

4

Leveraging skills to drive innovation and strengthen firm performance in Ireland

Optimally using people's skills is associated with higher wages and job satisfaction for employees, high rates of productivity and innovation within firms, and stronger economic growth. Better leveraging skills is therefore central to supporting Ireland's economic renewal, promoting resilience to global megatrends and ensuring the country can achieve its aims of digital leadership and a just transition. This chapter assesses how Ireland leverages skills to drive innovation and strengthen firm performance and presents three opportunities to improve performance by: 1) better utilising Ireland's research talent and public research and innovation system to drive innovation within firms; 2) promoting the continuous improvement of leadership and management skills within enterprises; and 3) incentivising and enabling enterprises to make better use of the skills of their workers through innovative workplace solutions.

The importance of leveraging skills to drive innovation and strengthen firm performance

The degree to which skills are used in the workplace, across the economy and in society has important implications for the returns countries can expect to receive from their investments in skills. Previous studies have shown that better skills use¹ is associated with higher wages and job satisfaction for employees; high rates of productivity and innovation within firms; and stronger economic growth (OECD, 2016^[1]; OECD/ILO, 2017^[2]).

In the context of dramatic changes in the world of work, as set out in Chapter 1, countries must strive to ensure skills are used as intensively as possible in the economy, workplaces and society. Technological advancement, globalisation, demographic change, the green transition and, more recently, Brexit and the coronavirus (COVID-19) pandemic continue to challenge Ireland to raise productivity, innovative capacity and competitiveness.

To respond to these challenges and position economies to move to higher value-added and innovation-intensive activities, education, lifelong learning and labour-market-related policies need to be accompanied by policies supporting firms' research and development² (R&D), innovative activities and entrepreneurship (OECD, 2019^[3]). This enables countries to simultaneously stimulate both the demand for skills among employers and ensure they can find the talent they need in the labour market.

Rising to this challenge is crucial to Ireland's future success. Better leveraging skills to drive innovation and strengthen firm performance will be central to supporting its economic renewal, promoting resilience to global megatrends and ensuring Ireland can achieve the twin aims of digital transformation and a just transition (DPER, 2021^[4]).

While skills utilisation is often overshadowed by a policy focus on skills development (Keep, 2016^[5]), Ireland has quickly recognised the importance of using skills in the workplace. The National Skills Strategy (NSS) 2025 identifies “the effective use of skills to support economic and social prosperity and to enhance the well-being of our country” as a key component of its vision (Department of Education and Skills, 2016^[6]).

The analysis included in this chapter enables an assessment of progress towards this ambition and considers developments in the economic backdrop and policy landscape since the NSS 2025 was launched in 2016. It further offers examples of international practice and recommendations to inform the NSS 2025 follow-up, particularly concerning the NSS 2025' second objective on employer participation in developing and using skills to drive improvements in productivity and competitiveness (see Box 4.1).

In reviewing how Ireland can better leverage skills to drive innovation and strengthen firm performance, a wide range of policy areas is relevant, spanning education; economic; industrial; research and innovation; and regional growth policy. This chapter focusses on three skills-related policy areas: the utilisation of Ireland's research talent and public research and innovation (R&I) system to drive innovative capacity in the economy, management and leadership capability, and workplace practices that make effective use of skills. These three policy areas were selected based on an examination of relevant literature, feedback from the public consultation and insights from stakeholders consulted during this Skills Strategy project (hereafter “project participants”) shared through bilateral interviews, workshops and roundtables.

Policy areas discussed in other chapters will also be important in better leveraging skills in Ireland. Effective skills use requires strong alignment between workers' skills and those needed in their roles. This “skills match” is predicated on granular and forward-looking labour market information (LMI) (discussed in Chapter 5), an agile and responsive skills system and strong career guidance to inform decisions on what skills to develop and which employment opportunities to pursue (discussed in Chapter 2). Ongoing investment in workforce skills is vital to ensure firms can adapt to changes in the market and innovate, which is discussed in Chapter 3 on lifelong learning.

Box 4.1. This chapter and Ireland's National Skills Strategy 2025

The analysis and recommendations included in this chapter assess progress and offer further insight into Objective 2 of Ireland's National Skills Strategy 2025: "Employers will participate actively in the development of skills and make effective use of skills in their organisations to improve productivity and competitiveness."

In particular, the first opportunity examines the scope and levers to promote greater connectivity between enterprises, particularly small and medium-sized enterprises (SMEs), and Ireland's tertiary education and research capability to support knowledge transfer and enhance the innovative capacity of firms (Action 2.4 of the NSS 2025).

The NSS 2025 identifies enhancing management practices as an important prerequisite to improving skills use, innovation and productivity in the economy (Action 2.2). The final two opportunities set out in this chapter explore how Ireland can promote a culture of continuous improvement in management capability and drive sharper focus on high-performance workplace practices (HPWPs),¹ which have a demonstrable impact on productivity and business performance.

1. High-performance workplace practices include both organisation factors (i.e. teamwork, autonomy, task discretion, mentoring, job rotation and applying new learning) and management practices (i.e. employee participation, incentive pay, training practices and flexibility in working hours).

Source: Department of Education and Skills (2016^[6]), *Ireland's National Skills Strategy 2025 – Ireland's Future*, www.gov.ie/en/publication/69fd2-irelands-national-skills-strategy-2025-irelands-future/.

This chapter begins with an overview of current arrangements and performance indicators on the extent to which Ireland is leveraging skills. Subsequently, it examines three skills-related policy areas – or opportunities – for better leveraging skills to drive innovation and strengthen firm performance:

1. better utilising Ireland's research talent and public research and innovation system to drive innovation within firms
2. promoting the continuous improvement of leadership and management skills within enterprises
3. incentivising and enabling enterprises to make better use of the skills of their workers through innovative workplace solutions.

Overview and performance of leveraging skills to drive innovation and strengthen firm performance

Overview of arrangements to leverage skills to drive innovation and firm performance

When considering how skills are put to use in the economy, relevant strategies and policies span a range of policy domains and connect with the mandate of various agents within and beyond Ireland's skills system.

The formation of the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) and the transfer of national R&I policy responsibility from the Department of Enterprise, Trade and Employment (DETE) into DFHERIS brought the portfolios for skills, R&I under the umbrella of the same department. Ireland has also adopted a whole-of-government approach to developing and implementing policy initiatives (see Chapter 5 for a broader discussion on collaboration and co-ordination between departments). In developing key strategies, such as Impact 2030, there is strong collaboration between DFHERIS, DETE and the Department of Education (DEP EDU), for instance, on issues such as

entrepreneurship education at primary and post-primary levels, enterprise innovation and regional economic development. These departments have a range of arms-length government agencies charged with policy design and implementation. They also engage with a wide range of stakeholders in carrying out their mandates, including representative and advocacy bodies for education providers and businesses and regional agencies responsible for skills. Table 4.1 provides an overview of the key actors concerned with skills, R&I and enterprise in Ireland and details their roles and responsibilities.

Relevant strategies and programmes advanced by these agents are discussed further under the opportunities below, and Chapter 5 provides a comprehensive review of governance arrangements in Ireland.

Table 4.1. Overview of key actors with roles and responsibilities for skills, research and innovation, and enterprise in Ireland

Actor	Brief description of roles and responsibilities
Governmental departments	
Department of Further and Higher Education, Research, Innovation and Science (DFHERIS)	Designs and implements higher and further education and research policy. Oversees the Higher Education Authority, the Irish Research Council, the Science Foundation Ireland, the National Training Fund, Quality and Qualifications Ireland, Regional Skills Fora, Skillnet Ireland and SOLAS.
Department of Education (DEP EDU)	Designs and implements education policy in early childhood education, at early primary and post-primary levels, and special education. Oversees the Education and Research Centre, the National Council for Curriculum and Assessment, the National Council for Special Education and the State Examinations Commission, among others.
Department of Enterprise, Trade and Employment (DETE)	Designs and implements policies for stimulating foreign direct investment, indigenous enterprise development, international trade, enterprise innovation, fair competition in the marketplace, protection of consumer standards and workers' rights. Oversees Enterprise Ireland, the Industrial Development Agency, Local Enterprise Offices, and the development of Regional Enterprise Plans, which outline strategies for supporting regional enterprise growth, competitiveness, innovation and job creation across Ireland's nine regions. Provides secretariat to the Expert Group of Future Skills Needs (EGFSN).
Governmental agencies	
Enterprise Ireland (EI)	Enterprise Ireland is the government organisation responsible for developing and growing Irish enterprises in world markets. EI works in partnership with Irish enterprises to help them start, grow, innovate and win export sales in global markets. In this way, EI supports sustainable economic growth, regional development and secure employment. In addition, through EI's Centre of Excellence, EI works with the network of 31 Local Enterprise Offices to support micro-enterprises.
Higher Education Authority (HEA)	Governs and regulates Ireland's higher education (HE) system. Leads the strategic development of Ireland's HE and research system with a mandate that includes building research capacity, promoting the responsiveness of HE institutions to the needs of the economy and wider society, and developing the evidence base to underpin strategic planning at the institutional, regional and national level.
Industrial Development Agency (IDA) Ireland	Encourages investment in Ireland by foreign-owned companies. Works as a strategic partner with its existing client base to help them transform their operations in Ireland and successfully grow, working through many partners across the state.
Irish Research Council (IRC)	Funds research and supports the education and skills development of researchers. Provides policy advice on postgraduate education and research to the HEA and other national and international bodies, with a particular focus on the arts, humanities and social sciences.
Knowledge Transfer Ireland (KTI)	Supports business and the research base to maximise innovation from state-funded research, enabling businesses to access research and innovation (R&I) expertise and facilities, promoting industry-academia partnerships and research commercialisation.
Local Enterprise Offices (LEOs)	Act as local first-stop-shops to support starting, growing and developing a business. There are 31 LEOs, which offer mentoring and training programmes for developing business and management skills among small and micro-sized businesses.
Regional Skills Fora (RSF)	Act as regional one-stop-shops for supporting enterprises with reskilling/upskilling. Raise awareness of the range of services and programmes available across Ireland's education and training system among employers, help employers identify their skills needs, refer employers to suitable education and training providers and help design tailor-made reskilling/upskilling programmes reflecting employers' needs.
Science Foundation Ireland (SFI)	Funds basic and applied research in science, technology, engineering and mathematics (STEM). Promotes and supports STEM education and engagement, creating awareness and understanding of the value of STEM to the economy and society.

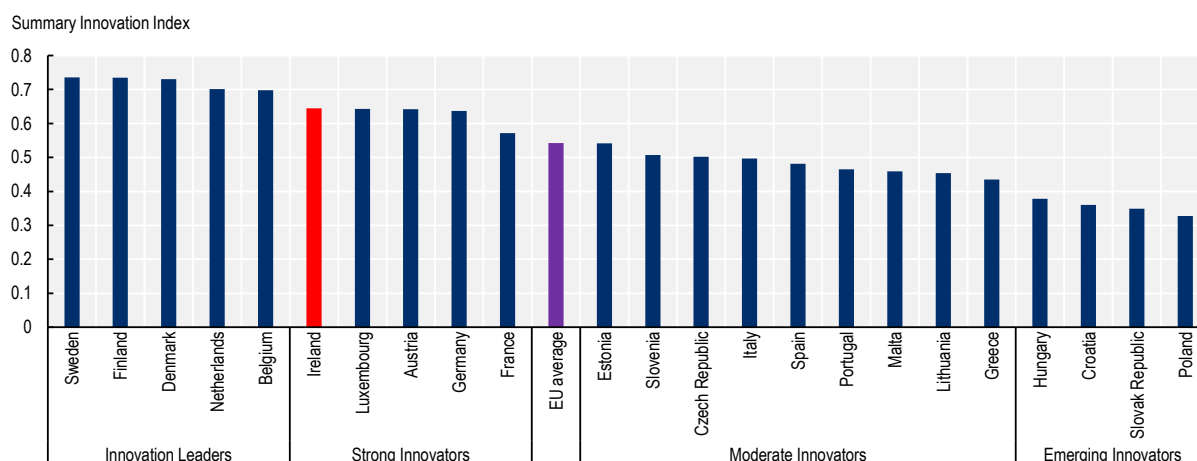
Actor	Brief description of roles and responsibilities
Skillnet Ireland	Runs sectoral and regional enterprise learning networks to increase education and training participation within enterprises and, thereby, enterprise competitiveness. Operates under a joint investment model, where government funding of on-the-job training is matched by contributions from enterprises.
Skills Labour Market Research Unit (SLMRU)	Carries out analysis of Ireland's skills supply and demand to inform the work of the National Skills Council and the public. Supports the development and review of policies and practices by the RSF, the EGFSN and other government bodies, including SOLAS and the education and training boards.
SOLAS	Manages or oversees a range of further education and training programmes (e.g. Skills to Advance, apprenticeships, traineeships, etc.) and houses the SLMRU.
Non-governmental stakeholders	
Irish Universities Association	Represents and advocates for the interests of Ireland's research-intensive universities.
Technological Higher Education Association	Represents and advocates for the interests of Ireland's technological universities and institutes of technology.
Higher Education Colleges Association	Represents and advocates for the interests of Ireland's independent HE sector.
Ibec	Business membership organisation representing businesses of all sizes and with 39 trade associations covering a range of industry sectors. Advocates for members' interests and offers members professional services and management training.
Chambers Ireland	Business network, representing the interests of member companies, supporting SMEs and facilitating trade. Umbrella group for local affiliated chambers, which are comprised of local business representatives.
Small Firms Association (SFA)	Subsidiary of Ibec, representing small firms in Ireland with fewer than 50 employees. Advocates for members' interests and offers members professional services and management training.
Irish SME Association	Business membership organisation representing SMEs. Advocates for members' interests and provides advice and information, learning and development programmes, business development and promotion opportunities.
The Wheel	National association of community and voluntary organisations, charities and social enterprises in Ireland. Advocates for members' interests and provides resources, advice, training and other opportunities for those working in the voluntary and community sector.
Technology, Research and Enterprise Centres	Including EI/IDA Technology Centres, SFI Research Centres and EI Incubation Centres, which promote collaboration between businesses and the public R&I infrastructure and provide support for R&D, business start-up and development.
Education and training providers	Include schools, colleges, universities, institutes of technology, technological universities, education and training boards, and others.

Note: The table presents key actors responsible for skills, R&I and enterprise. The mandates of other agents in the Ireland skills ecosystem may also be relevant; please refer to Table 5.1 in Chapter 5. The table aims to provide an overview, not an exhaustive list.

Ireland's performance in leveraging skills to drive innovation and strengthen firm performance

Ireland is considered a strong innovator but is losing ground

The European Innovation Scoreboard classes Ireland as a strong performer, ranked 6th out of 27 EU member states (see Figure 4.1) (European Commission, 2022^[7]). In 2022, Ireland exceeded the EU average across several domains of the Innovation Index but lagged leading innovation economies, such as Sweden, Finland, Denmark and Belgium. Further, Ireland's performance lead over the EU average is weakening, attributed to reduced relative performance on measures of government support for business R&D, and non-R&D innovation expenditures, employment in innovative enterprises, product innovators, patent and trademark applications and environment-related technologies (European Commission, 2022^[7]). Ireland's place in the Global Innovation Index has also fallen from 7th place in 2016 to 23rd place in 2022 out of 132 countries, with significant deterioration in relative performance across a range of human capital and research indicators, including expenditure on education, gross expenditure on R&D and research talent in the business enterprise sector (WIPO, 2022^[8]).

Figure 4.1. Performance of Ireland's innovation system compared to other EU countries, 2022

Note: The EU Innovation Scoreboard summary innovation index is based on 32 different indicators.

Source: European Commission (2022^[7]), *European Innovation Scoreboard 2022*,

<https://ec.europa.eu/docsroom/documents/46013/attachments/1/translations/en/renditions/native>

StatLink  <https://stat.link/hgy4tr>

Human capital is a key strength of Ireland's R&I system. As discussed in Chapter 1, the share of the population with tertiary education is relatively high and positions Ireland ahead of other European countries. Ireland also benefits from a strong stock of doctoral graduates and above-average rates of lifelong learning (although still significantly below that of top performers in the European Union) (European Commission, 2022^[7]). In Ireland, collaboration rates between enterprises and between academia and industry are also significantly above average. For example, data from the Community Innovation Survey 2020 suggest that more than 40% of innovative enterprises in Ireland had collaborated with other enterprises or organisations when undertaking R&D or other innovation activities – among the highest collaboration rates in Europe (Eurostat, 2020^[9]).

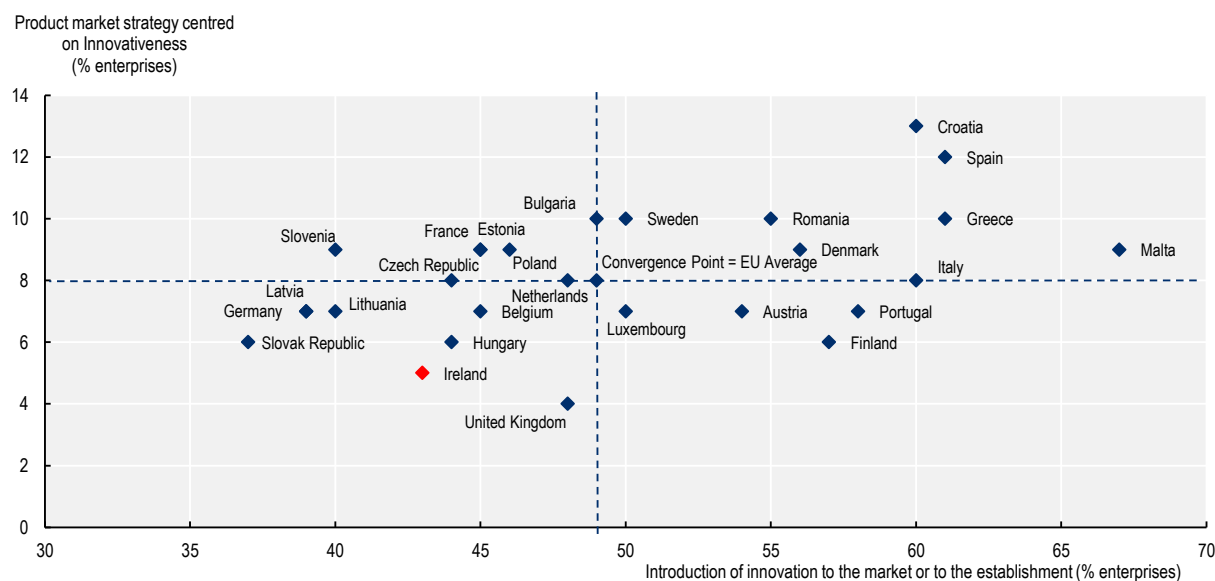
On other measures, Ireland's innovation system performs less strongly. Gross expenditure on R&D (GERD) in Ireland falls short of the EU and OECD average, including when based on gross national income³ (GNI) (DFHERIS, 2021^[10]). At 0.92%, the R&D intensity rate in Ireland is also below the EU average (1.39%) and around half the rates of leading innovators, such as Sweden (2.40%), Austria (2.14%) and Germany (2.11%). Private expenditure on R&D is also heavily concentrated among larger firms, with the top 100 largest firms in Ireland accounting for 81.8% of spending, 78.1% of which is attributed to foreign-owned enterprises. Investment in R&D is considerably lower among SMEs, who account for 99% of all businesses in Ireland, but only one-third (33.9%) of total business expenditure on R&D (BERD) (Central Statistics Office, 2021^[11]; OECD, 2022^[12]).

Rates of innovation within enterprises are relatively low in Ireland

Evidence from the Community Innovation Survey suggests that between 2016 and 2018, firms in Ireland were less likely to have introduced new or improved products (28.6%) or business process innovation (38.5%) than their European counterparts (29.8% and 41.0%, respectively). When exploring the factors that hamper innovation, enterprises in Ireland are less likely to report constraints to innovation, across almost all categories, including a lack of qualified employees within the enterprise, and a lack of collaboration partners. The only exception is “different priorities within the enterprise”, which might suggest a need for Irish firms to attach greater priority to innovation (Eurostat, 2018^[13]).

Further evidence from the European Company Survey suggests Irish enterprises are less likely to have introduced an innovation that is new to the market or to their establishment (43% of enterprises) compared to the EU average (49%) and are also less likely to have a product market strategy orientated around innovation (Figure 4.2) (Eurofound/CEDEFOP, 2019^[14]). Just 5% of firms view developing products, services or processes that are new to the market as the most important factor for the competitive success of their business.

