance commitments. Endowment-backed STEM faculty lines should be offered as five-year, milestone-renewable contracts with competitive regional compensation, start-up research packages, and guaranteed access to shared national core facilities. In return, faculty members must commit to a sustained physical presence in Armenia for a defined portion of the year, actively participate in graduate training, and make measurable contributions to research output, external grant acquisition, and industry or societal engagement aligned with priority domains. Renewal should be contingent on transparent evaluation against pre-specified benchmarks, including mentoring of doctoral students, international collaboration, and integration into national research networks.

Doctoral fellowships should be similarly structured to align training with national needs while preserving academic excellence. Competitive fellowships should cover full tuition, living stipends, research expenses, and international mobility, but be linked to a



post-graduation service commitment within Armenia, such as employment in academia, public research institutes, industry R&D, or mission-critical government laboratories for a defined period. Flexible repayment or service-offset mechanisms can balance individual choice with national return on investment, allowing fellows to fulfill their obligations through teaching, applied research, or entrepreneurial activity rather than rigid placement mandates. This approach reinforces a culture of contribution without discouraging high-caliber candidates.

Diaspora engagement must move beyond symbolic inclusion and be operationalized through standardized, low-friction mechanisms. A national “diaspora faculty and scientist” framework should enable joint appointments between Armenian institutions and leading foreign universities or laboratories, with clearly defined expectations for teaching, supervision, and collaborative research. Short-term “tours of duty” lasting several weeks to a semester should be formally recognized in promotion and evaluation systems, allowing diaspora scholars to contribute intensively without requiring permanent relocation. Remote co-teaching and shared graduate supervision should be normalized through digital infrastructure and harmonized academic calendars, ensuring that students benefit from global expertise while remaining embedded in Armenian institutions. Visiting lab networks, supported by competitive seed grants and travel funds, can further institutionalize collaboration and reduce dependence on individual relationships.

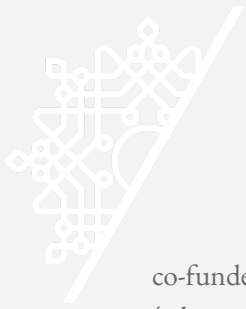
Funding for this talent strategy must be stable, transparent, and shielded from short-term political pressures. A professionally managed national endowment, capitalized through a combination of state seed funding, diaspora contributions, philanthropic capital, and strategic development finance, should underwrite faculty lines, fellowships,

and mobility programs. Annual payouts should be rule-based and insulated from discretionary interference, with public reporting on returns, allocations, and outcomes. Complementary funding streams, such as matched industry sponsorships, international grants, and cost-sharing with host institutions, can amplify impact while reinforcing accountability. Together, these mechanisms ensure that Armenia competes not by matching global salaries but by offering a coherent, mission-driven ecosystem in which talented individuals can build meaningful careers, contribute to national development, and remain connected to the global scientific community.

This integrated talent strategy transforms human capital from a chronic vulnerability into a strategic asset, anchoring expertise within Armenia while leveraging the full reach of its global diaspora.

Third, research–industry integration as a requirement, not an aspiration. Each priority hub should include shared core facilities, translational infrastructure, and co-funded industry labs. Singapore’s RIE ecosystem explicitly emphasizes creating value from R&D investment and linking research capability to enterprise transformation and national needs. Ireland’s Technological Universities and enterprise-linked reforms show how a regionally distributed skills-and-innovation engine can be built when institutions are designed to engage employers and build applied capacity. Armenia should create a modern Technology Transfer & Applied Innovation framework (IP rules, royalty sharing, conflict management, and seed funding) that is consistent across institutions.

Each designated priority hub, whether in AI, microelectronics, biotechnology, agro-tech, or advanced engineering, should therefore be structured around three non-negotiable components: shared core facilities, translational infrastructure, and



co-funded industry laboratories. Shared core facilities (advanced instrumentation, clean rooms, prototyping workshops, biobanks, high-performance computing, testing and validation labs) reduce duplication, increase utilization rates, and enable small firms to access capabilities they cannot afford to acquire independently. Access rules should be national, transparent, and priced through standardized user fees, with subsidized access for students and early-stage startups. This ensures that public investment translates into broad economic value rather than institutional silos.

