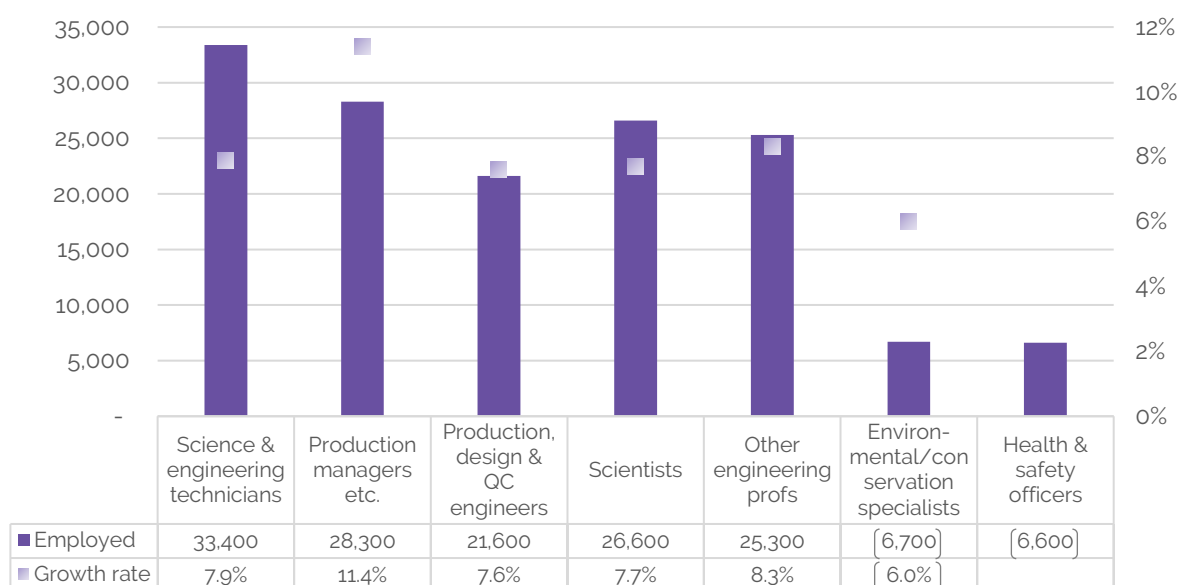


10.1 Science & Engineering Occupations

Figure 10.1 Annual Average Employment (2024) & Annual Average Growth Rates (2019-2024)



Overall employment	148,500
Share of total workforce	5.0%
Main sectors of employment	48% - Industry 19% - Professional activities [8%] - ICT [4%] - Public administration and defence
Employment growth	+49,800 between 2019 and 2024 +8.5% on average annually (compared to +3.4% for total workforce)

2024	% Female Q4	% Full-time Q4	% Aged 55 years & over Q4	% Irish citizens Q4	% Third level graduates Q4	Number of new employment permits	Recruitment Agency Survey
Chemical, biological & physical scientists	54%	92%	[17%]	74%	96%	433	✓
Other engineering professionals	...	98%	...	71%	93%	1,338	✓
Production, design & QC engineers	[30%]	98%	...	76%	89%	1,666	✓
Science & engineering technicians	42%	97%	[13%]	72%	74%	197	✓
Production managers etc.	31%	98%	[23%]	83%	73%	116	
Environmental/con conservation specialists	...	[93%]	...	[96%]	[82%]	45	✓
Health and safety officers	...	...	...	...	...	15	✓
Overall total	34%	96%	17%	77%	84%	3,810	

Source: SLMRU (SOLAS) analysis of CSO (LFS) data, DETE, and SLMRU Recruitment Agency Survey (RAS)
Numbers in square brackets should be treated with caution; an ellipsis (...) denotes numbers too small to report

Overall Outlook for these Occupations

Employment growth was above average for this occupational group, with the second highest growth rate after ICT occupations, resulting in an additional 50,000 persons employed since 2019. Employment growth was particularly strong since 2023, with 12,000 extra persons employed. The majority of persons employed in these roles held third level qualifications. The high number of employment permits issued, frequent mentions in online job adverts, and difficulty in filling vacancies highlighted in both the Skills for Growth data and through the Recruitment Agency Survey all point to an occupational group where skills are in particular demand.

A large share of employment for these occupations was in industrial activities (e.g. pharmaceuticals, medical devices, R&D etc.). These sub-sectors have seen considerable growth in recent years, with a recent report by the EGFSN on the skills needs in the biopharma sector estimating the additional jobs required for this sector over the next five years to be in the range of 14,000 to 26,000.¹ The potential risk to employment associated with the introduction of US tariffs is already having an impact on GDP in Ireland, due to a significant jump in pharmaceutical exports in March 2025 in anticipation of the threat of tariffs; however, employment levels do not appear to have been impacted to date. The green agenda is expected to bring a continued strong demand for scientists and engineers in the development of new work practices, such as sustainable sourcing, circular lifecycles, energy efficiency, and waste minimization. This may also lead to increased demand for upskilling and reskilling (e.g. AI) for the existing workforce in these roles. Finally, while graduates from science and engineering disciplines are pivotal across industry and related sectors (professional services), they are also much sought after in other areas (e.g. education, health, PAD). As such, demand for these science and engineering skills is likely to continue.

Supply continues to be strong from the education and training system. At NFQ levels 8-10, there were almost 6,000 science awards and over 4,500 engineering/manufacturing awards made in 2023 to students at HEA-funded institutions; the number of awards was similar to those made in 2022 for science-related courses, while there was an increase of just over 200 awards in engineering/manufacturing. A potential key to unlocking further supply of skills for these roles would be to find additional ways to attract and retain women for these roles (only a third of employment in these jobs is currently undertaken by women).