Figure 4.2. Innovation within enterprises in Ireland, 2019



Source: Eurofound/Cedefop (2019^[14]), *European Company Survey 2019*, www.eurofound.europa.eu/surveys/2019/european-company-survey-2019.

StatLink  <https://stat.link/vkm52w>

Ireland is a strong digital performer, but there is a need to improve business take-up of productivity-enhancing systems

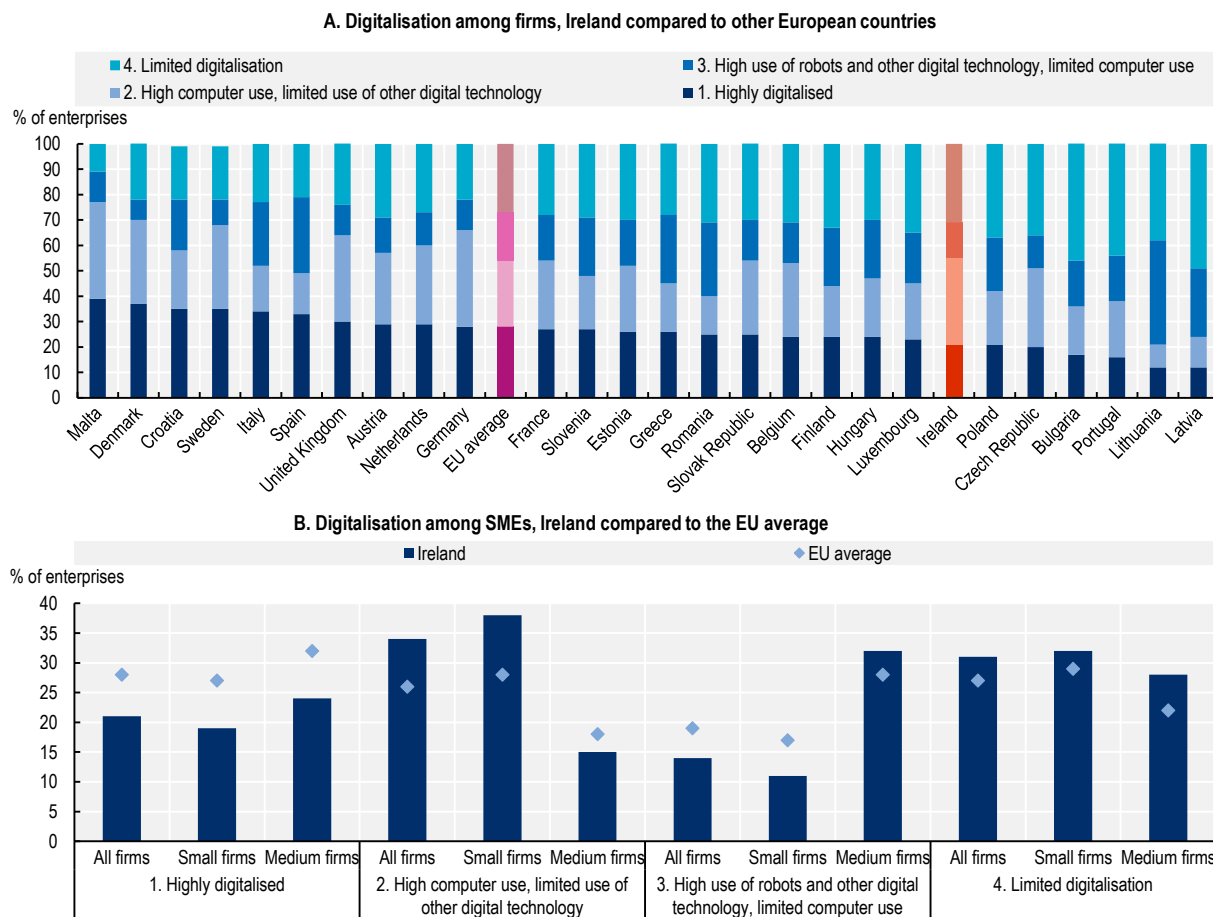
Ireland has been a strong and consistently improving digital performer in Europe, ranking 5th out of 27 EU member states in the Digital Economy and Society Index (DESI) 2022 (Eurostat, 2022^[15]). Ireland is ranked as a top performer for human capital, ranked 3rd and exceeding the EU average across all metrics, with strengths grounded in its information and communications technology (ICT) graduates and ICT specialists. Ireland also scores well for its digital public services (ranked 6/27), including services for citizens and business and open data, and for its connectivity (ranked 6/27), reflecting coverage of fast broadband, very high capacity networks and 5G (Eurostat, 2022^[15]).

The integration of digital technology in business is also above average in Ireland, particularly in areas such as e-commerce, cloud services, social media and big data. However, there is room to further improve the adoption of advanced digital technology and systems to support e-business. Ireland lags behind other EU nations in adopting a range of advanced systems to support internal processes (e.g. enterprise resource planning and customer relationship management software); supply chain management (e.g. e-invoicing software); and production (e.g. 3D printing, robots, Internet of Things) (Eurostat, 2021^[16]).

Data from the European Company Survey categorises enterprises based on their use of a range of digital technologies, grouping firms based on the extent of digitalisation, ranging from highly digitalised firms (defined as having high computer use and being likely to have purchased customised software) to limited


digitalisation (defined as having below-average computer use and being less likely to have purchased customised software or to use robots). The survey confirms earlier findings that the use of advanced digital technologies is more limited in Ireland (Eurofound/CEDEFOP, 2019_[14]). Ireland has a relatively low share of highly digitalised enterprises (21% of firms, compared with 28% in the European Union) and businesses that have a high use of robots and other digital technology but limited computer use (14% versus 19% in the European Union) and a higher share of firms that have high computer use, but limited use of other technology (34% versus 26% in the European Union) and that have limited digitalisation (31% versus 27% in the European Union) (see Figure 4.3).

Figure 4.3. Use of digital technologies by firms in Ireland and other European countries, 2019



Note: Panel B: small firms have 10-49 employees, and medium firms have 50-249 employees. Data for large firms (250+ employees) have been suppressed, given the limited sample size for Ireland.

Source: Eurofound/Cedefop (2019_[14]), *European Company Survey 2019*, www.eurofound.europa.eu/surveys/2019/european-company-survey-2019.

StatLink  <https://stat.link/ahzgcf>

Like other countries, the adoption of digital technology is lower among SMEs, but disparities between Ireland and the EU average are most pronounced for small firms (10-49 employees). For instance, 28% of small firms in Ireland have high computer use but limited use of other digital technology – a 10 percentage-point difference compared to small firms across Europe (Eurofound/CEDEFOP, 2019_[14]).

Therefore, there is room for further enhancing digital adoption and innovation across large and small enterprises. A key challenge will be to ensure that these issues are viewed as an important priority within

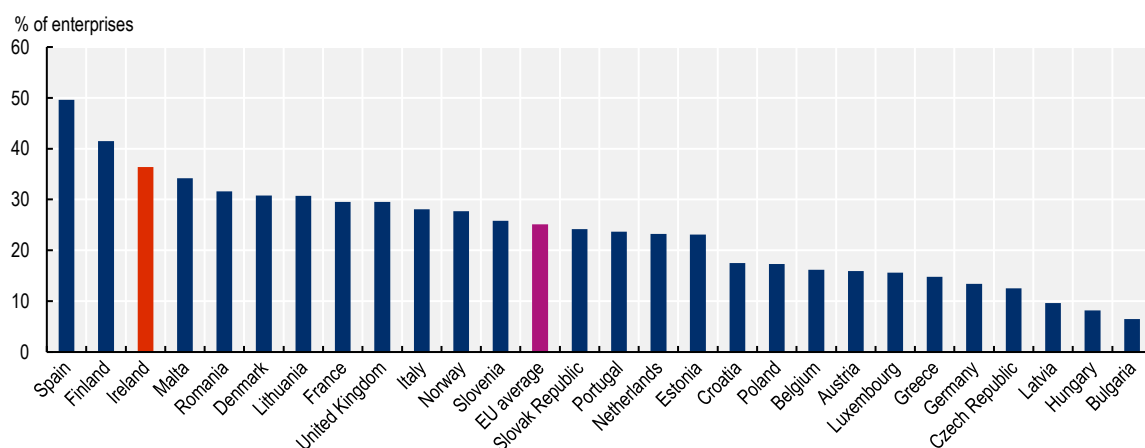
organisations, that there is an appropriate pipeline of skills to meet employer needs and sufficient expertise within enterprises to successfully implement new technologies and advance new products, services and business processes that strengthen firm competitiveness and performance.

Firms need stronger leadership and management capabilities

Strong leadership and management capabilities are important drivers of organisational change, helping to optimise the use of skills in workplaces and drive innovation, productivity and performance of firms. Previous studies have highlighted a need to improve management capability in Ireland, particularly among smaller enterprises (OECD, 2019^[17]). While the share of firms with professional management, defined as managers chosen for merit and qualifications, is comparatively high in Ireland (World Economic Forum, 2018^[18]), data from the Survey of Adult Skills (a product of the OECD Programme for the International Assessment of Adult Competencies, PIAAC) from 2012 suggests that the numeracy, literacy and problem-solving skills of managers are slightly below the OECD average (OECD, 2019^[19]).

Evidence from the Continuing Vocational Training Survey suggests that the demand for management skills among enterprises in Ireland is higher than in most other European countries (see Figure 4.4). Just under one-third (32%) of enterprises in Ireland identify management skills among the top-three skills needed for developing their organisations, compared to 23% of firms across the European Union. Analysis of the skill requirements of companies participating in Enterprise Ireland’s Spotlight on Skills also identified people management as among the most highly sought skills (Enterprise Ireland, 2022^[20]). Further, up-to-date job postings data suggests that in 2020, management skills were among the most requested skills in online job postings (CEDEFOP, 2020^[21]).

Figure 4.4. Management skills among the top-three skills needed for the development of enterprises in Ireland and other European countries, 2020



Source: Eurostat (2022^[22]), *Continuing Vocational Training Survey 2020*, https://ec.europa.eu/eurostat/databrowser/view/TRNG_CVT_10S_custom_4180659/default/table?lang=en.

StatLink  <https://stat.link/wi2nzz>

The quality of management practices in Ireland has also been found to lag other advanced economies. For example, data from the World Management Survey place Ireland 13th out of 15 nations – significantly behind the highest-performing countries, such as the United States, Germany and Sweden (World Management Survey, 2014^[23]).

In part, weak management and leadership capability reflect the structural features of Ireland’s economy. While the strong presence of multinational enterprises (MNEs) acts to drive up average managerial

performance, Ireland has a relatively large share of SMEs that typically display weaker management skills and practices. Past research has shown that structural factors – including firm size, ownership type, skills and qualifications and labour market flexibility – account for 38% of the gap between management practices in Irish firms compared to firms in the top performer (the United States). Remaining disparities in managerial performance were found to relate to non-structural factors, such as operational, performance and people management (McKinsey & Company, 2009^[24]).

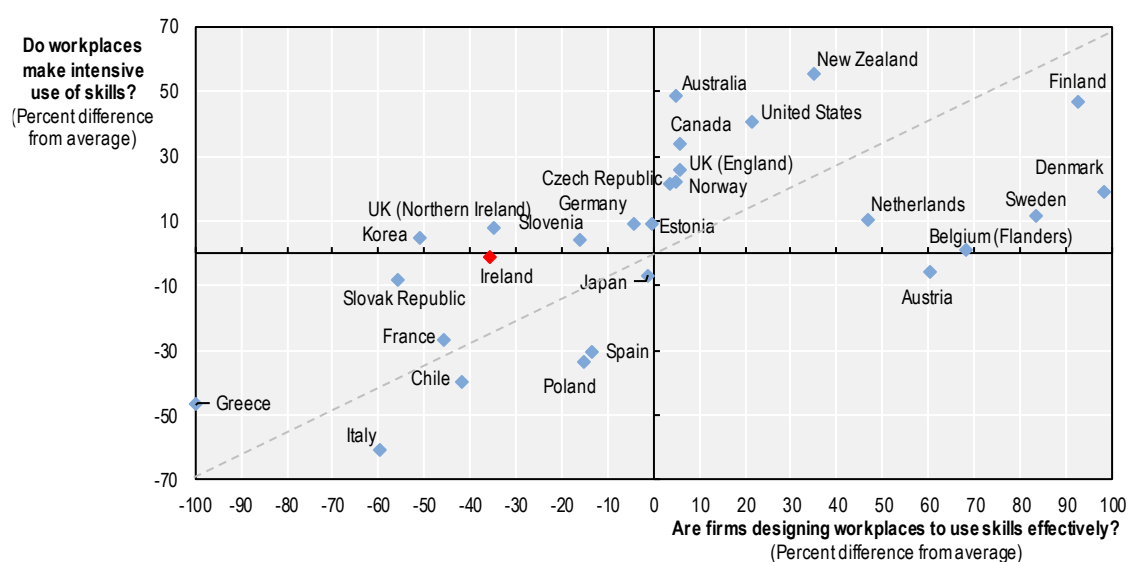
Stronger organisational practices are needed to strengthen the use of skills, adopt new technology and drive innovation

There is evidence that employers in Ireland could be more effectively using the skills of their workers. Data from the Survey of Adult Skills (PIAAC) suggest that on measures of skills use in the workplace, Ireland performs in line with the OECD average but lags economies like Australia, Finland, New Zealand, Norway, the United Kingdom and the United States, where firms tend to use the skills of their employees more intensively (OECD, 2019^[19]).

Various factors influence the extent to which skills are effectively used in the workplace. These include macroeconomic conditions, labour market demand, skills supply and the extent of skills imbalances. In addition, organisational practices are an important but often overlooked determinant of how effectively skills are deployed in the workplace. The adoption of HPWPs, including staff training, autonomy, teamwork, performance incentives and mechanisms to promote strong employee voice are vital in enabling employees to fully apply their skills at work, promoting strong employee engagement and eliciting discretionary effort that drives innovation, productivity and performance of firms (OECD/ILO, 2017^[2]).


Across the OECD, a little more than one in four workers are employed in jobs with high HPWPs. In high-productivity, high-innovation economies like Denmark, Finland and Sweden, the share of jobs in the economy adopting HPWPs is considerably higher, with around 40% of jobs displaying high HPWPs (Figure 4.5). In Ireland, one in five jobs adopts high HPWPs, below the OECD average (26%).

Figure 4.5. High-performance workplace practices and the use of skills in the workplace



Note: The figure is based on indicators from the Skills Strategy Dashboard, using normalised scores of the following aggregated indicators: “Do workplaces make intensive use of skills?” and “Are firms designing workplaces to use skills effectively?” both based on PIAAC scores.

Source: OECD calculations based on OECD (2019^[19]), *Survey of Adult Skills (PIAAC)*, 2012/15, www.oecd.org/skills/piaac/.

StatLink  <https://stat.link/y5xurb>

Once again, the structural makeup of the Irish economy is a factor at play, given that SMEs tend to have weaker management capability and often lack dedicated human resources functions. Wider evidence also suggests a more mixed picture of workplace practices in Ireland, with strong performance on some metrics but scope to improve on others – which is discussed in greater depth in Opportunity 3. However, Ireland’s performance suggests that a stronger focus on work organisation and management practices could be an important lever for driving innovation and strengthening firm performance.

Opportunities to better leverage skills to drive innovation and strengthen firm performance

To better leverage skills to drive innovation and strengthen firm performance, Ireland could consider a number of policy actions. The selection of such policy actions below is based on input from literature, desk research, discussions with the Cross-Departmental Project Team and discussions with a broad range of project participants – e.g. government departments and organisations, employer organisations, educational establishments and other interested parties – during workshops, group discussions and several related meetings. As a result, the following opportunities are considered to be the most relevant for Ireland’s specific context:

1. better utilising Ireland’s research talent and public research and innovation system to drive innovation within firms
2. promoting the continuous improvement of leadership and management skills within enterprises
3. incentivising and enabling enterprises to make better use of the skills of their workers through innovative workplace solutions.

Opportunity 1: Better utilising Ireland’s research talent and public research and innovation system to drive innovation within firms

Investment in research, development and other knowledge-based assets, such as higher education institutions (HEIs) and research centres, plays an important role in securing advanced economies’ success, developing high-level, cutting-edge skills and supporting firms’ innovation activities through knowledge transfer and spillovers.

Ireland’s public R&I system is one of its key strengths. As noted earlier, Ireland benefits from a strong base of research talent relative to the size of its labour force. Its quality-of-life offer attracts leading academic researchers from all over the world. International collaboration, measured in terms of co-inventions and co-authorship, is also high.

Despite these knowledge assets, R&D intensity in Ireland is comparatively weak, and rates of innovation in firms in Ireland, particularly among small, indigenous enterprises, are relatively low.

Project participants regularly identified a need to better leverage Ireland’s public R&I system to drive innovation within firms. This is also identified as a key priority in Impact 2030, Ireland’s Research and Innovation Strategy published in 2022 (DFHERIS, 2022^[25]).

There is a range of potential avenues for driving innovation among Irish firms, many of which have been the subject of previous OECD reviews; see OECD (2019^[17]) and OECD/European Union (2017^[26]). The skills and knowledge vested in Ireland’s research talent and public R&I system can be better leveraged to improve the innovative capacity of the Irish economy and strengthen the performance of firms in Ireland, including by developing skills for innovation across the education system to strengthen Ireland’s adaptive capacity and competitiveness, as well as by better activating the skills of graduate and doctoral researchers in the workforce to strengthen the innovation capacity of Ireland’s economy.

Recommendation 1: Develop skills for innovation across the education system to strengthen Ireland's adaptive capacity and competitiveness

Skills are vital for innovation. Skilled people generate new knowledge, adopt and evolve existing ideas; can adapt to changing circumstances, learn new skills and develop new approaches; and complement and make use of other inputs, such as digital technology, to spur innovation (OECD, 2011^[27]).

The interplay between skills, R&D and innovation is well acknowledged in Ireland's economic and R&I strategies. For instance, "Talent" is a central pillar of Impact 2030, including strengthening emphasis on the careers, mobility, inclusion and impact of research talent in Ireland. The strategy also seeks to better leverage Ireland's knowledge assets to broaden and deepen enterprise innovation capacity (DFHERIS, 2022^[25]). Skills feature as an important input across a wide range of other strategies in Ireland, particularly those concerned with ensuring Ireland's economy remains competitive, is well-positioned to respond to global megatrends and capitalise on opportunities to expand knowledge-based industries. This includes Ireland's Industry 4.0 Strategy (DBEI, 2019^[28]), the Digital Ireland Framework (Department of the Taoiseach, 2022^[29]) and the Climate Action Plan (Government of Ireland, 2021^[30]).

Despite this good practice, project participants suggested there was scope to further strengthen strategic connectivity and alignment between skills policy and other policy domains. In particular, this related to the skills needed to support the development and adoption of emerging technology and the need to promote alignment with Ireland's new National Smart Specialisation Strategy (S3) (Government of Ireland, 2022^[31]), to ensure the skills system is well placed to deliver the skills required to support sectoral specialisms identified in different regions. In addition to ensuring wider economic and innovation strategies to acknowledge skills as an important framework condition, project participants emphasised a vital role for the NSS 2025 in demonstrating the centrality of skills, crucial to delivering a broad range of Ireland's long-term aspirations and policy objectives. This was seen as important to ensure the prioritisation of skills in the policy discourse and to secure adequate investment in skills in the years ahead.

Ireland, like other OECD countries, also requires an in-depth understanding of the skills and attributes that are needed to support innovation, smart specialisation, digitalisation and climate transition and how these can best be developed through the skills system (see also Chapter 2 for a section on identifying skills of strategic importance, and Chapter 5 on improving skills data). The literature identifies a wide range of skills that contribute to innovation, emphasising the specific importance of technical, transversal and social skills (OECD, 2011^[27]; 2015^[32]).