Translational infrastructure must bridge the gap between discovery and deployment. This includes applied research units, proof-of-concept funding, regulatory and standards expertise, clinical or field-testing platforms, and professional staff who specialize in commercialization rather than expecting faculty to manage these functions alone. Singapore's Research, Innovation and Enterprise (RIE) framework explicitly links public R&D investment to national missions and enterprise transformation, emphasizing downstream impact, co-funding with industry, and measurable economic outcomes alongside scientific excellence. Armenia can adapt this logic on a smaller scale by requiring that a defined share of public research funding in priority domains be matched by industry contributions, financial or in-kind, and tied to clearly articulated use cases.

Co-funded industry laboratories should be integral to priority hubs, not peripheral. These labs should be jointly governed by universities, national research institutes, and firms, with shared intellectual property rules and multi-year research agendas aligned with market needs. Faculty participation in such labs should be considered in promotion and contract renewal decisions, while industry scientists should be eligible for adjunct academic appointments. This dual affiliation model enhances knowledge flow, improves

the relevance of research questions, and fosters natural pathways for student internships, thesis projects, and eventual employment opportunities.

Ireland's experience with Technological Universities and enterprise-linked research centers illustrates how a regionally distributed skills-and-innovation engine can be built when institutions are explicitly designed to engage employers. Cooperative education, industry-sponsored capstones, applied doctoral programs, and regional innovation centers ensure that higher education contributes directly to productivity and export growth. For Armenia, this model is particularly relevant outside Yerevan, where applied universities can serve as anchors for local firms in agribusiness, manufacturing, logistics, energy systems, tourism technologies, and medical device servicing. Such institutions should be evaluated not only on teaching quality but also on employer engagement, graduate employment outcomes, contract research income, and contribution to regional development.

To enable this integration at scale, Armenia must establish a modern, unified Technology Transfer and Applied Innovation framework that applies consistently across universities and research institutes. Currently, IP ownership, royalty sharing, conflict-of-interest management, and startup formation rules are fragmented or unclear, which discourages both faculty entrepreneurship and private investment. A national framework should define default IP ownership (with institutional ownership and inventor revenue sharing), standardized royalty splits, clear rules for faculty equity participation and time allocation, and transparent processes for licensing and spin-out creation. Seed funding mechanisms, co-financed by the state, diaspora investors, and development partners, should be linked directly to technology transfer offices to support early-stage commercialization.



Critically, compliance with research–industry integration requirements should be enforced through funding and governance mechanisms. Priority hubs and institutions should be eligible for infrastructure and core funding only if they demonstrate active industry partnerships, co-funded projects, and measurable translational outcomes. Performance contracts should include metrics such as industry research income, number of joint labs, licensing revenue, startup formation, and employer participation in curriculum design. In this way, integration becomes a condition of legitimacy and sustainability rather than an optional ambition.

By integrating research–industry partnerships into institutional architecture, funding rules, and accountability systems, Armenia can ensure that public investment in higher education and research yields tangible economic and societal benefits. This approach aligns scientific capability with enterprise needs, strengthens regional economies, and positions higher education as a central driver of national resilience and growth rather than an isolated academic sector.

Fourth, pedagogy modernization that explicitly targets critical thinking. Finland’s strength is not merely “good schools”; it is a system-level norm of inquiry, student agency, and problem-solving that creates adaptable graduates, while UAS RDI serves as an applied innovation layer for regions²⁷⁴. Armenia should embed writing, argumentation, and project-based learning in every STEAM program, including structured “capstone” work with real sponsors. AI literacy should be integrated across disciplines (not confined to computer science), and English-medium STEAM education should expand

rapidly, increasing global integration and access to frontier knowledge.

At the curricular level, this requires redesigning degree programs around a limited number of core competencies rather than proliferating disconnected courses. Every undergraduate STEAM program should include a vertically integrated sequence in analytical writing, quantitative reasoning, and problem formulation, beginning in the first year and culminating in a senior capstone. These courses should explicitly teach students how to frame research or engineering questions, evaluate evidence, build and test hypotheses, design alternatives, and defend conclusions in both written and oral forms. Finland’s universities and universities of applied sciences provide a strong model in this regard, particularly in how inquiry-based modules replace traditional exams with portfolios, design notebooks, and iterative project reports. Armenia can import these pedagogical frameworks, not wholesale syllabi, but structural templates, and adapt them to national priorities and language realities.