Occupation	Economic summary
Scientists Skills shortage: Analytical, process, & medical scientists	Employment growth was above average for this occupation over the five-year period with growth since 2023 of 4,100 persons. At 26%, the share of non-Irish citizens employed in this occupation was above the national average. Over a third of all science & engineering online job adverts (Eurostat/CEDEFOP) in 2024 were for this occupation, especially relating to R&D managers. Employment permits issued were mainly for roles in industry including medical/analytical scientists, chemists). The Recruitment Agency Survey highlighted issues with recruiting for various scientific roles, while Skills for Growth data identified issues recruiting chemists and microbiologists with key skills in demand including AI, quality standards/quality processes, leadership and technical

¹ https://www.egfsn.ie/media/x4xbx2z2/egfsn-skills-for-biopharma-2024_.pdf

	report writing. Compared to 2019, the number of biochemistry and chemistry awards in 2023 increased to reach over 700 and more than 1,200 awards respectively. Despite this increase in supply, it does not appear to be sufficient to meet the high level of demand for these occupations. Shortages are expected to persist, particularly in the life sciences sector, for those with experience and/or in niche areas.
Production, design & QC engineers Skills shortage: Quality control/assurance, process, and design engineers	Although the five-year annual average employment growth was above average for this occupation, employment levels declined since 2023, returning to 2021/2022 levels. Despite this, there were frequent mentions of difficult-to-fill vacancies (various engineers including validation, process, quality, R&D, regulatory) in the Recruitment Agency Survey. Skills for Growth data also highlighted issues recruiting engineers (including quality auditor) for high tech sectors (e.g. electronics, life sciences) with key skills in demand including process knowledge, innovation, communication, lean. The almost 1,700 employment permits were across the ICT and industry sector for roles across design, process and quality. Together, these data sources indicate that issues are persisting in sourcing suitably qualified personnel for these roles in sufficient numbers.
Other engineering professionals (e.g. mechanical, electrical and electronic engineers) Skills shortage: Engineers (mechanical, electrical, automation)	Employment levels grew strongly between 2023 and 2024 (by 6,300 persons), resulting in above average annual employment growth over the five-year period. Almost half were employed in the professional activities sector with a further quarter employed in industry. At 29%, the share of non-Irish citizens was above average which is borne out in the employment permit data, with over 1,300 new permits issued in 2024 primarily for electrical, mechanical, automation and project engineers. Skills for Growth data highlighted issues in the utilities and manufacturing sectors, particularly relating to mechanical, electrical and lead instrumentation engineers; with automation, mechanical and electrical engineers also identified as roles which were difficult-to-fill in the Recruitment Agency Survey. Experience (usually at least 2 years) was a key demand along with technical (biomedical, electrical/power engineering, life sciences etc.), finance, leadership, and digital (including data analysis and AI) skills. These skills play a critical role in Ireland's industrial sector, particularly in the life sciences, and in the transition to a digital and green economy. As such, demand is likely to persist for these roles. Although the supply of skills from the education and training system appears strong, the recent employment growth and the demand for specific skills and experience means that skills shortages are persisting.
Science & engineering technicians Skills shortage: Maintenance/manufacturing/lab technicians	Employment levels have fluctuated over the last five years, but overall, employment growth was above average, with an additional 5,500 persons employed since 2023. Demand was evident across a range of data sources, including employment permits (aircraft, manufacturing, electrical, and quality), online job adverts (lab technicians, manufacturing, HVAC, avionics, electrical, production and mechanical technicians), difficult-to-fill vacancies including maintenance, manufacturing, and engineering technicians (Recruitment Agency Survey), as well as laboratory analysts (Skills for Growth). Skills in demand included quality standards, problem solving, project management, and people skills. Supply from the education and training system remains strong. In 2023, there were 3,800 higher education awards at levels 6 and 7, with further possible supply from level 8 graduates who may begin their careers in technician level roles. Despite this, many graduates move to other roles or may already be in employment and shortages for certain technician-level roles persist. The intensity of any shortage will depend on the impact of US tariffs on EU trade on the sub-sectors where many of these technicians are employed.
Production managers in manufacturing	Employment growth was above average for this occupation, with strong annual growth between 2020 and 2023 but employment levels have seen only marginal growth since 2023. Employment permits were issued for production managers and directors but no other data sources pointed to issues with sourcing suitably qualified personnel for these roles.

Environmental/ conservation specialists Shortage: Inconclusive	Employment levels have grown at an above average rate over the five-year period, although the numbers employed remain too small for detailed analysis. A small number of employment permits were issued for roles such as environmental health & safety (EHS) specialists/managers, environmental consultants and ecologists. EHS engineers/managers were also mentioned in the Recruitment Agency Survey as difficult-to-fill vacancies. Skills for Growth data highlighted issues with recruiting environmental chemistry analysts. Reaching targets set out in the Climate Action Plan by 2030 should see demand for these roles increasing; however, environmental and green skills may also become an increasingly key component of already existing job roles, as highlighted in the recent SLMRU report examining green skills. ²
Health and safety officers	The numbers employed in this occupation were too small for detailed analysis. Health and safety officers in the construction sector were mentioned in the Recruitment Agency Survey and a small number of employment permits were issued for these roles. However, knowledge of health and safety regulations was frequently mentioned as a required skill across a range of other occupations in the Skills for Growth data (e.g. engineering professionals, skilled trades (fabricator, mechanics, CNC operators and fitters), electricians, and HGV drivers).