Project participants suggested that nurturing an "innovation mindset" and developing transversal skills needed for innovation was an important priority for Ireland. Research examining international surveys of tertiary graduates five years after graduation found that the transversal skills that most distinguish workers that innovate were creativity, critical thinking and communication (Avvisati, Jacotin and Vincent-Lancrin, 2013^[33]). A range of social skills is also considered important, including self-confidence, risk-taking, leadership and teamwork (OECD, 2016^[34]). The development of these skills is an integrated part of learning in Ireland, featuring in the Key Skills Frameworks for both the Junior and Senior Cycle (NCCA, 2015^[35]; 2009^[36]). In addition, Science Foundation Ireland (SFI) runs a range of programmes to inspire interest in science, technology, engineering and mathematics (STEM) subjects and promote high-quality, inquiry-based teaching, for example, through its Curious Minds (previously Discover Primary, Science and Maths) programme (Box 4.2). The Creative Ireland Programme, now extended to 2027, features a number of initiatives to support the arts, culture and creativity in education at every level. This includes the Creative Schools Programme, which supports the development of tailored projects to reinforce creative education in schools; the Creative Clusters scheme, where schools work together to shape arts and cultural projects; continuing professional development (CPD) programmes for teachers and creativity programmes for young people in disadvantaged communities; and a new Creative Youth Plan 2023-2027, which will facilitate collaboration between early years and school-age education and childcare professionals, those involved in youth and community work and relevant support services to promote the development of creativity

among children and young people (Government of Ireland, 2018^[37]). Entrepreneurship education is incorporated into curriculum time, as well as through project-based activities, including during the Transition Year (OECD, 2019^[17]). Ireland also offers a range of entrepreneurship initiatives at the primary and secondary levels, including the Junior Entrepreneur Programme and Student Enterprise Programme delivered by Local Enterprise Offices (LEOs) in partnership with local schools.

Box 4.2. Relevant national example: Developing transversal skills for innovation

Ireland: Curious Minds

Curious Minds is part of SFI's Education and Public Engagement Programme, which aims to increase interest in STEM among students, teachers and members of the public. Launched in 2003 as the Discover Primary Science and Maths, the programme aims to introduce primary school students to science in a practical, hands-on, enjoyable and interactive way. This is through awards to celebrate STEM achievements, resources to support inquiry-based teaching of STEM, free CPD training for primary school teachers and a network of Discover Centres that offer accredited workshops and outreach programmes for primary schools.

Source: SFI (2023^[38]), *Curious Minds*, www.sfi.ie/engagement/curious-minds/.

However, given evidence that three-quarters of adults in Ireland lack the problem-solving skills required for technology-rich environments (OECD, 2019^[19]) and that one-third of Irish employers are not satisfied with the entrepreneurial skills of higher education (HE) and further education and training (FET) graduates (Fitzpatrick Associates, 2019^[39]), there remains scope to further strengthen the development of these skills across the education system in Ireland. DFHERIS, DETE and DEP EDU should review how best to extend existing innovation and entrepreneurship initiatives, including exploring the potential for new pedagogical practices, capacity building for teachers or reforming teaching methods, as seen in many OECD countries in efforts to broaden the skills and culture for innovation (OECD, 2016^[34]; 2016^[40]). One example is Germany's STEM education initiative, Little Scientists' House, which blends participatory learning for primary-aged children with a CPD programme for early-years educators (see Box 4.3), which is now available in 73% of primary schools in Germany. There may also be scope to draw on new entrepreneurship education initiatives being led by HEIs and funded by the Higher Education Authority (HEA), which seeks to expand and enhance existing institution-led activities (Higher Education Authority, 2022^[41]). Furthermore, the redevelopment of the Senior Cycle also offers a timely opportunity for Ireland to consider how best to nurture transversal skills crucial to innovation across the second-level curriculum through Transition Year and wider entrepreneurship initiatives (NCCA, 2022^[42]).

Box 4.3. Relevant international example: Developing transversal skills for innovation

Germany: Little Scientists' House

"Haus der kleinen Forscher" (or Little Scientists' House) is Germany's largest early childhood STEM education initiative. Established in 2006, run by a non-profit foundation and sponsored by the Federal Ministry of Education and Research, the programme aims to equip children aged 3-10 with the skills they need to be resilient, act responsibly and successfully meet global challenges. The pedagogic vision of the foundation is based on co-construction, where children are able to shape their learning processes. Central to these learning processes are exploration and inquiry, through which children develop problem-solving skills, find their own answers and develop self-confidence.

The foundation also offers a nationwide CPD programme to support primary school teachers and childhood educators in nurturing children’s spirit of discovery, exploration and inquiry. The education initiative makes an important contribution to improving educational opportunities, fostering the next generation of professionals in STEM disciplines and professionalising pedagogical staff. Through its network of 196 local partners, the education initiative is now available to 73% of primary schools in Germany. Some 86 000 early childhood educators and primary teachers have participated in the initiative’s CPD programme.

Source: Haus der kleinen Forscher (2023^[43]), *About Germany’s largest early childhood education initiative*, www.haus-der-kleinen-forscher.de/en.

Alongside developing transversal skills, Ireland also needs an in-depth understanding of the academic and technical skills required for innovation. Ireland’s ability to exploit emerging technologies and other innovations will largely depend on an adequately skilled labour force and the adoption and utilisation of these skills within enterprises. Past research suggests that both tertiary and vocational education produces skills valuable for innovation but that there is also significant sectoral variation (Jones and Grimshaw, 2012^[44]). For instance, despite the common focus on STEM, the importance of different fields of study varies by type of innovation and sector of activity. This emphasises the need to complement efforts to forecast changing skills needs across the economy (for example, research progressed by the Expert Group on Future Skills Needs [EGFSN], discussed further in Chapter 5) with more granular insight on the job roles, skills and competencies required in different sectors, occupations or with regard to specific innovations. This is particularly important for frontier innovation and, more generally, where skills needs are changing rapidly, often as a consequence of the disruptive effects of global megatrends.

National or regional sectoral clusters can serve as an important vehicle for promoting collaboration between employers, providers and wider actors in the skills system to identify and respond to changing skills needs. Project participants highlighted several examples of where clusters in Ireland had successfully worked together to refine existing or develop new education and training provisions in response to emerging regional or national skill shortages. Sometimes this activity was led by the government and initiated in response to policy needs, as in the Modern Methods of Construction Leadership and Integration Group (Box 4.4). Other clusters had developed more organically, reflecting regional sectoral specialisms and networks – some dependent on voluntary staff time, some with formalised management structures funded by county councils, and others supported through Enterprise Ireland’s Regional Technology Clustering Fund. Ireland’s forthcoming National Clustering Programme will provide a platform to promote a more strategic approach to cluster development, greater consistency and sustainability of funding and stronger strategic oversight of regional sectoral clusters. This also offers the opportunity to sharpen focus on the role of clusters in shaping Ireland’s skills system.

Box 4.4. Relevant national example: Developing technical skills for innovation

Ireland: Modern Methods of Construction Leadership and Integration Group

Modern methods of construction (MMC) have been identified as a key measure to address the different housing needs in Ireland in Housing for All, Ireland’s Housing Plan to 2030. DETE has recently overseen the establishment of an inter-departmental MMC Leadership and Integration Group. This group will ensure the cohesive integration and co-ordination of various government-supported MMC-relevant initiatives to support innovation in the construction industry, including the Construction Technology Centre; Demonstration Park; National Construction Training Centre; the “Build Digital Project”; and the “Built to Innovate” awareness campaign.

DETE is currently examining a range of issues and potential barriers to MMC adoption in residential construction, with a view to strengthening the broader MMC ecosystem, including a focus on required skillsets across regulatory structures (e.g. Building Control Authorities); public procurement; professional bodies (architects, engineers, surveyors, etc.); business leadership; offsite manufacturing; and other areas. In 2023, the group will work with the EGFSN on identifying skills needs for MMC.

Source: DETE, *Modern Methods of Construction Leadership and Integration Group*, <https://enterprise.gov.ie/en/publications/mmc-leadership-and-integration-group.html>.

Regional sectoral clusters supported through the new National Clustering Programme could have a clear mandate for strengthening and systematising the process of identifying and responding to emerging technical skills needed to support innovation in their specialist areas, working with wider actors in the skills system, including the EGFSN, the Regional Skills Fora (RSF), Skillnet Ireland, FET and HE providers, R&I centres, employer representatives and sector bodies. There are international examples from which Ireland can draw lessons, including the development of “cluster pacts” by “Spearhead” clusters in Flanders, Belgium, and the activity of the United Kingdom’s “Catapults” across the skills value chain, supporting collaborative foresighting exercises, identifying gaps or a need to update current provision, shaping and supporting the uptake of new learning options (Box 4.5).

Box 4.5. Relevant international examples: Developing technical skills for innovation

Flanders (Belgium): Spearhead clusters

Spearhead clusters are partnerships between companies, knowledge institutions and the government that develop a long-term strategy to remain competitive. The cluster plays an important role in identifying skills needs. With support from the European Social Fund, they can initiate skills prognosis exercises and co-operate with innovation and education partners. Each cluster negotiates a cluster pact, which can include initiatives to increase training. There are currently six clusters that have been approved by Flanders Innovation and Entrepreneurship (VLAIO): Catalisti (chemistry); Flux50 (energy); VIL (logistics); Flanders’ Food (agri-food); SIM (materials); and Blue (North Sea economic development).

England (United Kingdom, UK): Emerging skills project, Department for Education, UK Research and Innovation (UKRI), Gatsby Foundation

In 2021, the UK Department for Education launched the first Emerging Skills Project with the High-Value Manufacturing Catapult and Institutes of Technology, building on work supported by the Gatsby Foundation. This pilot project is attempting to future-proof the skills system by driving the adoption by industry of the skills needed to exploit emerging technologies and other innovations (known as the Skills Value Chain approach). The Skills Value Chain is comprised of three activities, delivered in sequence: 1) convening centres of innovation, employers, and providers to undertake “foresighting”, which establishes emerging skills needs in a sector and analyses the gap in current provision; 2) developing course content and modular training to meet the need identified through foresighting; 3) delivering skills diffusion by training trainers, delivering funded learner uptake to employees in the sector, and working with high-quality providers to make the courses widely available.

As part of the new UK Innovation Strategy, UK Research and Innovation (UKRI) announced the intent to launch a second project and to explore further how the Skills Value Chain could be adopted by the government and the innovation ecosystem – including by Catapults and Innovate UK.

Source: VLAIO (2023^[45]), Spearhead clusters, www.vlaio.be/nl/vlaio-netwerk/flanders-innovation-entrepreneurship/innovation-clusters-flanders/spearhead-clusters; UKRI (2022^[46]), *UKRI Strategy 2022 to 2027: Transforming tomorrow together*, www.ukri.org/publications/ukri-strategy-2022-to-2027.

Recommendation 1: Develop skills for innovation across the education system to strengthen Ireland's adaptive capacity and competitiveness

Skills are vital for innovation and sit at the intersection of various policy domains, including R&I, industrial development and regional growth. Ensuring strategic connectivity and policy alignment is therefore important. Ireland requires an in-depth understanding of the transversal, technical and soft skills needed for innovation and how these can best be developed through the skills system.

Ireland can undertake the following specific actions to develop skills for innovation across the education system to strengthen the country's adaptive capacity and competitiveness:

- 1.1. **Strengthen the strategic positioning of skills for innovation and improve connectivity with wider policy domains.** While skills are recognised as an important framework condition in a range of strategies relating to Ireland's competitiveness, project participants emphasised the importance of articulating a stronger national narrative on the importance of skills for innovation to ensure the prioritisation of skills in the policy discourse and secure adequate investment in skills in the years ahead. Ireland's NSS 2025 offers an opportunity to demonstrate the centrality of skills to the realisation of a broad range of Ireland's long-term aspirations and policy objectives, including those set out in Impact 2030, Industry 4.0, the Digital Ireland Framework, the Climate Action Plan and the new National Smart Specialisation Strategy.
- 1.2. **Improve the development of transversal skills for innovation, such as creativity, critical thinking, and communication, across the education system, including lifelong learning.** DFHERIS, DETE and DEP EDU should review the potential to expand and enhance existing STEM, creativity, innovation and entrepreneurship education programmes in Ireland, including exploring the potential for new pedagogical practices, capacity building for teachers and reforming teaching methods at primary, second and third level, as seen in other OECD countries in efforts to broaden the skills and culture for innovation. This could draw lessons from new institution-led entrepreneurship education initiatives being funded by the HEA and be considered as part of the redevelopment of the Senior Cycle.
- 1.3. **Strengthen and systematise the process for identifying and responding to emerging technical skills needed for innovation in areas of strategic importance for the economy.** Regional sectoral clusters supported through Ireland's new National Clustering Programme should be given a clear mandate for anticipating future technical skills needs in their sectors or thematic areas, identifying gaps in existing provision and shaping new learning options, working with wider actors in the skills system, including EGFSN, RSF, Skillnet, FET and HE providers, R&I centres, employer representatives and sector bodies.

Recommendation 2: Better activate the skills of graduate and doctoral researchers in the workforce to strengthen the innovation capacity of Ireland's economy

Ireland's public R&I system provides high-level, cutting-edge technical skills for innovation, but mechanisms that enable access to talent and promote collaboration between public, private and academic sectors are vital to foster knowledge transfer and maximise innovation.

Past research suggests that these mechanisms for knowledge exchange and innovation diffusion are relatively well developed in Ireland (EGFSN, 2020^[47]; OECD, 2019^[17]; OECD/European Union, 2017^[26]). Knowledge Transfer Ireland (KTI), established in 2013, promotes business engagement with the state-funded research base through Technology Transfer Offices (TTOs), enabling access to expertise, equipment and facilities in Ireland's HEIs and supporting university spin-outs. Ireland also benefits from a strong network of R&I centres, including 16 academic-led research centres supported by Science Foundation Ireland (SFI), 9 enterprise-led technology centres and 15 technological gateways, both supported by Enterprise Ireland, which offer access points for industry-focused researchers and specialist equipment and facilities across a range of key technologies. The forthcoming European Digital Innovation Hubs (EDIHs), part of the European Commission's Digital Europe Programme and led by the DETE through Enterprise Ireland, will further strengthen this landscape, supporting the digital transformation of smaller enterprises and public sector organisations in key technologies such as cybersecurity, artificial intelligence and high-performance computing. Enterprise Ireland and SFI also offer funding for specific R&I projects; for instance, the Enterprise Ireland Innovation Partnerships Programme provides expertise and financial support to offset the cost of developing new or improved products, processes or services (see Table 4.2 for a more detailed list).

Table 4.2. Initiatives to support knowledge exchange and innovation diffusion in Ireland

Programme	Organisation	Short description
Knowledge Transfer Ireland (KTI)	Enterprise Ireland / Irish Universities Association	The national central point that helps businesses benefit from Irish expertise and technology. KTI operates a national network of TTOs in Ireland's HEIs and research organisations to help companies and investors access the expertise and state-of-the-art equipment. KTI also helps businesses and spin-outs from academic research to identify and license new technologies and intellectual property relevant to their business and assists with R&D funding support.
Innovation Partnership Programme (IPP)	Enterprise Ireland	Allows organisations to access the latest skills and expertise from a network of research institutes throughout Ireland. The IPP can provide up to 80% of the cost of research towards developing new and improved products, processes or services.
Disruptive Technology Innovation Fund	DETE	Open to consortia of small and large companies working together or with research institutions on projects that have the potential to significantly alter markets or the way businesses operate.
Technology Centres	Enterprise Ireland / IDA Ireland	Allow Irish companies and multinationals to collaborate on market-focused strategic R&D projects with research institutions. The eight Technology Centres span a range of sectors, including food and beverage, pharmaceuticals, medical devices, engineering, ICT, education/training and finance.
Technology Gateways	Enterprise Ireland	In partnership with the institutes of technology and technological universities, EI has established a nationwide network of Technology Gateways that allow SMEs access to over 300 industry-focused researchers with specialist equipment and facilities. Technology Gateways also feature three clusters to further encourage collaboration within the technology gateway network (Internet of Things, engineering, material and design and food and beverage technologies).
Incubation Centres	Enterprise Ireland	EI funds both business and bio-incubation centres on college campuses across Ireland that provide space and support for start-up companies. Supports include access to mentoring on key aspects of business development, such as market research and finance; proximity to research teams in the college and the use of R&D facilities on campus.
European Digital Innovation Hubs	Enterprise Ireland	The network of European Digital Innovation Hubs will support businesses and organisations in their digital transformation and disseminate the latest advances in digital technologies, cybersecurity, artificial intelligence and high-performance computing. They will provide access to research infrastructure, technical expertise and experimentation in order that these organisations can "test before invest".

Programme	Organisation	Short description
Innovation Scorecard	IDA Ireland	Offers a free online assessment of strengths and areas for development across all areas of the Innovation Management Guide 560002. The output can be supported by IDA through a training grant or Innovate Programme.
Innovate Programme	IDA Ireland	Worth up to EUR 30 000, IDA Ireland offers Innovate Start and Innovate Plus Programmes to encourage multinational corporations to engage with introducing and managing innovation across their enterprises.
Innovation Vouchers	Enterprise Ireland	Worth EUR 5 000, innovation vouchers assist a company in exploring a business opportunity or problem with a registered knowledge provider. They can be used for new product/process development, new business model development, new service delivery and customer interface; new service development; and tailored training in innovation management and innovation/technology audit.
Career-FIT	Enterprise Ireland	Career-FIT offers experienced researchers the opportunity to develop their careers in market-focused applied research in Ireland's Technology Centres. The programme is open to researchers worldwide. To date, 50 experienced researchers have received the opportunity to engage in a three-year fellowship, one year of which being on secondment to an Enterprise Ireland Partner.
Research Centres	Science Foundation Ireland	The network of 16 SFI Research Centres links scientists and engineers in partnerships across academia and industry to address crucial research questions. The centres support both basic and applied research, spanning a wide range of sectors at varying levels and stages.
Centres for Research Training	Science Foundation Ireland	Provide funding for training postgraduate students in areas of identified skills needs. The purpose of the centres is to provide cohorts of academically outstanding future research leaders with the skills and knowledge required to address the future challenges of an ever-changing work environment.
Researcher Database	Science Foundation Ireland	The Researcher Database provides a facility to search for SFI-funded researchers by name, award type, year, institution, industry sector and/or scientific category. The database contains over 2 000 records.
Industry RD&I Fellowship Programme	Science Foundation Ireland	Seeks to support academia-industry interactions in order to address industry-informed challenges. Awards under this programme can be made to academic researchers wishing to spend time in industry worldwide through temporary placement.
Enterprise Partnership Scheme	Irish Research Council	Co-funds research master's and doctoral candidates across all disciplines to undertake collaborative research with enterprise while based at a HE institution.
Employment-based Postgraduate Programme	Irish Research Council	Co-funds collaborative research with higher education institutions while research master's and doctoral candidates are based within a range of organisations.
New Foundations	Irish Research Council	Supports researchers across a range of disciplines to undertake research, networking or dissemination activities.
Collaborative Alliances for Societal Challenges (COALESCE)	Irish Research Council	Supports research addressing national and global challenges, including partnerships with government departments and agencies.
Campus Engage	Irish University Association	Dedicated to supporting Irish HEIs to embed, scale and promote civic and community engagement across staff and student teaching, learning and research.
Researcher International Mobility	Irish University Association	Supporting international researcher mobility under Marie-Sklodowska-Curie Actions, including through doctoral networks, staff exchange and postdoctoral fellowships.
Researcher Career Development and Employment Framework	Irish University Association / Technological Higher Education Association	An overarching framework for HEIs that aims to support more structured progression for researchers and clearer pathways into employment within and beyond academia.

Note: This is not an exhaustive list, but it aims to highlight the main programmes with a strong focus on knowledge exchange and innovation diffusion in Ireland.

Reviews and evaluations of Ireland’s public research, development and innovation (RD&I) system suggest that programmes are well aligned to policy priorities, are achieving their aims and delivering a positive impact on innovation and wider performance indicators for beneficiaries and Ireland’s economy. This includes positive engagement with SMEs, with small firms comprising 56% of beneficiaries of Enterprise Ireland RD&I financial support and 66% of R&D agreements between research-performing organisations and Irish SMEs (Technopolis/ESRI, 2020^[48]; Knowledge Transfer Ireland, 2021^[49]; Indecon, 2017^[50]). Yet, relative to the size of the SME population, uptake is more limited among smaller enterprises, suggesting there is scope for TTOs and R&I Centres to further broaden the base of firms with which they engage. Enterprise Ireland, KTI and the SFI should explore the scope to further strengthen existing targets or incentives for SME engagement, as well as simplify and speed up the application process as well as minimise the administrative burden of monitoring activities, which have been cited as areas for improvement in past evaluations (Indecon, 2017^[50]; OECD, 2019^[17]; Technopolis/ESRI, 2020^[48]). The 2019 OECD review of SME and Entrepreneurship Policy in Ireland also identified a potential role for LEOs in directing small firms to RD&I support available in regions (OECD, 2019^[17]).