Project-based learning should become mandatory rather than elective. Each STEAM program should embed at least one major project per academic year that addresses a real problem: an industry challenge, a public-sector need, a research question from a national lab, or a community-based application. Ireland’s technological universities offer a valuable reference point in which capstone projects are co-designed with employers and jointly assessed by faculty and external partners. For Armenia, this approach should be adapted to include not only private firms but also hospitals, agricultural cooperatives, energy providers, defense-adjacent research entities where appropriate, and public agencies. Importantly, projects should be graded not only on technical correctness but also on the clarity of reasoning, the quality of assumptions, the use of

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<https://www.tandfonline.com/doi/full/10.1080/13636820.2024.2443905?>



evidence, teamwork, and the ability to communicate trade-offs.

Hands-on learning must be supported by deliberate investment in teaching laboratories and maker-style environments, even at a modest scale. Rather than attempting to equip every institution with cutting-edge facilities, Armenia should develop shared teaching labs aligned with priority domains, such as electronics prototyping, materials testing, computational modeling, wet-lab fundamentals, and data analytics, that are accessible across institutions within a region. Finland's UAS RDI platforms and Germany's applied lab models demonstrate that high educational impact does not require maximal sophistication, but reliable access, structured lab pedagogy, and integration with coursework. Lab exercises should be redesigned to emphasize experimental design, error analysis, and interpretation, rather than relying on the rote execution of predefined protocols.

AI literacy represents a cross-cutting pedagogical imperative. Armenia should treat AI not as a standalone discipline confined to computer science, but as a general analytical tool akin to statistics or computing. Coursework in engineering, life sciences, economics, and even humanities-adjacent fields should include applied modules on data literacy, algorithmic reasoning, and the responsible use of AI tools for modeling, simulation, and decision support. Singapore's approach, embedding AI competencies across disciplines while maintaining strong ethical and governance frameworks, offers a practical reference. Armenia should adapt these materials by emphasizing applied use cases relevant to local industries and public needs, and by training faculty to integrate AI tools into assignments without undermining fundamental reasoning skills.

Language of instruction is a critical enabler of pedagogical reform. Expanding English-medium

instruction in STEAM is not primarily about prestige, but about access to current knowledge, open educational resources, and global collaboration. Armenia should prioritize English-medium delivery for upper-division undergraduate and graduate STEAM courses, while maintaining Armenian-language support at the foundational level to ensure inclusivity. Finland and the Netherlands provide instructive examples of how to balance national language preservation with international integration. Faculty development programs must accompany this shift, including funded training in English-medium teaching and access to high-quality open courseware from leading institutions.

Equally important is faculty preparation. Pedagogical modernization cannot succeed if faculty are expected to adopt new teaching methods without adequate training, sufficient time, or appropriate incentives. Armenia should establish national faculty development programs focused on inquiry-based teaching, critical thinking assessment, and project supervision. These programs can draw on Finnish teacher-training models, which emphasize pedagogy as a scholarly discipline, and on Irish practice-based teaching fellowships embedded in industry-linked institutions. Participation in such programs should be tied to promotion criteria and teaching load adjustments, signaling that high-quality teaching is a core institutional responsibility rather than a secondary obligation.

Finally, assessment systems must be aligned with these pedagogical goals. If exams continue to reward memorization and speed rather than reasoning and synthesis, curricular reform will fail. Armenia should pilot alternative assessment frameworks, including rubric-based project evaluations, oral defenses, reflective essays, and team-based deliverables that explicitly measure critical thinking and applied competence. National quality assurance bodies



should revise accreditation standards to recognize these forms of assessment as valid and desirable, drawing on European Standards and Guidelines for Quality Assurance and best practices from Finland and Ireland.

In summary, the modernization of pedagogy in Armenia must be understood as a system redesign rather than a collection of isolated innovations. By importing proven inquiry-based and applied teaching frameworks from Finland, Ireland, and select Singaporean programs, adapting them to the Armenian language, labor market, and institutional realities, and embedding them consistently across curricula, Armenia can produce graduates who are not only technically trained but also capable of independent reasoning, collaboration, and innovation. This is essential for building a resilient STEAM workforce and for ensuring that higher education serves as a true engine of national development rather than a credentialing pipeline.