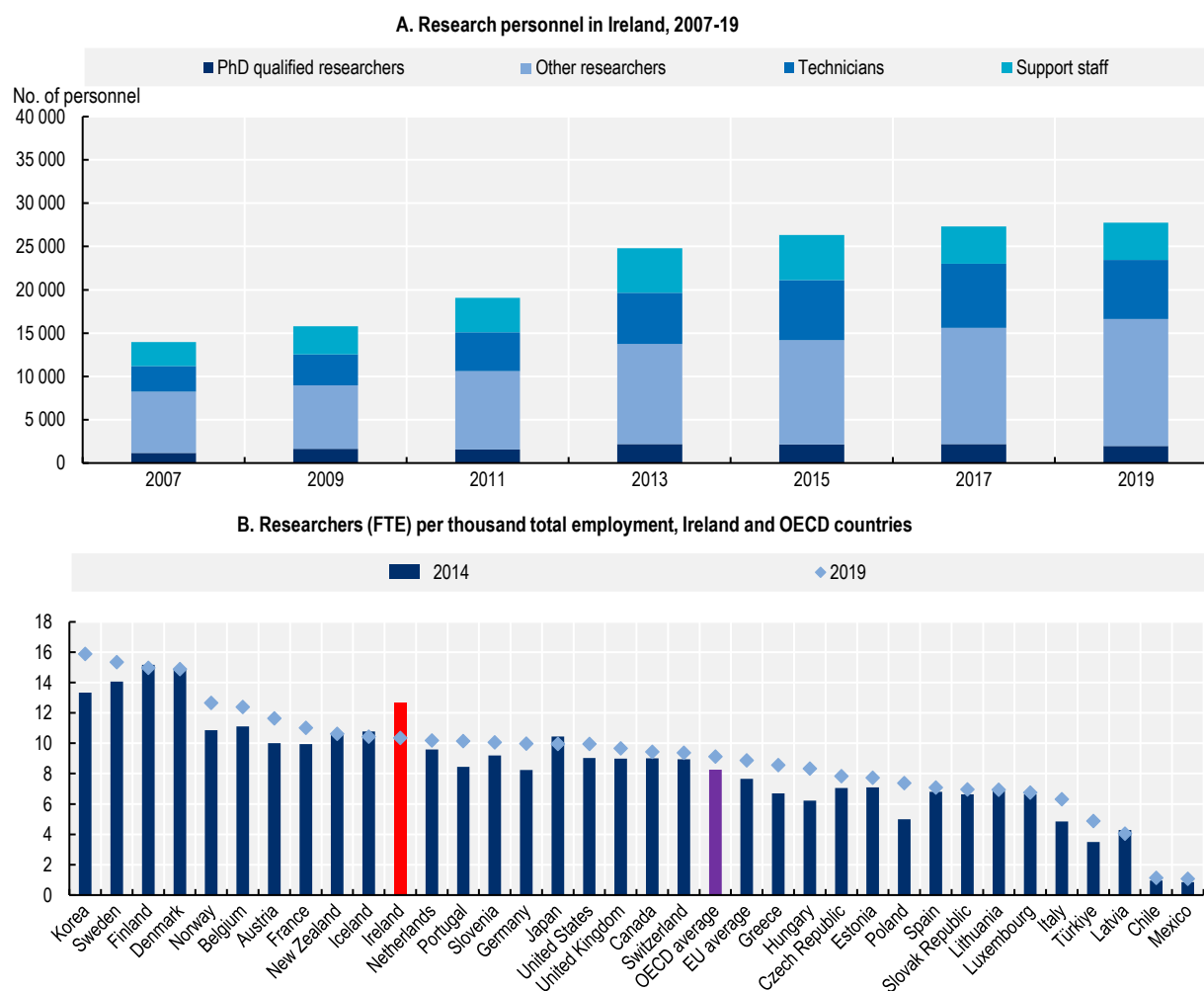
Project participants also emphasised that simplifying the language used to describe Ireland’s public R&I system and support programmes was important to better engage smaller enterprises. It was felt there was a need to “demystify” the concept of innovation and build awareness of the value of incremental improvements in products, services or business processes (incremental innovation) alongside more transformational innovation. Technological universities (TUs) and institutes of technology (IoTs) were viewed as playing a vital role in widening participation, as institutions well embedded in regional economies and with strong networks with local businesses. However, project participants emphasised the relatively limited resources or incentives for engagement activities – both in terms of specialist staff and the time allocation of academic staff. Previous reviews of Ireland’s higher education (HE) system have also found that current pay structures, the workload model and progression or promotion criteria do not sufficiently incentivise or reward academic staff for industry engagement, with some notable exceptions within specific HEIs (OECD/European Union, 2017^[26]). DFHERIS and the HEA should work with the research-intensive and TUs and IoTs to examine how best to adjust staff teaching and research workloads to accommodate increased industry engagement, particularly ensuring that the TUs are adequately resourced to manage greater levels of activity envisaged in Impact 2030 (DFHERIS, 2022^[25]).

Beyond strengthening mechanisms that enable access to research expertise and foster collaboration between academic, public and private sectors, there is also a need for Ireland to consider how to improve the mobility of research talent between academia, industry, the public and voluntary and community sectors. Ireland invests considerably in graduate and doctoral researchers who are among the most highly skilled workers in the economy. The knowledge vested in these individuals is considerable, as is their capacity to drive R&D intensity and innovation within firms. Studies of innovation systems over a number of decades have demonstrated the importance of the movement of skilled research personnel, within and between sectors, as a vehicle for the transfer and diffusion of formal and tacit knowledge (OECD, 2001^[51]).

This has not escaped Ireland’s attention and improving the mobility of research talent has been a priority in Ireland for several years. The National Strategy for Higher Education to 2030 called for secondments, consultancy and greater parity in the esteem afforded to knowledge transfer and commercialisation activities in performance reviews and metrics and promotion criteria to promote greater mobility of research staff (Department of Education and Skills, 2011^[52]). Innovation 2020 established an explicit target of increasing the number of research personnel working in enterprises from just under 25 000 in 2013 to 40 000 in 2020 (Interdepartmental Committee on Science, Technology and Innovation, 2015^[53]). Impact 2030 reaffirms this commitment, with a strategic objective to promote researcher mobility and to raise the number of researchers relative to the size of the labour force from 9.52 (in 2019) to 15.00 in 2030 (DFHERIS, 2022^[25]). This would position Ireland among the leading innovation economies, such as Korea, Sweden, Finland and Denmark. However, as illustrated by Figure 4.6, the number of enterprise researchers has been increasing at a modest pace in Ireland and has reduced, relative to the size of the


labour force, over the past five years – with a more significant decrease in Ireland than in any other OECD country.

Figure 4.6. Enterprise researchers in Ireland and OECD countries, 2019



Note: Panel B: 2014 figure for Ireland is estimated based on the biennial BERD survey. Data for Switzerland and New Zealand are from 2015 and 2019. Data for Iceland are from 2015 and 2017. FTE: Full-time equivalent.

Source: CSO (2021^[54]), *Business Expenditure on Research and Development (BERD) 2007-2021*, www.cso.ie/en/statistics/technologyandinnovation/businessexpenditureonresearchanddevelopment/; OECD (2022^[55]), *OECD Main Science and Technology Indicators* (database), https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB.

StatLink  <https://stat.link/6etc3d>

The continued policy focus on the mobility of research personnel is important to ensure Ireland does not lose ground on leading innovation economies. However, Ireland lacks detailed intelligence on enterprise demand for research talent and the movement of graduate researchers between sectors across their careers and the factors that inhibit and enable these transitions. Addressing these evidence gaps could prove crucial in better aligning the supply of research graduates with labour market demand and refining current interventions that promote research graduate mobility.

Ireland should prioritise regular forecasting of the demand for research graduates (National Framework of Qualifications [NFQ] Level 9 by research and Level 10) as an integrated part of the wider LMI framework in Ireland (see Recommendation 5 in Chapter 5 for further discussion of the need to reinstate regular

model-driven quantitative forecasting of labour demand at all levels). This would then provide the basis for a more detailed understanding of current and future needs for research graduates from different disciplines and by different sectors of Ireland's economy, complementing detailed foresighting activities progressed by EGFSN.

In addition to better anticipating labour demand, Ireland needs to examine research graduate outcomes and onward transitions of research talent in the labour market. The most detailed studies of labour mobility have been undertaken in Nordic countries due to the availability of highly detailed registers that capture the educational background of employees and their subsequent movement between jobs over time (Nas et al., 2001^[56]). However, over the past decade, more countries, including Ireland, have invested in linking administrative datasets. The Central Statistics Office (CSO) Higher Education Outcomes collates data from various public bodies, including salary data from Revenue, benefits data from the Department of Social Protection, and graduate data from the HEA, enabling a longitudinal view of the mobility of research talent in the labour market. The planned development of a research graduate tracking system in Ireland, as part of the Impact 2030 work programme for 2022-24, would explicitly address this evidence gap. There is an opportunity for Ireland's plans to align with efforts by the European Commission to develop a European graduate tracking mechanism (European Commission, 2020^[57]). Such approaches could also be further enhanced through new sources of "big data", including those drawn from social and professional networks, which provide new opportunities to track graduate transitions throughout their career, as seen in the OECD's work benchmarking the performance of HE systems (OECD, 2019^[58]).

In addition to more detailed insight into the demand for research talent and postgraduate career pathways, project participants emphasised the importance of careers education, information and guidance for research talent. As noted earlier, career advice plays an important role in minimising skills imbalances in the economy and is considered vital to signposting researchers towards opportunities in the economy and building awareness and motivation to pursue careers outside of academia. Further discussion on careers education, advance and guidance can be found in Chapter 2.

The development of transversal skills among research graduates has been shown to have a significant impact on labour market outcomes (CESAER, 2020^[59]; OECD, 2012^[60]); features as one of the European Commission's seven principles for innovative doctoral training (European Commission, 2011^[61]); and have been the subject of detailed study [see, for example, Eurodoc (2018^[62])]. Past research has also shown that SMEs tend to attach greater value to PhD graduates' transferable skills than larger companies do (Borrell-Damian, 2009^[63]).

Developing transversal skills among researchers is also a priority in Ireland. This is noted in the 2020 review of Ireland's Higher Education Research System (Higher Education Research Group, 2020^[64]), and Impact 2030 commits to fostering transversal skills development, especially for early-career researchers, to enable career pathways outside academia. Graduate employability is also a key objective in the Higher Education Authority Strategic Plan (Higher Education Authority, 2017^[65]); the development of transferable skills is central to the Irish Research Council (IRC)'s Career Development Policy (Irish Research Council, 2017^[66]); and Science Foundation Ireland set out plans to align more PhD training to the National Framework for Doctoral Education to ensure doctoral researchers develop a breadth of skills, including entrepreneurship (Science Foundation Ireland, 2021^[67]).

The OECD's review of Entrepreneurship and Innovation in Ireland's HE system notes that HEIs in Ireland undertake a range of activities to promote the development of transversal skills, including through teaching and learning, projects and work placements, competitions and prizes. HE work placements and job placement assistance have been found to support the development of employability skills, reducing the mismatch between graduates' skills and those needed by employers (OECD/European Union, 2017^[26]). Ireland offers a range of such schemes. For example, the IRC Employment-based Postgraduate programme co-funds collaborative research with HEIs, while research master's and doctoral candidates are based within a range of organisations, and the SFI Industry RD&I Fellowships Programme supports

academic researchers in undertaking a temporary placement in industry to address industry-informed challenges (see Table 4.2 for a more detailed list). There are also institution-led initiatives, such as University College Cork's Odyssey Programme (discussed further in Box 4.6).

Box 4.6. Relevant national examples: Developing the transversal skills of research talent

Ireland: Odyssey programme, University College Cork

Formulated in response to the fact that a very small share of PhD graduates secure permanent positions in academia, the Odyssey programme aims to change the perspectives of researchers and final-year PhD students to explore and progress career paths beyond academia.

The programme includes a pre-meeting with participants to build trust and reflect on personal career expectations; a two-day programme exploring researcher career trajectories, organisational culture and skills needs outside of academia, and practical advice on the recruitment process; and a post-meeting, which includes a CV clinic and reflections on how to translate programme learnings into practical next steps. Early assessments of the programme report that 58% of participants moved beyond academia.

Ireland: Career-FIT, Enterprise Ireland

Career-FIT was launched in 2018 to offer experienced researchers the opportunity to develop their careers in market-focused applied research in Ireland's Technology Centres. The programme is open to researchers worldwide and is co-funded by Enterprise Ireland and the European Union. There have been two competitive calls to date that resulted in 50 experienced researchers receiving the opportunity to engage in a three-year fellowship, one year of which was on secondment to an Enterprise Ireland Partner.

Source: University College Cork (2022^[68]), *Pathways Beyond Academia*, www.ucc.ie/en/hr/research/theodysseyprogrammeucc/odysseyreport2022; Enterprise Ireland (2023^[69]), *Career-FIT*, <https://horizoneurope.ie/career-fit>.

Despite these initiatives, project participants suggested that further work is needed to strengthen the transversal skills of graduate researchers and the perceived value of academic researchers among smaller enterprises. Data from the Irish National Employer Survey also suggest that while employers tend to rate HE and FET graduates highly across a number of workplace and personal attributes, commercial awareness and entrepreneurial skills are perceived as weaknesses (Fitzpatrick Associates, 2019^[39]).

The HEA, IRC and SFI should work collaboratively to strengthen research graduates' transversal skills, including by: further integrating transferable skills development into PhD programmes and Centres for Research Training; specialist doctoral schools and residential transferable skills training courses for postgraduate students; and collaborative doctoral programmes (Technopolis, 2011^[70]; OECD, 2012^[60]; Eurodoc, 2018^[62]). The IRC and SFI should also prioritise SME engagement in these programmes, exploring the further scope for jointly supervised collaborations at the master's level, given that master's projects are typically shorter in duration and closer to market, addressing the distinct resource and financial constraints of smaller enterprises and maximising the commercial value of such collaborations (Borrell-Damian, Morais and Smith, 2015^[71]). In recent years, there has also been growing interest in Doctoral Networks, where a partnership of universities, research institutions and businesses (including small firms), often from different countries, facilitate a series of short-term fellowships for researchers across the network (Borrell-Damian, 2009^[63]). The Marie Skłodowska-Curie Actions (MSCA) Doctoral Networks provide one such example available to Irish researchers. There is an opportunity for the IRC and SFI to expand and enhance Doctoral Networks in Ireland, including exploring the scope for doctoral candidates to be "shared" by several companies, such as the SEPnet Doctoral Training Networks in the United Kingdom (Box 4.7), which support cost and risk sharing among SMEs (Borrell-Damian, 2009^[63]).

Box 4.7. Relevant international examples: Developing the transversal skills of research talent

Europe: Marie Skłodowska-Curie Actions Doctoral Networks

MSCA Doctoral Networks implement doctoral programmes through partnerships with universities, research institutions and businesses, including SMEs. These doctoral programmes are centred around identified R&I needs and expose researchers to both academic and non-academic sectors, supporting the development of research and transferable skills and competencies relevant for innovation and long-term employability. Industrial doctorates train PhD candidates who wish to develop their skills and experience outside of academia, with participants jointly supervised by academic and non-academic partners and spending a minimum of 50% of their time working in the non-academic sector.

England (United Kingdom): SEPnet Doctoral Training Networks for SMEs

The South East Physics Network (SEPnet) has created an SME Doctoral Training Network (SME-DTN) to support regional industries and national science priorities. Funded by UKRI and Research England, the Doctoral Networks bring together small consortia of SMEs and large companies to share costs, facilities and expertise, develop industry-relevant research and create skilled, adaptable and commercially-focused PhD graduates to help meet their needs now and in the future. Companies share the costs of each PhD studentship with a SEPnet university partner and work with academics to shape projects in line with each company's business strategy. The project was launched during COVID-19 and is currently small in scale (supporting eight industry-relevant PhD projects), but it could prove an interesting model for enhancing SME engagement in collaborative doctoral programmes.

Source: European Commission (n.d.^[72]), *Doctoral Networks*, <https://marie-sklodowska-curie-actions.ec.europa.eu/actions/doctoral-networks>; Irish Universities Association (2023^[73]), *Doctoral Networks (DN)*, www.iaa.ie/for-researchers/marie-sklodowska-curie-actions/funding-calls-and-deadlines/doctoral-networks/; SEPnet (n.d.^[74]), *SEPnet's Doctoral Training Network for Small to Medium Size Enterprises*, www.sepnet.ac.uk/sme-dtn/.

Recommendation 2: Better activate the skills of graduate and doctoral researchers in the workforce to strengthen the innovation capacity of Ireland's economy

Ireland invests considerably in its public R&I system, and the knowledge vested in graduate and doctoral researchers is substantial, as is their capacity to drive R&D intensity and innovation within firms. However, while past research suggests mechanisms for knowledge transfer are well developed in Ireland, there is a need to enhance engagement with smaller enterprises and promote greater mobility of research talent between academia, industry, the public and voluntary and community sectors.

Ireland can undertake the following specific actions to better activate the skills of graduate and doctoral researchers in the workforce to strengthen the innovation capacity of Ireland's economy:

- 2.1. Strengthen incentives and resources for research and innovation institutions and highly-skilled research talent to engage and collaborate with small enterprises.** Enterprise Ireland, KTI and the SFI should explore the scope to further strengthen existing targets and incentives for the TTOs, EDIHs and R&I Centres for SME engagement. DFHERIS and the HEA should also work with HEIs to examine how best to adapt the workload model progression and promotion criteria for academic staff to better enable and incentivise industry engagement while

ensuring that the technological universities are adequately resourced to manage greater levels of activity envisaged in Impact 2030.

- 2.2. Advance further research to better understand current and future demand for research graduates and the mobility of research talent between academia, industry, the public and voluntary and community sector.** This could build on regular quantitative forecasting, including at NFQ Level 9 by research and Level 10, recommended in Chapter 5, to provide more granular insight into enterprise demand for research graduates from different disciplines and by different sectors of Ireland's economy. In the short-term, DFHERIS should also examine how the CSO Higher Education Outcomes data could be better leveraged to support a longitudinal view of the mobility of research talent in the labour market, as well as scope to utilise data drawn from social and professional networks to track research graduate transitions. Over the medium term, Impact 2030 plans to develop a research graduate tracking system in Ireland, which will prove vital to addressing this evidence gap. There is scope to align national efforts with wider initiatives being led by the European Commission to develop a European graduate tracking mechanism.
- 2.3. Strengthen career guidance for research graduates and better integrate transversal skills development into research training at all levels.** The HEA, IRC and SFI should work collaboratively to review the career guidance for researchers (discussed further in Chapter 2) and further integrate transferable skills development into PhD programmes, EI Technology Gateways, SFI Research Centres and Centres for Research Training. There is also scope for Ireland to consider specialist, doctoral schools, residential transferable skills training courses for postgraduate students and extend collaborative doctoral programmes, including Doctoral Networks. SME engagement in these programmes must be a priority, with scope to extend jointly supervised collaborations at the master's level and advance Doctoral Training Networks for smaller enterprises that support cost and risk sharing between small firms.

Opportunity 2: Promoting the continuous improvement of leadership and management skills within enterprises

Strong management and leadership skills are vital to the success of Irish firms, underpinning their ability to adapt to many of the global megatrends set out in Chapter 1. Well-managed firms tend to perform better across a range of indicators: they are more productive, grow faster and have higher survival rates (Bloom and Van Reenen, 2010^[75]). Skilled managers are more likely to innovate, adopt quality-orientated product market strategies and implement HPWPs (UKCES, 2014^[76]). Managers' attitudes, particularly in small firms, have been shown to significantly influence the prioritisation and investment in training for workers (discussed further in Chapter 3).

For project participants, addressing weak management and leadership skills is key to driving innovation and strengthening firm performance in Ireland.

Management development has been a policy priority in Ireland for a number of years. The report of the Management Development Council proposed wide-ranging reforms to establish a national system for management development (Management Development Council, 2010^[77]). More recently, the Expert Group on Future Skills Needs' report *Leading the Way* sets out a vision for management development in Ireland and makes a range of recommendations (EGFSN, 2020^[47]), which are being taken forward by an inter-departmental group, working with business representative organisations (discussed in more detailed below).

Improving management capability is also acknowledged as vital to improving the productivity and competitiveness of Ireland's firms (National Competitiveness and Productivity Council, 2021^[78]), enabling

the digital transformation of enterprises (Department of the Taoiseach, 2022^[29]) and in maximising the benefits and mitigating the risks of the growth in hybrid working following the COVID-19 pandemic (DETE, 2021^[79]).

Despite this policy focus, there are still various areas for improvement. Based on the assessment of the evidence, bilateral interviews and workshops, there is scope to extend flexible, subsidised and customisable development opportunities for Ireland's managers to maximise the accessibility, relevance and value of support; and to strengthen incentives for management development to raise the motivation of Ireland's managers to upgrade their skills and participate in lifelong learning.

Recommendation 3: Extend flexible, subsidised and customisable development opportunities available to Ireland's managers to maximise the accessibility, relevance and value of support

Existing research suggests that there is a range of measures available to support management development for businesses in Ireland (see Table 4.3 for an overview). LEOs act as a first-stop-shop offering management development programmes and mentor programmes for micro and small-sized firms. Enterprise Ireland offers a wide array of programmes to support Irish enterprises to grow, innovate and internationalise, including Leading 4 Growth and Go Global 4 Growth programmes, alongside grants for mentoring and strategic consultancy. Enterprise Ireland also runs a Mentor Network, which connects Irish businesses with experienced business leaders. IDA Ireland offers support for their client base, including the new Leading with Strategic Intent programme and the Future Subsidiary Leaders Programme, developed with the Irish Management Institute. Skillnet Ireland offers Management Development programmes through its 72 learning networks across Ireland and has recently launched Mentors Work with the Small Firms Association (SFA) to enhance leadership capability within smaller enterprises.

Table 4.3. Leadership and management programmes in Ireland

Programme	Organisation	Short description
Green for Micro	Local Enterprise Offices	Provides small businesses with tailored expert advice on how to drive sustainability. Qualifying SMEs get access to two days of intensive mentoring, including a sustainability audit and action plan.
Lean for Micro	Local Enterprise Offices	Supports companies in adopting lean business principles in their organisations to increase competitiveness. It helps identify issues and potential improvement areas and provides support for implementation and the achievement of savings and improvements in capability and the capacity to deliver.
Accelerate	Local Enterprise Offices	Aims to provide owners/managers with the management, leadership, business skills and knowledge to achieve sustainability and growth in their business.
Mentor Programme	Local Enterprise Offices	Matches up the knowledge, skills, insight and entrepreneurial capability of experienced business practitioners with small business owners/managers who need practical and strategic one-to-one advice and guidance.
Workplace Innovation Toolkit	Department of Enterprise, Trade and Employment	A diagnostic toolkit consisting of an online questionnaire designed to facilitate self-evaluation of an organisation's capacity to be an innovative workplace. It seeks to enhance performance in employee engagement, training, innovation and productivity.
Climate Toolkit for Business	Department of Enterprise, Trade and Employment	Provides practical and cost-effective actions for businesses to take to increase their sustainability.
Green Offer	Enterprise Ireland and IDA Ireland	Aims to help prepare companies to incorporate sustainable practices into the day-to-day running of their business. It comprises three levels of support, characterised by increasing levels of capability in implementing environmental best practice approaches to drive company awareness, adoption and integration of environmental best practice approaches, tools and techniques.
Lean Business Offer	Enterprise Ireland and IDA Ireland	This offer is designed to encourage companies to adopt lean business principles in their organisation to increase performance and competitiveness. The offer comprises three levels of support, characterised by increasing levels of capability in implementing lean leadership business principles and other best practice approaches to drive company awareness, adoption and integration of lean culture, tools and techniques.

Programme	Organisation	Short description
Digital Marketing Capability	Enterprise Ireland	Management development support facilitated by a digital marketing agency or consultant, which aims to develop and enhance a company's capability to use digital channels for business development.
EILearn	Enterprise Ireland	An e-learning platform where Enterprise Ireland client companies can access over 450 pieces of customised content designed for start-ups and SMEs. The focus is around six key business pillars essential for growing a business: finance; people and management; sales and marketing; strategy; innovation; and operations.
Go Global 4 Growth	Enterprise Ireland	Delivered in partnership with Dublin City University, this strategy implementation programme facilitates the creation of international growth action plans by chief executive officers (CEOs) and their senior teams.
Innovation 4 Growth	Enterprise Ireland	A partnership with the Irish Management Institute (IMI) and Massachusetts Institute of Technology (MIT) Sloan School of Management, this programme targets leaders in a management team and fast-tracks companies through an end-to-end innovation learning and practice journey to support the delivery of one or more innovation initiatives.
Leadership 4 Growth	Enterprise Ireland	A partnership with IESE Business School, in association with Learning Partnership, this programme comprises three overseas weeklong residential modules, covering Dynamic Business Strategy, High-Performance Leadership and Sustainable Growth and aims to develop world-class business leaders equipped with the necessary strategic and innovative capabilities required to scale sustainable internationally trading companies.
New Frontiers Programme	Enterprise Ireland	Designed to help entrepreneurs develop their ideas through practical and interactive workshops, personalised mentorship, co-working space and funding. The course was developed by the institutes of technology and technological universities. It aims to equip budding entrepreneurs with the skills, confidence, and knowledge to turn their idea into a viable enterprise.
Strategic Marketing Review	Enterprise Ireland	Targeted at senior management teams, this programme involves one-to-one engagement with an experienced consultant with a focus on the development of a market-driven business strategy that will impact a company's international growth potential.
Spotlight on Skills	Enterprise Ireland	Developed in partnership with DFHERIS, IMI and Enterprise Ireland, this programme helps businesses create a company skills plan to identify and address their critical skills needs, build capability and achieve strategic growth.
Leading with Strategic Intent	IDA Ireland / Irish Management Institute	A strategic leadership programme for senior leadership teams in subsidiaries of multinationals based in Ireland to enable the crafting of a value-adding, future-focused subsidiary strategy.
Future Subsidiary Leaders Programme	IDA Ireland / Irish Management Institute	A senior leadership programme for subsidiaries of MNCs in Ireland to elevate and develop the capabilities and mindset needed to successfully lead the subsidiary.
Management Development Programmes	Skillnet Ireland	Skillnet Business Networks offer tailored upskilling, networking opportunities and management development programmes through its 72 Learning Networks, underpinned by an SME Management Competency Framework.
Innovation Exchange	Skillnet Ireland	Facilitates collaboration between corporates and SMEs to develop an understanding and capability around corporate innovation, from ideation and talent development to procurement and adoption.
Springboard+	Government / Higher Education Authority	Springboard+ is a government initiative offering free and heavily subsidised courses at certificate, degree, and master's levels leading to qualifications in areas with employment opportunities in the economy, including management courses.
Skills to Advance Leadership and Management	SOLAS / Education and Training Boards	Developed in collaboration with IDA Ireland, Enterprise Ireland and the Regional Skills Fora, Skills to Advance Leadership and Management provides subsidised training to upskill supervisory staff, resulting in a Level 6 certificate or diploma accredited by the Institute for Leadership and Management.
Ibec Academy	Ibec	Offers a variety of management development courses, covering issues such as leadership, human resource management, employee engagement and workplace well-being.
ISME Learning and Development	Irish SME Association (ISME) / Skillnet	ISME Skillnet offers a variety of courses tailored to small firms, including SME management and leadership development, and is extending the offer through a new partnership with University College Dublin (UCD) Professional Academy.
Mentors Work	Skillnet Ireland / Small Firms Association	A structured 12-week business-support programme comprising an integrated approach of mentoring and targeted learning opportunities.
Leadership Academy	The Wheel	Offers resources and support tailored to the needs of non-profit leaders.

Note: This is not an exhaustive list, but it aims to highlight the main programmes with a strong focus on management and leadership capacity in Ireland.

Government programmes sit alongside a wider offer of support for start-ups and SMEs offered through business representative organisations such as Ibec, the SFA and the Irish SME Association (ISME), as well as a range of management development programmes tailored to the needs of businesses operating in different sectors of the economy.

Despite initiatives like the LEO Making it Happen campaign, not all businesses, particularly SMEs, are aware of the opportunities available to them. Project participants viewed the complexity of the landscape of support for management development in Ireland as a critical factor inhibiting the take-up of management training and support programmes. Concerns were also raised that organisations were often presented with different management development opportunities depending on the agency they first contacted. This often reflected the suite of programmes that the agency was funded to deliver rather than signposting enterprises towards support that was best suited to their needs.

Following the OECD review of SME and Entrepreneurship Policy in Ireland (OECD, 2019^[17]) and the *Leading the Way* report (EGFSN, 2020^[47]), the SME and Entrepreneurship Implementation Group is progressing a range of important measures to enhance the availability, relevance and navigability of support for enterprises. This includes widening eligibility of existing schemes to address identified gaps, establishing micro-credentials for entrepreneurs and developing a Single SME Portal that will provide information on support available; diagnostic tools to guide managers to development opportunities most aligned to need; and access to a national mentoring programme for SMEs (SME Taskforce, 2021^[80]). In addition, during the stakeholder engagement process, there was significant support for strengthening referrals between regional agencies, with the scope to develop a “no wrong door” policy or one-stop-shop where businesses can access a consistent offer. This was seen as a vehicle for accessing all training and development options (including management development), as also covered in Chapter 3.

While at first glance, there appear to be plentiful management training options in Ireland, there is evidence of potential gaps in support and underserved or unmet need for management development. One example relates to established, mid-sized enterprises employing 50 to 249 employees with limited export potential (OECD, 2019^[17]). These firms would be ineligible for the support offered through the LEOs, which is targeted towards micro firms, and recently extended to small businesses with fewer than 50 employees (Government of Ireland, 2022^[81]). They may also fall outside of Enterprise Ireland’s client groups, which include high-potential start-up companies with the capability to start a business and sell in export markets; established manufacturing and internationally traded services businesses that are SMEs; Irish-based food and natural resource companies that are overseas-owned or controlled; and large companies (with 250+ employees). Mid-sized, locally traded service companies may therefore be ineligible for Enterprise Ireland and LEO support programmes. However, these firms may still be able to benefit from open-access resources like the EILearn e-learning platform and participate in wider management development opportunities, such as Mentors Work.

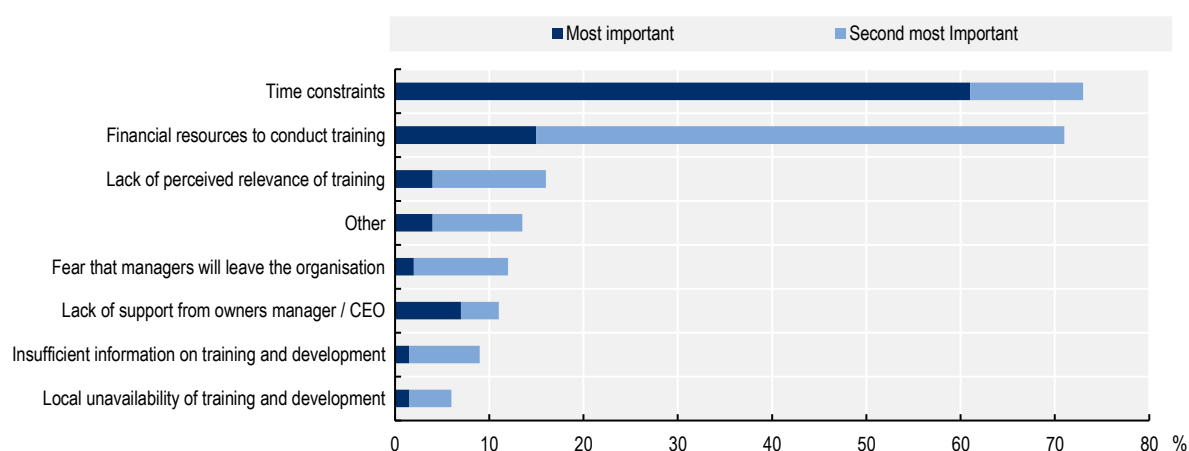
Another identified gap relates to community, voluntary and social enterprises (CVSEs). These organisations are acknowledged as making a vital contribution to Ireland’s economic and social prosperity and are increasingly deploying new technologies and creative approaches to address societal and environment challenges. However, many programmes listed in Table 4.3 are not available to charities or not-for-profit organisations. Research suggests that there are very low levels of awareness, a variable offer of support and limitations to the programmes available through the local enterprise support offer (The Wheel/Carmichael, 2021^[82]; DRCD, 2019^[83]).

Addressing these unmet needs should be considered a priority in Ireland. DETE and DFHERIS, working with Enterprise Ireland, the LEOs, Skillnet Ireland, the Regional Skills Fora and employer representative organisations such as Ibec and The Wheel, should review the relevance of their existing management development programmes to these organisations and the feasibility of widening the eligibility criteria for accessing support and developing targeted management development opportunities. Delivering commitments made in the Department for Rural and Community Development (DRCD) National Social

Enterprise Policy to compile a list of business support available to social enterprises, identify gaps in provision, improve access to mainstream support (such as that offered by LEOs) and provide tailored training for social enterprises will be important in improving business and leadership support for the CVSE sector. The launch of the Leadership Academy (see Box 4.8 further below), which offers resources and support tailored to the needs of non-profit leaders, is a noteworthy addition to the landscape of support and illustrates the value placed on customised and targeted support for groups of businesses that share common management challenges.

Several factors have been found to inhibit participation in management training. International evidence and research undertaken with businesses in Ireland identify time constraints as a major barrier to the take-up of management development opportunities, particularly among SMEs (Figure 4.7) (EGFSN, 2020^[47]; Management Development Council, 2010^[77]). Smaller firms are also less likely to have a dedicated budget for management development, meaning financial constraints are an additional concern. The EGFSN's *Leading the Way* report found that less than half (48%) of small firms have a budget for management development, and 32% of micro-sized firms do (EGFSN, 2020^[47]).

Figure 4.7. Barriers to management development faced by SMEs in Ireland, 2020



Source: EGFSN (2020^[47]), *Leading the Way: Investing in Management Development for SME Productivity and Growth*, www.skillsireland.ie/all-publications/2020/201020-final-leading-the-way-report_skillnet-ireland.pdf.

StatLink  <https://stat.link/0pg4qs>

Chapter 3 discusses in great depth the barriers to lifelong learning and the need for flexible, modern learning options. In the context of significant time and cost constraints faced by managers in SMEs, this is particularly relevant, and project participants emphasised the need for substantially or fully subsidised training that is delivered flexibly, including short-term, modular and blended learning, online training and training delivered at times suited to business leaders.

Project participants also stressed the importance of engaging businesses in the co-design of management training and building a degree of customisation into the delivery of programmes. In particular, strong support was shown for the SFA/Skillnet Ireland Mentors Work programme and Enterprise Ireland Spotlight on Skills, which both enable participants to shape their learning journey and are also fully subsidised by the government and free to access for participants (in the case of the latter for EI clients only). Project participants viewed this as vital to ensure the relevance of management training to business needs, to maximise the business benefits of management development and to offer learning options that accommodate the time and cost constraints felt most acutely by SMEs. Another example of this in Ireland is the ISME / UCD Professional Academy which offers accredited, subsidised management development for SMEs, delivered flexibly through an interactive online study environment (Box 4.8).

Box 4.8. Relevant national examples: Flexible and targeted management development programmes for SMEs

Ireland: Skillnet Ireland Management Development Programme

Skillnet Ireland promotes training and upskilling for Irish companies. It designs tailored training programmes for companies and is overseen by a board of representatives from the Department of Education and Skills and key industry stakeholders. Accessed through networks that link companies based on areas of interest and business needs, it facilitates networking, the sharing of best practices and the delivery of upskilling programmes for employees. A core part of the programme is aimed at upskilling managers. The Management Development Programme offers courses for a wide variety of managerial needs. Managers can improve their leadership and communication skills, foundational skills, and the techniques necessary for managing teams, as well as learn specific skills required in sectors such as retail. Courses are subsidised, and in 2018, 56 182 people were trained from 16 462 member companies.

Ireland: The Leadership Academy

The Leadership Academy is a new model for leadership development in the community and voluntary sector, launched by The Wheel with support and funding from DFHERIS.

The Leadership Academy is a resource for all non-profit leaders, providing opportunities for peer networking, professional and personal development. A variety of resources are available from the Leadership Academy website, including self-assessment tools, workshops and webinars on key leadership topics, accredited leadership development opportunities and podcasts and publications.

Ireland: UCD Professional Academy

ISME Skillnet and the University College Dublin (UCD) Professional Academy worked together to develop subsidised, flexible, accredited management training delivered flexibly to accommodate the time constraints of smaller firms. As an alternative to on-campus learning, the UCD Professional Academy delivers expert instructor-led courses via an interactive online study environment.

UCD Professional Academy offers a variety of study options, including: live online learning, delivered through weekly evening classes, usually over 12 weeks or a 5-day intensive boot camp where participants can interact with each other but benefit from the convenience of studying from home; on-campus learning, in-person weekly evening classes; on-demand learning, where participants have the option to join live tutorial sessions but can learn at their own pace, on average over 6 weeks, but up to 18 weeks.

Each programme results in a UCD Professional Academy Diploma, with five areas of learning aligned to ISME's learning and development strategies: leadership and management; marketing; digital and information technology (IT); business programmes; and data analytics.

Source: Skillnet Ireland (2022^[84]), *Home page*, www.skillnetireland.ie/; The Leadership Academy (2023^[85]), *Home page*, www.leadersacademy.ie; UCD Professional Academy (2023^[86]), *Home page*, www.ucd.ie/professionalacademy/.

An international example of relevance here is the Polish Agency for Enterprise Development (PARP) management development programmes, which are notable for the scale of subsidies (equivalent to 80% of programme costs), the breadth of online learning options and their scale – reaching 180 000 small businesses since 2006 (Box 4.9). Indeed, in addition to advancing new, flexible and targeted management training, Ireland should review the scope to scale up or draw lessons from successful existing development programmes. However, consultations with project participants suggest that there is a need for further

measures that stimulate demand and uptake among managers, particularly in SMEs (see Recommendation 4).

Box 4.9. Relevant international example: Flexible and targeted management development programmes for SMEs

Poland: PARP management development programmes

The Polish Agency for Enterprise Development (PARP) has a number of programmes targeting managers. For instance, the SME Manager Academy finances training and advisory support for managerial staff in SMEs in the area of business management, including human resources.

The academy aims to: 1) diagnose the needs of SMEs and the skills gaps of owners and managers; and 2) train managers of enterprises from the SME sector. Financial support covers up to 80% of projects, while the SME covers the remaining 20%. PARP has also introduced the PARP Academy, an e-learning platform offering 50 free-of-charge online training sessions tailored to the needs of the SME sector. The sessions are in four thematic areas related to setting up and running a business. Since 2006, over 180 000 participants have benefited from PARP Academy training.

Source: PARP (2023^[67]), *Polish Agency for Enterprise Development*, <https://en.parp.gov.pl/>.

Recommendation 3: Extend flexible, subsidised and customisable development opportunities to Ireland's managers to maximise the accessibility, relevance and value of support

Addressing weak management and leadership skills is an important factor in driving innovation and strengthening the performance of firms in Ireland. Management development has been a policy priority in Ireland for several years, and much work is underway. Despite a well-developed landscape of management training in Ireland, however, there is evidence of unmet needs for management development and, thus, scope to extend and scale up flexible, subsidised and customisable learning options for managers.

Ireland can undertake the following specific actions to extend flexible, subsidised and customisable development opportunities to Ireland's managers to maximise the accessibility, relevance and value of support:

- 3.1. Address gaps in management training for mid-sized, locally traded service companies and community, voluntary and social enterprises.** DETE and DFHERIS, working with Enterprise Ireland, the LEOs, Skillnet Ireland, the Regional Skills Fora and employer representative organisations, such as Ibec and The Wheel, should review the relevance of existing management development programmes to these organisations and the feasibility of widening the eligibility criteria for accessing support. There is also a need to develop tailored training customised to the distinct needs of these organisations, in the case of CVSEs, delivering commitments made in the DRCD National Social Enterprise Policy.
- 3.2. Advance new flexible, subsidised and customisable management training and scale up successful existing programmes.** Enterprise Ireland and Skillnet Ireland, working in partnership with the RSF, employer representative organisations, education and training providers, should review how to support the expansion of short-term, modular and blended

learning, online training, and training delivered at times suited to business leaders, which can better accommodate the time and cost constraints felt most acutely by Ireland's smaller enterprises (see Chapter 3 for more recommendations on flexible and accessible learning opportunities). Ireland should also review the scope to expand or draw lessons from successful existing examples of fully subsidised and customisable management development opportunities in Ireland, with project participants highlighting the SFA/Skillnet Mentors Work and EI Spotlight on Skills as innovative models that could be usefully applied to other management training programmes.