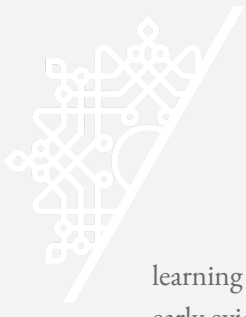
Fifth, a staged implementation roadmap with measurable outcomes. The critical failure mode in reforms is building structures without building capabilities. Implementation must be sequenced through pilots with clear KPIs and independent evaluation. Armenia's education and employment strategies already emphasize improving education–labor market linkages and work-based learning as key pillars; this proposal turns that emphasis into an execution plan with accountability and financing logic.

A recurring failure mode in higher-education reform, especially in small states under fiscal and geopolitical pressure, is the construction of new institutional forms without the parallel development of human, organizational, and execution capacity. Armenia must therefore treat implementation not as a legislative endpoint, but as a managed, evidence-driven process anchored in pilots, measurable outcomes, and

independent evaluation. Rather than launching system-wide reforms simultaneously, change should proceed through a limited number of well-designed pilots in priority domains and regions, with clear performance benchmarks and explicit “scale or stop” decision points.

Each pilot, whether an R1 research hub, a regional technological university, a national laboratory network node, or an industry-linked training program, should operate under a compact of defined key performance indicators (KPIs) that reflect both educational quality and economic relevance. At the institutional level, core KPIs should include external competitive grant success (EU, US, industry), research outputs normalized by field (publications, citations, patents), doctoral completions and time-to-degree, graduate employment outcomes within priority sectors, industry-sourced research or training income, and student progression and completion rates. Pedagogical reform should be tracked by evidence of project-based learning adoption, capstone completion with external sponsors, student assessments of critical-thinking and writing outcomes, and the proportion of programs delivered in English within STEAM fields.

At the system level, milestones should be sequenced across three horizons. In the first 12 months, success should be measured by governance readiness and capacity building, including the establishment of independent boards, the execution of performance contracts, the launch of pilot endowment-backed faculty lines and doctoral fellowships, the consolidation of administrative functions, and the deployment of professional grant support and technology transfer offices. By 24–36 months, the evaluation should shift toward functional outcomes, including demonstrated increases in grant applications and awards, sustained industry partnerships, operational co-op and work-integrated



learning pipelines, shared use of core facilities, and early evidence of regional economic engagement. By 48–60 months, outcome-level indicators, graduate retention in Armenia, startup formation, licensing income, regional employment multipliers, and international research standing, should determine whether pilots are scaled, restructured, or discontinued.

Independent evaluation is essential to credibility. External review panels with international and diaspora representation should assess pilot performance against predefined metrics on a rotating cycle, ensuring that political pressures do not override evidence. Funding tranches, whether state allocations, endowment disbursements, or donor contributions, should be explicitly tied to milestone achievement, reinforcing a culture of accountability and continuous improvement.

This approach directly operationalizes priorities already articulated in Armenia’s education and employment strategies, particularly the emphasis on education–labor market alignment and work-based learning noted in ETF analyses. The difference is execution: this proposal embeds those goals into enforceable contracts, financing logic, and measurable outcomes rather than aspirational language.

Ultimately, the objective is not the creation of a single prestigious campus or symbolic flagship, but the development of a national capability system, distributed across institutions and regions, resilient to shocks, and disciplined by performance. If Armenia focuses its efforts, aligns incentives with outcomes, protects institutional autonomy while enforcing accountability, and treats research–industry integration and pedagogical reform as core infrastructure rather than add-ons, it can realistically produce globally competitive STEAM talent and innovation at scale.

Recommendations

1. Reject single-point centralization as the primary strategy; adopt a distributed hub model

The “Academic City” concept, particularly if it constrains universities from maintaining academic infrastructure outside a designated zone, risks undermining regional development, increasing the risk of single points of failure, and turning reform into a construction program rather than a capability program²⁷⁵.

Recommendation: Any Academic City investment, if pursued at all, must be reframed as one node within a national network, not the node. No law or regulation should prohibit universities from maintaining regional academic and research units. (A distributed model also directly supports proportional territorial development concerns raised in the policy debate.)²⁷⁶

2. Build a tiered higher education system with differentiated missions and quality-linked consolidation

Forced consolidation based on simple thresholds (e.g., student headcount) can degrade quality and reduce flexibility; policy critiques note the lack of international precedent for minimum enrollment thresholds as a licensing determinant²⁷⁷.