Recommendation 4: Strengthen incentives for management development to raise the motivation of Ireland's managers to upgrade their skills and participate in lifelong learning

Data from the European Labour Force Survey suggests that in Ireland, managers are less likely to have participated in training than is average across the European Union. In 2021, 14.9% of Irish managers had engaged in education and training in the past four weeks, compared to 16.6% in the European Union and over 40% of managers in countries like Finland and Sweden (Eurostat, 2021^[88]). As in other countries, participation in management development increases with firm size, with 67% of micro-businesses engaging in formal management development between 2017 and 2020 compared to 88% of medium-sized enterprises (EGFSN, 2020^[47]).

Recent research also suggests there has been a deprioritisation of leadership development in Ireland, as firms have focused on the impact of COVID-19 and economic uncertainty (CIPD, 2021^[89]). The impact of the COVID-19 pandemic on management skills needs was also identified by project participants. COVID-19 has accelerated the shift towards more flexible forms of working (Microsoft, 2020^[90]), and more than half (56%) of organisations in Ireland have incorporated remote and hybrid working into strategies to attract and retain talent (CIPD, 2022^[91]). However, there is evidence that managers find it more difficult to manage remote teams (McCarthy et al., 2021^[92]). The DETE Making Remote Work strategy acknowledges that dedicated training to support management skills development will be important to enable the successful adoption of remote working (DETE, 2021^[79]). However, while 75% of Irish firms had invested in technology to support remote or hybrid working, less than half (41%) of line managers had received training on how to manage remote or hybrid teams (CIPD, 2022^[91]).

There is evidence that smaller enterprises may lack awareness of the value of management training and have unrecognised management development needs. For instance, evidence from the *Leading the Way* report suggests that business leaders in Ireland identify developing management capability as a priority but are more likely to identify management and leadership development as a top priority for their management teams than themselves (EGFSN, 2020^[47]). In order to build a culture of continuous improvement in management development in Ireland, there is a need to build awareness and commitment at the very top of organisations and to develop the skills of the entire management community, including junior team leaders and middle managers as well as senior executives and leaders. A lack of evidence on the return on investment in management training has been identified as a further barrier to participation, both in the literature and among government and industry stakeholders in Ireland. This suggests a need to improve awareness among businesses, particularly SMEs, of the business benefits of management development for productivity, innovation and business performance. The EGFSN *Leading the Way* working group could build on the recently launched Skills for Better Business campaign, which includes an online assessment of management development capabilities and signposts businesses to suitable support, to provide stronger quantitative evidence and case studies demonstrating the return on investment associated with management training.

Alongside soft measures like awareness campaigns, project participants were also interested in the potential for management standards, accreditation and quality marks and how these might support

stronger incentives for management development. Internationally, a few such standards exist, often focused on specific aspects of management, particularly human resource management in the case of the Investors in People Standard (see Box 4.10). An overriding benefit of such approaches is that employers are supported to make management improvements in becoming accredited and often report a range of benefits as a result in terms of attracting talent, promoting staff retention, and strengthening employee engagement. National and local enterprise agencies, qualifications and standards authorities such as Quality and Qualifications Ireland (QQI) and the National Standards Authority of Ireland (NSAI), providers of management training, employer representative organisations such as Ibec, ISME, the SFA and The Wheel, large organisations and SMEs should work collaboratively to develop new management standards and quality marks to professionalise management in Ireland. It will also be important to co-design the standards with employers (particularly smaller enterprises) to work through implementation challenges and to maximise relevance and impact. For instance, the accreditation journey can be time-consuming and costly, and many existing standards are, for example, tiered to support employers of all sizes to engage with standards as part of a journey and encourage their ongoing participation – progressing through standard, silver, gold and platinum award levels in the case of Investors in People.

Box 4.10. Relevant international examples: Incentivising management development

Worldwide: Investors in People (IIP) international standard

IIP is an accredited standard for people management. It originally started as an initiative by the UK government in 1991 and is now an international standard applied in over 80 countries in more than 30 languages. The latest framework focuses on three key areas (leading, supporting and improving), each covering nine performance indicators. Organisations are assessed against these indicators using a performance model made up of four levels: developed, established, advanced and high-performing. Standard, silver, gold and platinum levels are then awarded for one of three years. IIP has accredited over 50 000 organisations, and its “we invest in people” accreditation could be considered the global benchmark for people management.

Scotland (United Kingdom): Approach to Fair Work First in procurement

The Scottish government has been deploying its spending power to leverage employers’ commitment to Fair Work across Scotland. This is achieved by applying Fair Work First criteria to issuing public grants, contracts and other funding awarded by and across the public sector. Thus, all policy, funding and procurement managers across the Scottish government have been trained in and guided by the Fair Work Convention principles. This means asking employers to work to certain Fair Work criteria when receiving public funding, including:

- appropriate channels for effective voice, such as trade union recognition
- investment in workforce development
- action to tackle the gender pay gap and create a more diverse and inclusive workplace
- no inappropriate use of zero-hours contracts
- payment of the real living wage.

The criteria were updated in 2019 to reflect emerging priorities for encouraging constructive partnerships between employers and workers and addressing workplace equality.

Source: Investors in People (2023^[93]), *Home page*, www.investorsinpeople.com; Scottish Government (2021^[94]), *Fair Work Action Plan: Annual Report*, www.skillsdevelopmentscotland.co.uk/media/47742/fair-work-action-plan-annual-report.pdf.

Ireland should review the scope to advance incentives that promote the take-up of these standards, for example, by making accreditation a condition for accessing public funding or support – particularly for larger businesses that have greater resources to invest in management development. Internationally, there are examples of employment standards being integrated into public procurement frameworks, such as the Fair Work Standard in Scotland (Box 4.10). There are also examples of banks offering discounted interest rates for small businesses that have completed management training, as seen in the United Kingdom in the mid-to-late 1990s (OECD, 2002^[95]). There is some practice of this nature already underway in Ireland. For example, Micro Finance Ireland (MFI) offers a 1% discount to standard interest rates for loan applications made through LEOs, and once MFI approves the loan, businesses are provided with a mentor from the LEO Mentor Panel (Box 4.11). Extending such schemes could help to drive the take-up of management training and support a culture of continuous improvement in management skills in Ireland.

Box 4.11. Relevant national example: Incentivising management development

Ireland: Micro Finance Ireland (MFI)

MFI provides small loans of EUR 2 000 to EUR 25 000 for micro-sized businesses employing fewer than ten employees and with an annual turnover of less than EUR 2 million, including those that have been declined a loan from a bank.

MFI works closely with the LEOs and Local Development Companies and offers a 1% reduction in the interest rate on loans when businesses submit their applications through these intermediaries.

Micro-sized firms approved for a loan are supported by an experienced business mentor on the LEO Mentor Panel, who offers non-financial learning and support to help businesses develop and grow.

Source: Micro Finance Ireland (2023^[96]), *Home page*, <https://microfinanceireland.ie/>.

Recommendation 4: Strengthen incentives for management development to raise the motivation of Ireland’s managers to upgrade their skills and participate in lifelong learning

There is evidence that smaller enterprises have unrecognised management development needs, lack awareness of the value of investing in management skills and that COVID-19 has led to a deprioritisation of leadership development in firms in Ireland. Efforts to strengthen the relevance and accessibility of management training, therefore, need to be accompanied by interventions that increase the demand and take-up of management development opportunities.

Ireland can undertake the following specific actions to strengthen incentives for management development to raise the motivation of Ireland’s managers to upgrade their skills and participate in lifelong learning:

- 4.1. **Strengthen evidence on the business benefits of management development for productivity, innovation and business performance.** The EGFSN Leading the Way working group could build on the recently launched Skills for Better Business campaign to provide stronger quantitative evidence and case studies demonstrating the return on investment associated with management training.

- 4.2. Introduce a new management standard and associated quality marks to professionalise management in Ireland.** National and local enterprise agencies, qualifications and standards authorities such as QQI and NSAI, management training providers, employer representative organisations such as Ibec, ISME, the SFA and The Wheel, large organisations and SMEs should work collaboratively to develop the new management standard. It will also be important for stakeholders to co-design standards with employers to work through implementation challenges, minimise administrative burden and maximise value. Due consideration should be given to developing a tiered standard – for example, with gold, silver and bronze levels – to support employers of all sizes to engage with standards as part of a journey and encourage their ongoing participation.
- 4.3. Advance incentives for Irish firms to take up new management standards and quality marks,** for instance, by making it a condition for accessing public funding and support. This could build on current partnership arrangements between MFI and LEOs, which offer discounted interest rates on loans and promote participation in the LEO Mentor Panel. In addition, Ireland should review the potential to extend conditionality to a wider range of financial and non-financial support for business, particularly for larger firms that have greater resources to support management development.

Opportunity 3: Incentivising and enabling enterprises to make better use of the skills of their workers through innovative workplace solutions

While investment in R&D and the presence of R&D professionals within organisations are crucial factors in business innovation, an important but often overlooked determinant of innovation in smaller enterprises is organisational design and culture. How firms organise their workplaces has a significant impact on their ability to stimulate ideas from the workforce, transform these into innovation, and facilitate the absorption of knowledge from other firms and research organisations (Bloom and Van Reenen, 2010^[75]; Flood et al., 2008^[97]; Lorenz and Potter, 2019^[98]). In the context of relatively low rates of innovation in Ireland discussed earlier in this chapter, work organisation warrants considerable focus in Ireland.

Research suggests that small firms that offer greater autonomy, teamwork, performance-related pay and appraisal, and regular staff meetings between employees and their supervisors innovate more and co-operate more for innovation. The positive impact of participative forms of work organisation on firm-level productivity are well documented and substantial. For example, Swedish surveys suggest an uplift of between 20-60% in addition to reduced staff turnover and staff absence (Totterdill, 2015^[99]). In Nordic countries like Sweden and Finland, most SMEs design workplaces in these ways, but in Ireland, the share of firms adopting these organisational models is much lower (Lorenz and Potter, 2019^[98]).

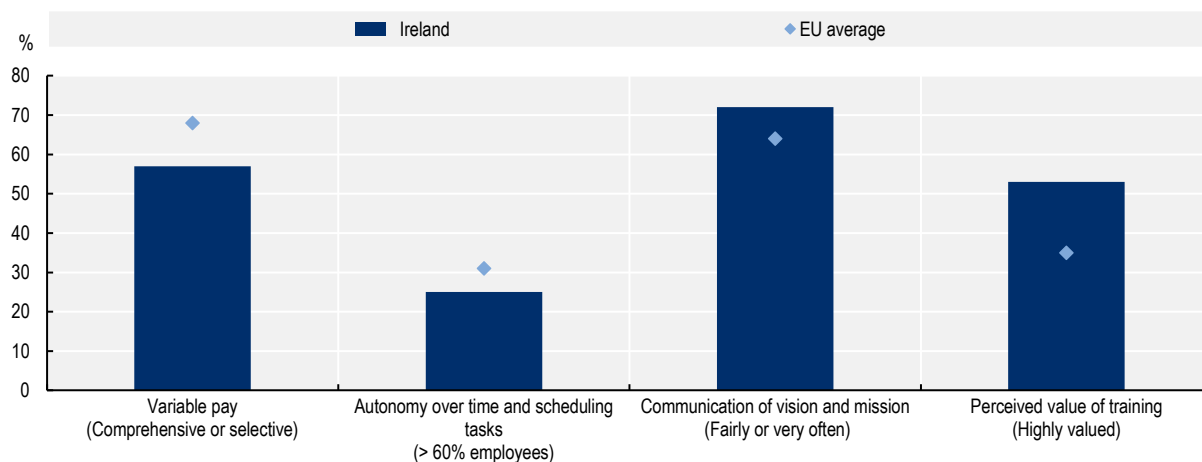
Research carried out by Dublin City University and the University of Limerick demonstrates the powerful effect that combining strategic human resource management with employee involvement and participation systems has on the performance of Irish firms. When employing this multi-dimensional model of HPWPs, firms were found to realise significant performance advantages, both in terms of labour productivity and workforce innovation (Flood et al., 2008^[97]).

As set out earlier, data from the Survey of Adult Learning (PIAAC) suggest a smaller share of jobs in Ireland adopt these HPWPs. However, evidence from the European Company Survey and European Working Conditions Surveys suggests a mixed picture of workplace practices in Ireland (Figure 4.8) (Eurofound/CEDEFOP, 2019^[14]; Eurofound, 2016^[100]). On the one hand, employees in Irish firms report that working conditions are good; they tend to rate their line managers highly, are more likely to have undergone training, and report being able to apply their own ideas in their work. In addition, employers in Ireland assign greater value to training, more regularly communicate their vision and mission to staff, and take steps to ensure their employees are engaged in the decision making of the business. However, on


the other hand, Ireland performs less well on measures of job design: workers in Ireland are more likely to report that their work involves monotonous tasks and work long hours. They also tend to experience less autonomy on some measures and are less likely to work in self-directed teams. Other studies suggest that small firms in Ireland struggle with more formal and strategic human resource management, particularly target setting and incentivisation, performance management and dealing effectively with underperformance (EGFSN, 2020^[47]; McKinsey & Company, 2009^[24]).

Figure 4.8. High-performance workplace practices in firms, Ireland and the EU average, 2019

In percentage of firms



Source: Eurofound/CEDEFOP (2019^[14]), *European Company Survey 2019*, www.eurofound.europa.eu/surveys/2019/european-company-survey-2019.

StatLink  <https://stat.link/x4tvoe>

These findings suggest there is an opportunity for Ireland to stimulate SME innovation by driving improvements in workplace organisation through greater adoption of HPWPs. In particular, Ireland could reinvigorate strategic focus on workplace innovation as a key vehicle to improve the productivity and performance of firms; and extend funding and support for peer-to-peer learning to maximise knowledge exchange and innovation diffusion between Ireland's MNEs and SMEs.

Recommendation 5: Reinvigorate the strategic focus on workplace innovation in Ireland as a key vehicle to improve firm productivity and performance

Despite the well-evidenced positive impacts of HPWPs, many European countries lack a strong strategic focus on modernising workplaces. While there is considerable potential for public programmes to strengthen workplace organisational practices, work organisation can often be viewed as the private concern of enterprises and social partners rather than an issue for public intervention (OECD/ILO, 2017^[2]).

The benefits of strengthening workplace practices have not gone unnoticed in Ireland. In the 1990s and early 2000s, Ireland was one of few liberal market economies to set out a strategic focus on HPWPs and workplace innovation, taken forward through the Irish government's National Workplace Strategy. The National Centre for Partnership and Performance (NCPP) was established to support and drive change in the Irish workplace. The NCPP subsequently launched a specialist Workplace Innovation Fund, which included public awareness campaigns to disseminate knowledge of HPWPs and running enterprise-level projects to foster social partnerships in advancing HPWPs within enterprises. However,

both the NCPP and its Workplace Innovation Fund were abolished in 2009 as part of wider austerity measures (Totterdill et al., 2016^[101]).

While the NSS 2025 acknowledges skills use as an important objective, there is scope for DFHERIS to strengthen the focus on HPWPs as a means to improve the use of skills in the workplace, drive innovation, improve productivity and strengthen firm performance. The NSS 2025 follow-up offers the opportunity to reinvigorate the strategic focus on organisational practices and workplace innovation⁴ in Ireland as a driver of innovation, productivity, competitiveness and digitalisation. While engagement activities undertaken during the recommendations mission for this project did not rate potential policy directions concerning workplace practices as highly as others, the mixed picture of workplace practices in Ireland and the potential uplift in productivity, innovation, and firm-level performance associated with participative forms of work organisation (noted above) justifies a sharper focus on enabling enterprises to make better use of the skills of their workers through innovative workplace solutions.

Lessons from those countries that have prioritised the diffusion of HPWPs over a number of decades also emphasise the importance of repositioning workplace innovation from a traditional industrial relations sphere to a mainstream policy priority (Totterdill et al., 2016^[101]). There is a need to embed workplace innovation more strongly within the NSS 2025 and the wider policy framework for economic development, industrial development, innovation and digitalisation in Ireland. One such example of this was *Future Jobs Ireland 2019*, which notes that the full productivity gains of new technology will only be realised if complemented with changes in organisational processes (Government of Ireland, 2019^[102]). This could include the government broadening its definition of innovation to include “organisational innovation”, spanning the adoption of productivity and efficiency-enhancing processes, including potentially redefining the Revenue Commissioners’ qualification requirements for the R&D tax credit. The IRC and SFI could also provide additional funding to support R&D projects that seek to blend technological innovation with investment in staff training, work reorganisation and job redesign to maximise the productivity benefits realised through the adoption of digital technology by Irish firms.

There are also potential learnings from workplace innovation programmes run in other European countries, particularly in countries like France, Germany and some Nordic countries, which have progressed a variety of strategies and interventions over the past 30 years, while other countries, like Canada, have relatively recently established organisational practices as a policy priority (Box 4.12). Evaluations of longstanding programmes identify a range of implementation challenges, including how best to allocate finite resources, deliver significant and sustained shifts in organisational practices, and successfully transition concepts and approaches from traditional manufacturing environments to meet the needs of knowledge-based service industries. They also offer lessons on how to successfully overcome many of these challenges, for example, through more inclusive framing strategies, involving workers and social partners in programme design, utilising collaborative learning networks to embed and diffuse learning and allocating sufficient resources for dissemination and capacity building (Totterdill et al., 2016^[101]).

Box 4.12. Relevant international examples: Making workplace innovation a policy priority

Finland: Workplace Development Programme

Finland’s Workplace Development Programme ran as a national government programme from 1996 to 2010. Motivated by a belief that sluggish productivity growth was linked to poor skills use, the programme aimed to disseminate new and innovative work, organisational and management practices, models and tools and to develop a “learning organisation” culture. Notable examples include the Finnish programmes TYKE (1996-2003) and TYKES (2004-10), which aimed to promote the introduction of organisational innovations, thus contributing to workplace productivity and the quality of working life. More than 1 800 projects were funded, involving nearly 350 000 employees and some EUR 106 million

of public funding. The most common focus areas for the development projects were work processes, the organisation of work, and the development of human resource management and supervisory work. Project implementation was in close co-operation between management and employees, and external experts were involved in each project. Most managers and staff expressed that the projects positively impacted the operational performance of the workplace and the quality of work. The programmes were especially successful in raising public awareness of the importance of workplace change and innovation; boosting development activity among a large group of workplaces, including SMEs; and strengthening expertise in workplace development and research on working life.

Canada: Innovation and Skills Plan

In 2017, Canada initiated the Innovation and Skills Plan, a blueprint to foster a culture of innovation in firms and workplaces, create well-paying, highly-skilled jobs, and help provide better services for entrepreneurs and businesses. The vision is divided into four key areas: 1) people and skills; 2) research, technology and commercialisation; 3) investment, scale-up and clean growth; and 4) programme simplification. The programme targets many areas of Canadian society and brings together different initiatives from different government departments to create one coherent strategy.

Some of the aims include increasing digital skills and literacy; increasing the number of professional, science and tech-related jobs in the Canadian economy; growing business investment in research and development; doubling the number of SMEs majority owned by women; and doubling the number of high-growth firms in Canada. Each target has a quantifiable goal that should be completed by 2025 (the plan's end date), and information on the progress of these objectives is provided to the public in a clear manner. On its dedicated website, progress bars visually track how close each target is to being achieved. The public can also see which government initiatives have been created to pursue each objective. This helps create accountability and transparency in implementing the Innovation and Skills Plan.

Source: OECD/ILO (2017^[2]), *Better Use of Skills in the Workplace: Why It Matters for Productivity and Local Jobs*, <https://dx.doi.org/10.1787/9789264281394-en>; Government of Canada (2019^[103]), *The Innovation and Skills Plan*, www.ic.gc.ca/eic/site/062.nsf/eng/h_00083.html.

The strategic prioritisation of workplace innovation in Ireland should, in turn, influence public funding allocation and programme design. As noted earlier, and in Chapter 3, Ireland benefits from a relatively well-developed offer of programmes to strengthen management capability and promote employer investment in skills. Several of these programmes develop skills required to drive improvements in organisational practices. For example, the Skillnet Ireland/Small Firms Association Mentors Work Competency Framework includes performance management, work culture, communication, and “motivate for growth” (among others), which equip participants with the skills to advance high-performing workplaces. The Ibec Academy offers a variety of relevant management courses on issues such as employee engagement and workplace well-being. Resources and programmes designed to support businesses in improving their organisational practices also exist. For instance, Enterprise Ireland’s Workplace Innovation Toolkit enables organisations to examine performance in areas such as employee engagement, training, innovation and productivity and signposts companies to relevant support. This includes, for example, Enterprise Ireland’s Lean Business offer, which enables firms to build the capability of leadership and staff to identify opportunities to improve operations and drive workplace innovation. Scaling up these existing initiatives, particularly promoting take-up among smaller enterprises, would help to secure improvements in workplace practices in conjunction with the digitalisation agenda.

DFHERIS and DETE, working through Enterprise Ireland, IDA Ireland, Skillnet Ireland, the RSF and LEOs and working with wider organisations such as Ibec, the SFA, ISME and The Wheel, should also examine the opportunity to update the content of wider programmes to strengthen the focus on workplace transformation and HPWPs. For instance, with the LEOs now servicing firms with up to 50 employees,

programmes such as the Accelerate Management Development Programme could be strengthened by adding modules focusing on building high-performing workplaces. In addition, Ireland could consider advancing new pilots that take well-established, innovative programmes, such as Skillnet Business Networks or Spotlight on Skills and apply them to improving work organisation within smaller firms. Similarly, additional funding and support planned for Industry Consortia looking to deploy Industry 4.0 technologies in firms could be extended to include organisational practices (DBEI, 2019^[28]).

Alongside the opportunity to strengthen the strategic focus on workplace innovation, there is a need to raise the awareness and motivation of employers (particularly smaller enterprises) to implement HPWPs. Despite the well-documented positive impact of HPWPs on firm performance, the adoption of these practices across Europe remains limited, particularly in Ireland. Low levels of take-up tend to be attributed to low levels of awareness of what constitutes good practice, lack of awareness about the benefits of HPWPs and poor access to resources and support to improve organisational practice and enable workplace innovation (OECD/ILO, 2017^[2]; Totterdill et al., 2016^[101]).

Project participants suggest that while Irish firms generally demonstrate a strong appreciation of the need to invest in training and development for staff (an important component of HPWPs and discussed in detail in Chapter 3), their awareness of wider organisational practices that could improve employee engagement and firm performance (e.g. job design, target setting, incentivisation and mechanisms for employee participation) is much lower. There is, therefore, a need for Ireland to advance awareness campaigns that build an understanding of the steps that small firms can take to stimulate better work organisation practices and to strengthen the evidence base on the business case for the adoption of HPWPs. Many other OECD countries have faced similar challenges and advanced relevant initiatives from which Ireland could draw lessons, including awareness-building activities that demonstrate leading practices around work organisation and job design, e.g. social media campaigns, the sharing of success stories, networking and diagnostic tools that help firms identify where improvements can be made (Box 4.13).

Box 4.13. Relevant international examples: Promoting awareness of the need to stimulate better work organisation practices

Australia: Centre for Workplace Leadership

There are a number of government-led active efforts in Australia that aim to build the evidence base for why action is needed while also sharing best practices about successful programmes. For example, the Centre for Workplace Leadership was established in 2013 and is dedicated to excellence in leadership research, improving leadership quality in Australian workplaces and developing individual leaders. The centre aims to bridge the gap between research insights and leadership practices around work organisation and job design. It offers a number of customised programmes to help organisations engage employees and develop organisational leadership skills.

New Zealand: Poor utilisation of skills in the workplace a key policy issue

New Zealand has singled out the poor utilisation of skills in the workplace as a key policy issue and recognises the introduction of HPWPs as crucial to increasing workplace productivity. Policy has been focused on increasing awareness and demonstrating how HPWPs can be applied in the workplace to achieve gains for both employers and employees. Limited financial resources have been devoted, primarily from the Department of Labour.

Flanders (Belgium): Flanders Synergy

Flanders Synergy helps firms evolve through workplace restructuring, workplace learning and innovation. Its objective is to help organisations create more attractive (workable) jobs and to become more agile, innovative and responsive to market needs. To this end, Flanders' Synergy conducts scientific research and helps disseminate practical examples and success stories through networking,

training, and new business models and tools. The Flemish government subsidises some services for employers. Flanders Synergy has an advisory board that includes academic researchers and social partners, including unions, enterprises and consultants.

Source: Centre for Workplace Leadership (2018^[104]), *Centre for Workplace Leadership*, <https://fbe.unimelb.edu.au/cwl/about>; OECD/ILO (2017^[2]), *Better Use of Skills in the Workplace: Why It Matters for Productivity and Local Jobs*, <https://dx.doi.org/10.1787/9789264281394-en>; OECD (2015^[105]), *Employment and Skills Strategies in Flanders, Belgium*, <https://dx.doi.org/10.1787/9789264228740-en>.

Recommendation 5: Reinvigorate the strategic focus on workplace innovation in Ireland as a key vehicle to improve firm productivity and performance

The NSS 2025 follow-up offers an opportunity for Ireland to reinvigorate its strategic focus on organisational practices. The mixed picture of workplace practices in Ireland, relatively poor rates of innovation in firms, and the well-evidenced uplift in the productivity and performance of firms associated with HPWPs suggest that work organisation warrants considerable focus in Ireland.

Ireland can undertake the following specific actions to reinvigorate its strategic focus on workplace innovation as a key vehicle to improve Irish firms' productivity and performance:

- 5.1. **Position the modernisation of Irish workplaces as an explicit policy priority in Ireland's National Skills Strategy 2025 follow-up.** Other strategies, such as Ireland's national R&I Strategy and Regional Development Plans, should also seek to acknowledge improvements in work organisation (or "workplace innovation") as a distinct and valued form of innovation, for example, redefining the qualification requirements for the R&D tax credit to include organisational innovation and supporting projects that seek to complement new technology with staff training and job redesign to realise the productivity benefits of digitalisation.
- 5.2. **Review Ireland's portfolio of management development opportunities to strengthen its focus on workplace transformation and high-performance workplace practices.** DFHERIS and DETE, working through Enterprise Ireland, IDA Ireland, Skillnet Ireland, the RSF and LEOs and working with wider organisations such as Ibec, the SFA, ISME and The Wheel, should examine the scope to scale up existing initiatives that develop skills required to drive improvements in organisational practices, such as the Mentors Work and Lean Business offers; adapt the competency frameworks or content of programmes to include work organisation and job design; or advance new pilots, that take well-established, innovative programmes, such as Skillnet Business Networks or Spotlight on Skills and apply them to improving work organisation within smaller firms.
- 5.3. **Advance awareness campaigns that build an understanding of the steps that small firms can take to stimulate better work organisation practices.** Project participants suggested Irish firms have very low levels of awareness of what constitutes good practice when it comes to organisational practices (beyond staff training). This highlights a need for Enterprise Ireland and the LEOs to strengthen the evidence base on the business case for the adoption of HPWPs and to advance new awareness-building activities that demonstrate leading practices around work organisation and job design, including social media campaigns, the sharing of success stories, networking and diagnostic tools that help firms to identify where improvements can be made.

Recommendation 6: Foster peer-to-peer learning and communities of practice to promote the diffusion of leading-edge organisational practices between Ireland's multinational enterprises and small and medium-sized enterprises

In addition to strengthening government support for improving workplace practices, past research and project participants show considerable interest in the role of employer networks in enabling peer-to-peer learning and fostering enduring communities of practice that can embed learning and share good practice on an ongoing basis (OECD, 2019^[17]; SME Taskforce, 2021^[80]).

Large and persistent dispersion exists in Irish firms' productivity performance (Papa, Rehill and Connor, 2018^[106]). Ireland benefits from the presence of many global frontier firms, and there is growing interest in how to support the diffusion of knowledge, technology and management practices between these leading performers and the long tail of low-productivity firms (Government of Ireland, 2019^[102]). *Future Jobs Ireland 2019*, for instance, identified the opportunity to increase the absorptive capacity of Ireland's small, indigenous enterprises by promoting stronger collaboration between MNEs and SMEs (Government of Ireland, 2019^[102]).

Ireland already benefits from well-established mechanisms that promote collaboration and enable peer learning. For instance, peer-to-peer support is at the heart of Skillnet Business Networks, of which there are now 72 across Ireland. The PLATO Business Development Network has at the core of its programme carefully curated participant groups and monthly sessions facilitated by large parent companies (Box 4.14). Skillnet Ireland's recently launched Innovation Exchange is another example of fostering collaboration between smaller enterprises and large multinationals to improve their understanding and capacity across the innovation process. At the same time, IDA Ireland and Enterprise Ireland's Disruptive Technologies Partnership Portal provides a platform for companies in Ireland to collaborate around disruptive, digital and sustainable technologies. Skillnet Ireland, EI and IDA Ireland, as well as wider providers of management training, should consider how wider aspects of HPWPs, such as new forms of work organisation and direct employee participation, could be more strongly embedded within the design of peer-to-peer learning programmes in Ireland or to advance similar initiatives to support improvements in workplace practices.

Box 4.14. Relevant national example: Peer-to-peer support programmes

Ireland: PLATO Business Development Network

PLATO is a peer-to-peer support and development network for owner-managers, established in Ireland almost 30 years ago. Delivered through LEOs, Ibec and Chambers Ireland, Plato is an 18-month development programme for managers established for SMEs in every sector. While there are various activities and support available to participants, including training and networking, at the core of the programme are participant groups. Each Plato Group has around 12 to 15 participants, and each group's makeup is carefully considered by PLATO to incorporate the best mix of expertise and range of business experience. Groups meet for three-hour monthly sessions facilitated by large parent companies. These sessions provide a vehicle to share information, expertise and experiences, where participants are able to raise issues relevant to their businesses and then discuss, confidentially, with the group. Groups decide what topics to discuss, and external business experts can be brought into group meetings to advise on specific topics. The programme has assisted over 4 000 businesses across Ireland, and participants report improved management awareness and effectiveness, productivity, profitability and growth.

Source: PLATO (2023^[107]), *About Plato Business Development Network*, <https://plato.ie/about-plato/>.

Given the strong presence of large MNEs, Enterprise Ireland and IDA Ireland should also examine the potential to further promote knowledge transfer between these organisations and their supply chains. Again, there are several international examples from which Ireland could learn. For example, in Korea, the POSCO National Human Resource Development (HRD) Consortium partners with local vocational education and training (VET) providers to offer leadership education to smaller enterprises in their supply chain. In Japan, J-Good Tech is an online business-matching site that aims to support information exchange and forming strategic partnerships between SMEs and larger domestic companies (Box 4.15).

There is one other area of focus Ireland could extend support to foster established or emerging business learning networks or communities of practice that seek to promote workplace innovation. These encapsulate a range of networks or forums that take varying forms, being sector-focused, supporting different professional groups, and often being geographically based. They can be vital in binding groups of businesses together, alongside other respected partners and experts, around a common purpose. These collaborative business networks often develop organically to advance specific short-term industry needs or business interests. However, if network activities support strong ties over time, this can boost the conditions for sustained and productive partnerships over the long term. Enterprise Ireland, IDA Ireland and Skillnet Ireland should review the existing landscape of networks and forums to identify the scope to further support these communities of practice and sharpen their focus on workplace practices. This could include extending networking activities for alums of existing programmes such as PLATO, Skillnet Business Networks or EI leadership programmes and IDA Innovation and Talent Forums, as well as offering targeted funding and support to collaborative business networks seeking to deploy innovative workplace solutions – an approach taken by France through its Competitive Clusters programme (Box 4.15).

Box 4.15. Relevant international examples: Peer-to-peer support programmes

Korea: POSCO HRD Consortium

Larger firms can encourage the better use of skills through their supply chain management practices. The POSCO HRD Consortium addresses company human resources management issues by involving change management and providing leadership education to managers on developing a common company vision in partnership with employees. POSCO has a large number of suppliers and outsourcing contractors that deliver goods and services for the production of steel in Korea. These companies, mostly SMEs, are located in the supply chain of POSCO and are not direct competitors. Through the POSCO HRD Consortium, SMEs are encouraged to increase investments in their own education and training programmes. POSCO partners with local VET providers to provide 130 courses in technology, safety, IT and ethics, including an e-MBA curriculum for executive members.

Japan: J-Good Tech

In Japan, SME Support Japan, a government-run organisation overseen by the Ministry of Economy, Trade and Industry, promotes SMEs in Japan and abroad. SME Support Japan runs the initiative J-Good Tech, an online business-matching site that connects SMEs with larger domestic and foreign companies. The overall aim is to support the creation of strategic partnerships between businesses and facilitate the exchange of information and ideas. The service is free, and companies are screened before they are listed on the site. Currently, 18 100 companies in Japan and abroad use the service, resulting in hundreds of SMEs and large companies exchanging ideas and collaborating on products.

France: Competitiveness clusters

France has sought to facilitate knowledge spillovers between large and small firms in the same sector by creating competitiveness clusters (*pôles de compétitivité*) in the regions of France identified with a particular specialisation. Grouping companies together aims to realise partnerships between different

actors with complementary skills and knowledge, develop collaborative R&D projects and enable targeted support to clusters on issues such as access to private financing and skills management. The clusters also intend to attract companies and avoid business relocation to other countries. As part of the clusters, a wide number of services are offered to SMEs to promote their participation.

Source: OECD/ILO (2017^[2]), *Better Use of Skills in the Workplace: Why it matters for Productivity and Local Jobs*, <https://dx.doi.org/10.1787/9789264281394-en>; Erickson and Jacoby (2003^[108]), “The Effect of Employer Networks on Workplace Innovation and Training”, <https://doi.org/10.2307/3590935>.

Recommendation 6: Foster peer-to-peer learning and communities of practice to promote the diffusion of leading-edge organisational practices between Ireland’s multinational enterprises and small and medium-sized enterprises

Ireland benefits from the presence of many global frontier firms but also a long tail of low-productivity enterprises. Peer-to-peer learning will therefore play a vital role in supporting the diffusion of knowledge, technology and management practices between Ireland’s MNEs and SMEs.

Ireland can undertake the following specific actions to foster peer-to-peer learning and communities of practice to promote the diffusion of leading-edge organisational practices between Ireland’s MNEs and SMEs:

- 6.1. Review the potential to embed organisational practices and high-performance work practices more strongly within Ireland’s well-established mechanisms for peer learning.** This includes Skillnet Business Networks, Plato Business Development Networks, the recently launched Innovation Exchange and the Disruptive Technologies Partner Portal, which could be expanded and extended to bring together enterprises to work collaboratively to embed wider aspects of HPWPs, such as new forms of work organisation, job redesign or mechanisms to support more direct employee participation within their organisations.
- 6.2. Develop new programmes to promote innovation diffusion between multinational and smaller enterprises in their supply chains.** For example, Enterprise Ireland and IDA Ireland could draw on international examples of supply-chain capacity-building programmes, including exploring the scope for further online platforms that support matching and information exchange between Ireland’s MNEs and SMEs and MNE-led leadership education and management development programmes delivered to smaller enterprises within their supply chain, as seen in Japan and Korea.
- 6.3. Strengthen collaborative business learning networks or communities of practice that seek to promote workplace innovation.** These are often initiated in response to shared business challenges and take varying forms, including sector-focussed forums, supporting different professional groups and often being geographically based. Enterprise Ireland, IDA Ireland and Skillnet Ireland should review the existing landscape of networks and forums to identify the scope to further support their alignment and efficacy by extending networking activities for alums of existing programmes such as PLATO, Skillnet Business Networks or EI leadership programmes and IDA Innovation and Talent Forums, and offering targeted funding and support to collaborative business networks seeking to deploy innovative workplace solutions.

Summary of policy recommendations

Table 4.4. Summary of policy recommendations for leveraging skills to drive innovation and strengthen firm performance

Recommendations	Specific actions
Opportunity 1: Better utilising Ireland’s research talent and public research and innovation system to drive innovation within firms	
1. Develop skills for innovation across the education system to strengthen Ireland’s adaptive capacity and competitiveness.	<ul style="list-style-type: none"> 1.1. Strengthen the strategic positioning of skills for innovation and improve connectivity with wider policy domains. 1.2. Improve the development of transversal skills for innovation across the education system, including lifelong learning. 1.3. Strengthen and systematise the process for identifying and responding to emerging technical skills needed for innovation in areas of strategic importance to the economy.
2. Better activate the skills of graduate and doctoral researchers in the workforce to strengthen the innovation capacity of Ireland’s economy.	<ul style="list-style-type: none"> 2.1. Strengthen incentives and resources for research and innovation institutions and highly-skilled research talent to engage and collaborate with smaller enterprises. 2.2. Advance further research to better understand current and future demand for research graduates and the mobility of research talent between academia, industry, the public and voluntary and community sector. 2.3. Strengthen career guidance for research graduates and better integrate transversal skills development into research training at all levels.
Opportunity 2: Promoting the continuous improvement of leadership and management skills within enterprises	
3. Extend flexible, subsidised and customisable development opportunities available to Ireland’s managers to maximise the accessibility, relevance and value of support.	<ul style="list-style-type: none"> 3.1. Address gaps in management training for mid-sized, locally traded service companies and community, voluntary and social enterprises. 3.2. Advance new flexible, subsidised and customisable management training and scale up successful existing programmes.
4. Strengthen incentives for management development to raise the motivation of Ireland’s managers to upgrade their skills and participate in lifelong learning.	<ul style="list-style-type: none"> 4.1. Strengthen evidence on the business benefits of management development for productivity, innovation and business performance. 4.2. Introduce a new management standard and associated quality marks to professionalise management in Ireland. 4.3. Advance incentives for Irish firms to take up new management standards and quality marks.
Opportunity 3: Incentivising and enabling enterprises to make better use of the skills of their workers through innovative workplace solutions	
5. Reinvigorate the strategic focus on workplace innovation in Ireland as a key vehicle to improve firm productivity and performance.	<ul style="list-style-type: none"> 5.1. Position the modernisation of Irish workplaces as an explicit policy priority in Ireland’s National Skills Strategy 2025 follow-up. 5.2. Review Ireland’s portfolio of management development opportunities to strengthen its focus on workplace transformation and high-performance workplace practices. 5.3. Advance awareness campaigns that build an understanding of the steps that small firms can take to stimulate better work organisation practices.
6. Foster peer-to-peer learning and communities of practice to promote the diffusion of leading-edge organisational practices between Ireland’s multinational enterprises and small and medium-sized enterprises.	<ul style="list-style-type: none"> 6.1. Review the potential to embed organisational practices and high-performance workplace practices more strongly within Ireland’s well-established mechanisms for peer learning. 6.2. Develop new programmes to promote innovation diffusion between multinational and smaller enterprises in their supply chains. 6.3. Strengthen collaborative business learning networks or communities of practice that seek to promote workplace innovation.