Recommendation: Consolidation should be achieved through incentives, including competitive funding eligibility, governance reforms, accreditation standards tied to the mission, and performance contracts, not blunt mandates.

²⁷⁵

<https://evnreport.com/law-society/new-law-on-higher-education/>

²⁷⁶ Ibid.

²⁷⁷ Ibid.



3. Choose 5–7 national advantage domains and fund them with performance contracts

Recommendation: Establish a National Priority Domains Council (comprising industry, academia, diaspora, and security/critical infrastructure expertise) to set five-year goals, in the spirit of Singapore’s multi-year planning cycles for R&D investment.

4. Create an endowment-backed talent pipeline

Recommendation: Launch a \$100–150M initial endowment target (with governance outside day-to-day politics), funding:

1. 100 milestone-renewable faculty chairs (open global recruitment)
2. 200–300 PhD fellowships tied to priority hubs
3. core facility instruments and shared platforms

5. Make work-integrated education mandatory in applied and clinical fields

Recommendation: Require co-ops/placements/capstones for Technological/Applied institutions, aligned with Ireland’s emphasis on technological universities and enterprise engagement²⁷⁸.

6. Modernize applied RDI through regional institutions

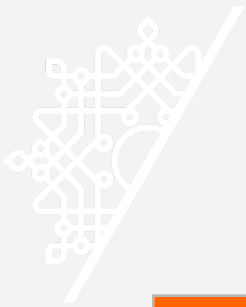
Recommendation: Build a UAS-like applied RDI function in Armenian regions, drawing from Finland’s applied RDI model, where UAS RDI spans applied research through commercialization and regional development²⁷⁹.

²⁷⁸

<https://hea.ie/policy/he-reform/technological-universities/>

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<https://tki.fi/research-development-and-innovation-rdi-in-universities-of-applied-sciences/>



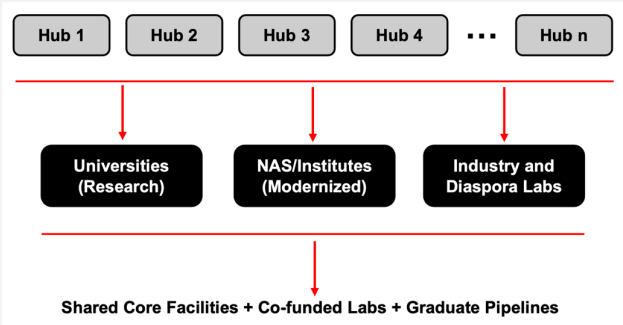
Dimension	Singapore	Finland	Ireland	Armenia: What to borrow
System posture	Mission-driven coordination and fast execution	Autonomy-heavy, high trust, deep learning	Enterprise-linked ecosystem and regional skills engines	Combine priority-setting + autonomy + enterprise pathways
R&D funding logic	Multi-year national cycles (RIE-style planning) ²⁸⁰	Stable, broad capability-building; applied RDI via UAS ²⁸¹ tki.fi+1	Applied capacity + regional reforms via Technological Universities ²⁸²	5-year plans + independent evaluation + distributed pilots
Industry linkage	Shared institutes, translational infrastructure, industry labs	Strong regional problem-solving with applied institutions	Demand-led research centers; enterprise engagement	Co-funded labs, mandatory placements, sponsor-driven capstones
Pedagogy outcome	Critical thinking within structured pathways	Inquiry, synthesis, student agency	Strong WIL and research-based education	Mandatory writing/argumentation + PBL + AI literacy
Main risk	Over-structured; dependency on central planning	Diffusion without focus	Exposure to external capital cycles	Solve via focus domains + diversified partners

Comparative Visuals

A) “Small-Nation Models”
Comparison Table (design principles)

B) System Architecture Diagram (recommended)

National Priority Domains Council



(5-year targets, evaluation, funding envelopes)

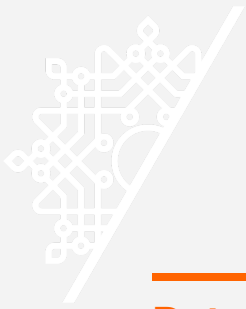
²⁸⁰ <https://file.go.gov.sg/rie-2025-handbook.pdf>

²⁸¹

<https://tki.fi/research-development-and-innovation-rdi-in-universities-of-applied-sciences/>

²⁸²

<https://hea.ie/policy/he-reform/technological-universities/>



Detailed Proposal

1) Context and Problem Definition

Armenia's system struggles with (i) outdated curricula and limited research-integrated teaching; (ii) excessive institutional fragmentation; (iii) weak labor-market linkage; (iv) incentives that reward compliance and survival rather than outcomes; and (v) separation of research from universities via legacy institute structures. Meanwhile, Armenia faces demographic and migration challenges and requires innovation-led growth to build resilience. Broader European partnership frameworks emphasize strengthening links between education and labor markets and advancing work-based learning, yet execution requires governance, financing, and institutional redesign.

2) Why “Academic City” Centralization Is High-Risk

The Academic City concept is often justified in the name of efficiency and prestige. The problem is not the desire for excellence; it is the policy's design. Public analysis of the Draft Law warns that the Academic City framing could effectively restrict universities from building academic unit infrastructure outside the designated territory (except for narrow geographic/climatic exceptions). This carries five risks:

1. **Regional hollowing-out:** students and talent drain from regions, weakening local innovation capacity.
2. **Single-point execution failure:** a single procurement or governance failure can become a national failure.

3. **Misallocation:** infrastructure spending outpaces capacity development (faculty, labs, governance, curricula).
4. **Reduced flexibility:** universities lose the ability to partner regionally with industry or hospitals.
5. **Political capture:** concentrated assets become easier to politicize.

Policy requirement: Armenia should adopt “distributed excellence,” where infrastructure is aligned with validated capabilities.

3) Vision (2030–2035)

A globally connected, English-capable STEAM higher education system that produces (i) high-employability graduates; (ii) internationally competitive research outputs; (iii) translational innovation and startups; and (iv) regionally distributed opportunity and resilience.

4) Pillars and Programs

Pillar A: Governance Reform and NAS Modernization

Goal: integrate research and teaching, reduce duplication, enforce quality, and protect autonomy while demanding outcomes.

Key actions:

- Establish an independent Higher Education & Innovation Quality Authority with external reviewers and public scorecards (teaching quality, employability, research outputs, integrity metrics).
- Create mission-based accreditation categories: Research Universities, Technological/Applied Universities, Specialized Institutes, and Colleges.
- Modernize the Academy/NAS institute ecosystem through joint governance and joint appointments, rather than purely administrative



absorption: institutes become “National Research Networks” aligned with priority hubs.

Pillar B: Talent and Faculty Excellence

Key actions:

- 100 endowed milestone-renewable faculty chairs globally recruited; reduced teaching loads; startup packages tied to hub priorities.
- Doctoral fellowships tied to hub labs and co-supervised with diaspora or partner universities.
- Diaspora operationalization: “tours of duty” (8–12 weeks/year), joint appointments, remote co-teaching, visiting committees.

Pillar C: Finance and Infrastructure as Capability, Not Construction

Key actions:

- National endowment with professional governance (investment committee, independent audit, conflict safeguards).
- Procurement reform for scientific equipment (fast-track, tax simplification, transparent vendor frameworks).
- Shared core facilities per hub (imaging, microfab, wet lab, HPC, prototyping) with fee-for-service models.

Pillar D: Research–Industry Integration and Global Value Chains

Key actions:

- Co-funded labs (industry pays + public matches) and sponsored capstones.
- Uniform national IP policy and TTO standards: inventor share, university share, lab share, conflict rules.

- Seed + venture co-fund with diaspora capital and credible investment governance.

Pillar E: Curriculum and Pedagogy Modernization (Critical Thinking by Design)

Key actions:

- Project-based learning requirements in every year of STEAM programs.
- Writing and argumentation requirements embedded across courses (not “one writing class”).
- AI literacy integrated across disciplines (including data ethics, verification, reproducibility, and computational thinking).
- English-medium STEAM expansion where it increases global alignment and access.

Pillar F: National Laboratories Network (Distributed)

Key actions:

- Establish national lab “nodes” linked to hubs, modeled as shared platforms supporting universities and firms, rather than standalone bureaucracies.
- Each node has: mission charter, external advisory board, open access rules, and measurable outputs.