References

- Avvisati, F., G. Jacotin and S. Vincent-Lancrin (2013), “Educating Higher Education Students for Innovative Economies: What International Data Tell Us”, *Tuning Journal for Higher Education*, pp. 223-240, [https://doi.org/10.18543/tjhe-1\(1\)-2013pp223-240](https://doi.org/10.18543/tjhe-1(1)-2013pp223-240). [33]
- Bloom, N. and J. Van Reenen (2010), “Why Do Management Practices Differ across Firms and Countries?”, *Journal of Economic Perspectives*, Vol. 24/1, pp. 203-224, <https://doi.org/10.1257/jep.24.1.203>. [75]
- Borrell-Damian, L. (2009), *Collaborative Doctoral Education: University-Industry Partnerships for Enhancing Knowledge Exchange*, European University Association. [63]
- Borrell-Damian, L., R. Morais and J. Smith (2015), *Collaborative doctoral education in Europe: Research Partnerships and Employability for Researchers*, European University Association. [71]
- CEDEFOP (2020), *Skills in online job advertisements*, <https://www.cedefop.europa.eu/en/tools/skills-intelligence/skills-online-job-advertisements>. [21]
- Central Statistics Office (2021), *Business Expenditure on Research and Development 2019-2020*, <https://www.cso.ie/en/releasesandpublications/er/berd/businessexpenditureonresearchdevelopment2019-2020>. [11]
- Centre for Workplace Leadership (2018), *Centre for Workplace Leadership About*, <https://fbe.unimelb.edu.au/cwl/about> (accessed on 28 November 2018). [104]
- CESAER (2020), *Boost the Careers of Early-Stage Researchers*. [59]
- CIPD (2022), *HR Practices in Ireland Report 2022*, https://www.cipd.ie/Images/CIPD-Ireland-HR-Practices-survey-2022_tcm21-109548.pdf. [91]
- CIPD (2021), *HR Practices in Ireland Survey 2021*, https://www.cipd.ie/Images/HR%20Practices%20in%20Ireland%20survey%202021_tcm21-95375.pdf. [89]
- CSO (2021), *Business Expenditure On Research And Development (BERD) 2019-2020*, <https://www.cso.ie/en/statistics/technologyandinnovation/businessexpenditureonresearchanddevelopment/>. [54]
- DBEI (2019), *Ireland’s Industry 4.0 Strategy 2020-2025*, <https://enterprise.gov.ie/en/Publications/Publication-files/Irelands-Industry-4-Strategy-2020-2025.pdf>. [28]
- Department of Education and Skills (2016), *Ireland’s National Skills Strategy 2025 – Ireland’s Future*, <https://www.gov.ie/en/publication/69fd2-irelands-national-skills-strategy-2025-irelands-future/>. [6]
- Department of Education and Skills (2011), *National Strategy for Higher Education to 2030 - Report of the Strategy Group*, <https://hea.ie/assets/uploads/2017/06/National-Strategy-for-Higher-Education-2030.pdf>. [52]
- Department of the Taoiseach (2022), *Harnessing Digital - The Digital Ireland Framework*, <https://assets.gov.ie/214584/fa3161da-aa9d-4b11-b160-9cac3a6f6148.pdf>. [29]

- DETE (2021), *Making Remote Work*, <https://enterprise.gov.ie/en/Publications/Publication-files/Making-Remote-Work.pdf>. [79]
- DFHERIS (2022), *Impact 2030: Ireland's Research and Innovation Strategy*, <https://assets.gov.ie/224616/5f34f71e-e13e-404b-8685-4113428b3390.pdf>. [25]
- DFHERIS (2021), *The Research and Development Budget 2020-21*, <https://assets.gov.ie/207607/3ad7d412-8069-4387-a40c-b5631605aaac.pdf>. [10]
- DPER (2021), *Ireland's National Recovery and Resilience Plan*, <https://assets.gov.ie/162639/e5f1a2bf-35aa-4e25-9a8a-9b49c8b0b50f.pdf>. [4]
- DRCD (2019), *National Social Enterprise Policy for Ireland 2019-2022*. [83]
- EGFSN (2020), *Leading the Way: Investing in Management Development for SME Productivity and Growth*, <https://www.enterprise.gov.ie/en/Publications/Publication-files/Leading-the-Way.pdf>. [47]
- Enterprise Ireland (2023), *Career-FIT*, <https://horizoneurope.ie/career-fit> (accessed on 3 March 2023). [69]
- Enterprise Ireland (2022), *Spotlight on Skills: Summary of Key Findings 2020-21*. [20]
- Erickson, C. and S. Jacoby (2003), "The Effect of Employer Networks on Workplace Innovation and Training", *Industrial and Labor Relations Review*, Vol. 56/2, p. 203, <https://doi.org/10.2307/3590935>. [108]
- Eurodoc (2018), *Identifying Transferable Skills and Competencies to Enhance Early-Career Researchers' Employability and Competitiveness*, The European Council of Doctoral Candidates and Junior Researchers, <https://eurodoc.net/skills-report-2018.pdf>. [62]
- Eurofound (2016), *European Working Conditions Survey*, <https://www.eurofound.europa.eu/data/european-working-conditions-survey>. [100]
- Eurofound/CEDEFOP (2019), *European Company Survey*, <https://www.eurofound.europa.eu/surveys/2019/european-company-survey-2019>. [14]
- European Commission (2022), *European Innovation Scoreboard 2022*, Publications Office of the European Union, Luxembourg, <https://doi.org/10.2873/725879>. [7]
- European Commission (2020), *Towards a European Graduate Tracking Mechanism: Recommendations of the Expert Group*, Publications Office, Luxembourg, <https://doi.org/10.2766/970793>. [57]
- European Commission (2011), *Report of Mapping Exercise on Doctoral Training In Europe: Towards a common approach*, https://www.hrk.de/fileadmin/redaktion/hrk/02-Dokumente/02-05-Forschung/Forschermobilitaet/Report_of_Mapping_Exercise_on_Doctoral_Training_FINAL.pdf. [61]
- European Commission (n.d.), "Doctoral Networks", *Marie Skłodowska-Curie Actions*, <https://marie-skłodowska-curie-actions.ec.europa.eu/actions/doctoral-networks> (accessed on 3 March 2023). [72]

- Eurostat (2022), *Continuing Vocational Training Survey 2020*, Eurostat, [22]
https://ec.europa.eu/eurostat/databrowser/view/TRNG_CVT_10S_custom_4180659/default/table?lang=en.
- Eurostat (2022), *Digital Economy and Society Index*, [15]
<https://ec.europa.eu/newsroom/dae/redirection/document/88707>.
- Eurostat (2021), *Digital Economy and Society*, <http://semantic.digital-agenda-data.eu/dataset/DESI>. [16]
- Eurostat (2021), *Labour Force Survey*, Eurostat, [88]
<https://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey>.
- Eurostat (2020), *Community Innovation Survey*, <https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database>. [9]
- Eurostat (2018), *Community Innovation Survey*, <https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database>. [13]
- Fitzpatrick Associates (2019), *Irish National Employer Survey*, [39]
<https://www.solas.ie/ff70398/x/ba617d5d3d/irish-national-employer-survey-final-report-3.pdf>.
- Flood, P. et al. (2008), *New Models of High Performance Work Systems: The Business Case for Strategic HRM, Partnership and Diversity and Equality Systems*, Equality Authority and National Centre for Partnership and Performance, [97]
https://www.researchgate.net/publication/264417491_The_Business_Case_for_Strategic_HRM_Partnership_and_Diversity_and_Equality_Systems_Equality_Research_Series_New_Models_of_High_Performance_Work_Systems.
- Government of Canada (2019), *The Innovation and Skills Plan*, [103]
https://www.ic.gc.ca/eic/site/062.nsf/eng/h_00083.html (accessed on 19 September 2019).
- Government of Ireland (2022), *National Smart Specialisation Strategy for Innovation 2022-2027*, [31]
<https://enterprise.gov.ie/en/Publications/Publication-files/National-Smart-Specialisation-Strategy-for-Innovation-2022-2027.pdf>.
- Government of Ireland (2022), *White Paper on Enterprise 2022-2030*, [81]
<https://enterprise.gov.ie/en/publications/white-paper-on-enterprise-2022-2030.html>.
- Government of Ireland (2021), *Climate Action Plan 2021: Securing Our Future*, [30]
<https://assets.gov.ie/224574/be2fecb2-2fb7-450e-9f5f-24204c9c9fbf.pdf>.
- Government of Ireland (2019), *Future Jobs Ireland 2019 - Preparing Now for Tomorrow's Economy*, [102]
<https://www.enterprise.gov.ie/en/publications/publication-files/future-jobs-ireland-2019.pdf>.
- Government of Ireland (2018), *Creative Youth: A plan to enable the creative potential of every child and young person*, [37]
<https://www.creativeireland.gov.ie/en/creative-youth/creative-youth-a-plan-to-enable-the-creative-potential-of-every-child-and-young-person/>.
- Haus der kleinen Forscher (2023), *About Germany's largest early childhood education initiative*, [43]
<https://www.haus-der-kleinen-forscher.de/en> (accessed on 3 March 2023).

- Higher Education Authority (2022), *Entrepreneurship Education Proposals*, [41]
<https://hea.ie/2022/12/12/entrepreneurship-education-proposals/>.
- Higher Education Authority (2017), *HEA Strategic Plan 2018-2022*, [65]
<https://hea.ie/2018/11/30/hea-strategic-plan-2018-2022/>.
- Higher Education Research Group (2020), *Ireland's Higher Education Research System*, [64]
<https://www.knowledgetransferireland.com/Reports-Publications/Ireland-s-Higher-Education-System-2021-HERG-Report.pdf>.
- Indecon (2017), *Interim evaluation of Science Foundation Ireland Research Centres Programme*, [50]
<https://www.sfi.ie/research-news/publications/organisational-publications/SFI-Research-Centres-Interim-Evaluation-Indecon-Report.pdf>.
- Interdepartmental Committee on Science, Technology and Innovation (2015), *Innovation 2020: Excellence, Talent, Impact*, [53]
<https://enterprise.gov.ie/en/publications/publication-files/innovation-2020.pdf>.
- Investors in People (2023), *Home page*, [93]
<https://www.investorsinpeople.com>.
- Irish Research Council (2017), *Career Development Policy Statement*. [66]
- Irish Universities Association (2023), *Doctoral Networks (DN)*, [73]
<https://www.iua.ie/for-researchers/marie-skłodowska-curie-actions/funding-calls-and-deadlines/doctoral-networks/>
 (accessed on 3 March 2023).
- Jones, B. and D. Grimshaw (2012), "The effects of policies for training and skills on improving innovation capabilities in firms", *Nesta Working Paper Series*, No. 12/08, [44]
<https://www.researchgate.net/publication/337283250> *The effects of policies for training and skills on improving innovation capabilities in firms*.
- Keep, E. (2016), "Improving Skills Utilisation in the UK: Some Reflections on What, Who and How?", *SKOPE Research Paper*, [5]
https://ora.ox.ac.uk/objects/uuid:fac4684f-7de8-408d-bac0-b6b767a38479/download_file?file_format=pdf&safe_filename=Keep%2B%282016%29.%2BImproving%2BSkills%2BUtilisation%2Bin%2Bthe%2BUK-%2BSome%2Breflections%2Bon%2BWhat%2C%2BWho%2Band%2BHow.pdf&type_of_wor.
- Knowledge Transfer Ireland (2021), *Annual Knowledge Transfer Survey 2021*, [49]
<https://www.knowledgetransferireland.com/Reports-Publications/Annual-Knowledge-Transfer-Survey-2021.pdf>.
- Lorenz, E. and J. Potter (2019), "Workplace organisation and innovation in small and medium-sized enterprises", *OECD SME and Entrepreneurship Papers*, No. 17, OECD Publishing, Paris, [98]
<https://doi.org/10.1787/11732c0c-en>.
- Management Development Council (2010), *Management Development in Ireland: The Report of the Management Development Council*, [77]
<https://enterprise.gov.ie/en/publications/publication-files/forf%C3%A1s/management-development-in-ireland.pdf>.
- McCarthy, A. et al. (2021), *Remote Working: Ireland's National Survey - Phase III Report*, NUI Galway Whitaker Institute and Western Development Commission, Galway, Ireland, [92]
<http://whitakerinstitute.ie/wp-content/uploads/2014/02/Remote-Working-National-Survey-Phase-III-Report-final.pdf>.

- McKinsey & Company (2009), *Management matters in Northern Ireland and the Republic of Ireland*, <https://www.economy-ni.gov.uk/sites/default/files/publications/deti/management-matters-in-northern-ireland-and-the-republic-of-ireland.pdf>. [24]
- Micro Finance Ireland (2023), *Home page*, <https://microfinanceireland.ie/> (accessed on 3 March 2023). [96]
- Microsoft (2020), *Building Resilience and Maintaining Innovation in a Hybrid World*, <http://d1c25a6gwz7q5e.cloudfront.net/reports/2020-11-09-workplace-whitepaper-FINAL.pdf>. [90]
- Nas, S. et al. (2001), "Knowledge transfer through labour mobility in the Nordic countries: Structure and dynamics", in *Innovative People: Mobility of Skilled Personnel in National Innovation Systems*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264195585-en>. [56]
- National Competitiveness and Productivity Council (2021), *Ireland's Competitiveness Challenge 2021*, <https://www.competitiveness.ie/publications/2021/ireland's%20competitiveness%20challenge%202021.pdf>. [78]
- NCCA (2022), *Senior Cycle Review: Advisory Report*, <https://ncca.ie/en/senior-cycle/senior-cycle-redevelopment/senior-cycle-advisory-report/>. [42]
- NCCA (2015), *Framework for Junior Cycle*, <https://ncca.ie/en/junior-cycle/framework-for-junior-cycle/>. [35]
- NCCA (2009), *Senior Cycle Key Skills Framework*, National Council for Curriculum and Assessment, https://ncca.ie/media/3380/ks_framework.pdf. [36]
- OECD (2022), *Enterprises by business size* (indicator), <https://doi.org/10.1787/31d5eeaf-en> (accessed on 19 July 2022). [12]
- OECD (2022), *Main Science and Technology Indicators (database)*, OECD, https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB. [55]
- OECD (2019), *Benchmarking Higher Education System Performance*, Higher Education, OECD Publishing, Paris, <https://doi.org/10.1787/be5514d7-en>. [58]
- OECD (2019), *OECD Skills Strategy 2019: Skills to Shape a Better Future*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264313835-en>. [3]
- OECD (2019), *SME and Entrepreneurship Policy in Ireland*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, <https://doi.org/10.1787/e726f46d-en>. [17]
- OECD (2019), *Survey of Adult Skills (PIAAC)*, <https://www.oecd.org/skills/piaac/publicdataandanalysis/>. [19]
- OECD (2016), "Building a science and innovation culture", in *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris, https://doi.org/10.1787/sti_in_outlook-2016-43-en. [34]
- OECD (2016), *Skills Matter: Further Results from the Survey of Adult Skills*, OECD Publishing, Paris, <https://doi.org/10.1787/1f029d8f-en>. [1]

- OECD (2016), “Strengthening education and skills for innovation”, in *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris, https://doi.org/10.1787/sti_in_outlook-2016-40-en. [40]
- OECD (2015), *Employment and Skills Strategies in Flanders, Belgium*, OECD Reviews on Local Job Creation, OECD Publishing, Paris, <https://doi.org/10.1787/9789264228740-en>. [105]
- OECD (2015), *The Innovation Imperative: Contributing to Productivity, Growth and Well-being*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264239814-en>. [32]
- OECD (2012), *Transferable Skills Training for Researchers: Supporting Career Development and Research*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264179721-en>. [60]
- OECD (2011), *Skills for Innovation and Research*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264097490-en>. [27]
- OECD (2002), *Management Training in SMEs*, OECD Publishing, Paris, <https://www.oecd.org/cfe/smes/2492440.pdf>. [95]
- OECD (2001), *Innovative People: Mobility of Skilled Personnel in National Innovation Systems*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264195585-en>. [51]
- OECD/European Union (2017), *Supporting Entrepreneurship and Innovation in Higher Education in Ireland*, OECD Publishing, Paris/European Union, Brussels, <https://doi.org/10.1787/9789264270893-en>. [26]
- OECD/ILO (2017), *Better Use of Skills in the Workplace: Why it Matters for Productivity and Local Jobs*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264281394-en>. [2]
- Papa, J., L. Rehill and B. Connor (2018), “Patterns of firm level productivity in Ireland”, *OECD Productivity Working Papers*, No. 15, OECD Publishing, Paris, <https://doi.org/10.1787/1a04730d-en>. [106]
- PARP (2023), *Polish Agency for Enterprise Development*, <https://en.parp.gov.pl/index.php/component/knowledge/en> (accessed on 3 March 2023). [87]
- PLATO (2023), *About Plato Business Development Network*, <https://plato.ie/about-plato/> (accessed on 3 March 2023). [107]
- Science Foundation Ireland (2021), *Shaping our Future: Delivering Today, Preparing for Tomorrow - Science Foundation Ireland Strategy 2025*, <https://www.sfi.ie/strategy/>. [67]
- Scottish Government (2021), *Fair Work Action Plan: Annual Report*, <https://www.skillsdevelopmentscotland.co.uk/media/47742/fair-work-action-plan-annual-report.pdf>. [94]
- SEPnet (n.d.), *SEPnet’s Doctoral Training Network for Small to Medium Size Enterprises*, <https://www.sepnet.ac.uk/sme-dtn/> (accessed on 3 March 2023). [74]
- SFI (2023), *Curious Minds*, <https://www.sfi.ie/engagement/curious-minds/> (accessed on 3 March 2023). [38]
- Skillnet Ireland (2022), *Home page*, <https://www.skillnetireland.ie/>. [84]

- SME Taskforce (2021), *SME and Entrepreneurship Growth Plan*, [80]
<https://enterprise.gov.ie/en/publications/publication-files/sme-taskforce-national-sme-and-entrepreneurship-growth-plan.pdf>.
- Technopolis (2011), *Research Support to the Fagerberg Committee*, [70]
<https://www.regjeringen.no/globalassets/upload/kd/vedlegg/fagerbergutvalget/technopolisgro-upfinalreportvolirev.pdf>.
- Technopolis/ESRI (2020), *Evaluation of the Enterprise Ireland Research, Development and Innovation Programme*, [48]
<https://enterprise.gov.ie/en/publications/publication-files/evaluation-of-enterprise-ireland-research-development-and-innovation-programme.pdf>.
- The Leadership Academy (2023), *Home page*, <https://www.leadersacademy.ie/> (accessed on [85]
 3 March 2023).
- The Wheel/Carmichael (2021), *Consultation Report on the Support Needs of the Nonprofit Sector*, [82]
<https://www.carmichaelireland.ie/app/uploads/2021/03/Consultation-Report-Nonprofit-Sector-Final-V1.75-23-March.pdf>.
- Totterdill, P. (2015), "Closing the Gap: The Fifth Element and Workplace Innovation", *European Journal of Workplace Innovation*, pp. 55-74, [99]
<https://doi.org/10.46364/ejwi.v1i1.166>.
- Totterdill, P. et al. (2016), "High-performance Work Practices in Europe: Challenges of Diffusion", [101]
European Journal of Workplace Innovation, Vol. 2/1, pp. 63-81,
<https://journal.uia.no/index.php/EJWI/article/view/355/317>.
- UCD Professional Academy (2023), *Home page*, <https://www.ucd.ie/professionalacademy/> [86]
 (accessed on 3 March 2023).
- UKCES (2014), *The Labour Market Story: Skills Use at Work*, [76]
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/343457/The_Labour_Market_Story_-_Skills_Use_at_Work.pdf.
- UKRI (2022), *UKRI Strategy 2022 to 2027: Transforming tomorrow together*, UK Research and [46]
 Innovation, <https://www.ukri.org/publications/ukri-strategy-2022-to-2027/ukri-strategy-2022-to-2027/>.
- University College Cork (2022), *Pathways Beyond Academic 2022*, University College Cork, [68]
<http://www.ucc.ie/en/hr/research/theodysseyprogrammeucc/odysseyreport2022>.
- VLAIO (2023), *Spearhead clusters*, <https://www.vlaio.be/nl/vlaio-netwerk/flanders-innovation-entrepreneurship/innovation-clusters-flanders/spearhead-clusters> [45]
 (accessed on 3 March 2023).
- WIPO (2022), *Global Innovation Index Database*, [8]
https://www.wipo.int/edocs/pubdocs/en/wipo_pub_2000-tech1.xlsx.
- World Economic Forum (2018), *The Global Competitiveness Report 2017-2018*, World [18]
 Economic Forum, Geneva, <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>.
- World Management Survey (2014), *World Management Survey*, [23]
<https://worldmanagementsurvey.org/survey-data/>.

Notes

1. In this report, “skills use” is defined as the frequency with which individuals use their skills at work (measured in the Survey of Adult Skills [PIAAC]). Skills use may reflect workers’ skills levels, their motivation, the skills required to carry out the job, and employers’ practices aimed at increasing the productivity of their staff.
2. Research and development (R&D) is defined as the creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge.
3. Gross national income (GNI) is used to control for the strong presence of foreign-owned companies in Ireland, which can distort ratio analysis based on gross domestic product (GDP), particularly when benchmarking against other countries.
4. The 2012 Dortmund-Brussels Position Paper on Workplace Innovation defines workplace innovation as a social process that shapes work organisation and working life, combining their human, organisational and technological dimensions. This participatory process simultaneously results in improved organisational performance and enhanced quality of working life. See www.workplaceinnovation.org/kennis/dortmund-brussels-position-paper-12th-june-2012/.



From:
OECD Skills Strategy Ireland
Assessment and Recommendations

Access the complete publication at:
<https://doi.org/10.1787/d7b8b40b-en>

Please cite this chapter as:

OECD (2023), “Leveraging skills to drive innovation and strengthen firm performance in Ireland”, in *OECD Skills Strategy Ireland: Assessment and Recommendations*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/e4441c48-en>

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. Extracts from publications may be subject to additional disclaimers, which are set out in the complete version of the publication, available at the link provided.

The use of this work, whether digital or print, is governed by the Terms and Conditions to be found at <http://www.oecd.org/termsandconditions>.