About the Authors

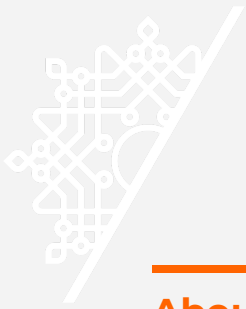
Khachatur Stepanyan is a Doctor of Historical Sciences, Professor, and Head of the Chair of World History and Its Teaching Methodology at the Armenian State Pedagogical University named after Khachatur Abovian, and a history teacher. His scholarly interests include the Armenian national liberation movement of the late 19th and early 20th centuries; the Armenian Revolutionary Federation; the First Republic of Armenia (1918–1920); Armenian–Georgian relations; Armenian diaspora socio-political thought of the 1920s–1930s; Armenian population movements; the history of Soviet Armenia and Transcaucasia; Sovietology; as well as issues of history education. He is the author of eight monographs, approximately 150 scientific articles, one textbook, and co-author of two educational manuals. He is also engaged with key education issues in Armenia and is a member of several educational expert groups.

Ara Nazarian is an Associate Professor of Orthopaedic Surgery at Harvard Medical School and an Affiliated Professor of Mechanical Engineering at Boston University. He currently serves as the Vice Chair of Research Affairs at the Carl J. Shapiro Department of Orthopaedic Surgery at Beth Israel Deaconess Medical Center. He serves as an Affiliated Professor of Orthopaedic Surgery at the Yerevan State Medical University and is on the board of the Zaven & Sonia Akian College of Science and Engineering at the American University of Armenia and the Armenian Society of Fellows. He is a co-author on over 230 peer-reviewed scientific articles, more than 35 patents and patent applications, and has mentored more than 250 trainees.

About the Institute

The Aram Manoukian Institute for Strategic Planning has been formed to work with experts in various fields to develop plans for the future of the Armenian nation in Armenia, Artsakh, and the Diaspora. The overarching vision of the Institute is to work towards creating a prosperous and just society in Armenia, Artsakh, and the Armenian diaspora, where the rights and dignity of all individuals are respected and where peace, democracy, and sustainable development are achieved.

The Institute will identify appropriate target audiences, including government officials, civil society organizations, academia, businesses, and the public, to ensure its work reaches a broad range of stakeholders. It will also build a diverse team with expertise from various fields, including academics, practitioners, members of the Armenian diaspora, and youth, to provide a holistic perspective on addressing the nation's challenges. Additionally, it underscores the significance of developing partnerships and collaborations with government agencies, NGOs, research institutions, businesses, international organizations, and diaspora organizations to leverage resources and knowledge effectively. The Institute's agenda will focus on pressing issues such as national security, economic development, education, good governance, health care, diaspora engagement, and environmental sustainability. By addressing these challenges through research-based insights and policy recommendations, the Institute will contribute toward the betterment of the Armenian nation.



About the Institute's Namesake

Aram Manoukian, born in 1879, was a prominent Armenian revolutionary who played a pivotal role in the formation of the First Armenian Republic in 1918. His educational journey began in local Armenian schools, followed by studies at the St. Petersburg Polytechnic Institute in Russia.

While still a student in St. Petersburg, Manoukian became deeply involved in the Armenian national liberation movement. In 1902, he formally joined the Armenian Revolutionary Federation (ARF) and actively participated in various ARF activities, including armed struggles against oppressive regimes in the Caucasus and the Middle East, notably the Ottoman Empire. He successfully led the self-defense of Van, saving the lives of tens of thousands of Armenian civilians from deportation and massacre by the Turkish government.

In 1917, after the Russian Revolution, Manoukian returned to Armenia and assumed a central role in establishing the First Armenian Republic in 1918. He served as the commander-in-chief of Armenian forces during intense battles against Ottoman forces in the Caucasus, ultimately securing Armenia's independence.

Beyond his military leadership, Manoukian's contributions extended to politics and economics in the nascent republic. As the prime minister, he championed social justice, equality, and progressive policies, focusing on land reform, education, and other measures to improve the lives of ordinary Armenians.

Today, Aram Manoukian's legacy endures, serving as a timeless source of inspiration for Armenians, commemorating his unwavering dedication to his nation and his role as a patriotic statesman.



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