Enhancing labour market relevance and outcomes of higher education: Country note Portugal

Portugal's binary higher education system has expanded in scope and institutional diversity in recent decades. Employment outcomes for higher education graduates are good, on average, but the system faces challenges aligning labour market-relevant supply and demand:

- In bachelor's programmes, low rates of completion within the theoretical duration make transition into the labour market with a degree lengthy.
- For prospective students, finding information on the study environments, academic requirements and labour market prospects of programmes can be challenging, sometimes resulting in hasty choices and field of study/programme changes.
- The skills developed in higher education programmes are not always clear to employers.
- Higher education institutions currently play a limited role in upskilling and reskilling, and lack information on emerging employer skill needs to design an attractive offer.

Analysis undertaken by the OECD project team, within the Labour Market Relevance and Outcomes of Higher Education (LMRO) Partnership Initiative between March 2020 and December 2021, identified four priority areas for development: i) strengthening the capacity of HEIs to collect, analyse and use labour market information; ii) guiding student choice; iii) supporting student success; and iv) strengthening the role of higher education in up- and reskilling of workers.

For each priority area, this country note reviews the system context, highlights challenges faced by institutions, lessons learned from current practice, and presents policy options for improvement. Annex B presents a self-reflection questionnaire for use by higher education institutions to identify strengths and weaknesses of current practice.

Aligning higher education with the labour market

Brief overview of higher education in Portugal

Higher education attainment in Portugal has been increasing considerably over the last decades, and in 2020, 42% of 25-34 year-olds had a higher education degree (at International Standard Classification of Education (ISCED) Levels 5-8) (OECD, 2022[1]). A key priority for policy makers has been enhancing pedagogical and curricular innovation in higher education, for example through allocation of funding to higher education institutions (HEIs) for the renewal of teaching and learning spaces and annual peer-learning meetings for teaching staff in higher education (Government of Portugal, 2019[2]).

Portugal has a binary system of higher education, with universities and professionally oriented polytechnics, which has expanded in scope and institutional diversity with a growing offer outside of the Bologna three-cycle system of bachelor's, master's and doctoral degree programmes. All HEIs offer non-degree postgraduate courses (*pós-graduação*) targeted at learners who seek upskilling and reskilling, and since 2014, polytechnics have been offering *Cursos Técnicos Superiores Profissionais* (CTeSP), technical, two-year programmes at ISCED Level 5 (in this paper, referred to as "short-cycle programmes") leading to a higher education diploma. A recent policy priority has been the introduction of micro-credentials[1] to offer students the possibility to supplement their traditional study programmes, meet employer skills demand and attract learners who seek upskilling and reskilling into higher education.

From an administrative and statistical perspective, the higher education system is organised as a network of "establishments" (*estabelecimentos*) or organic units, such as faculties or schools that are, in most cases, part of a main institution (*instituição de ensino superior*). In 2018/19, polytechnics enrolled 38% of higher education students, while most students (63.1%) were enrolled in universities (Directorate General of Higher Education, 2022[3]).

> *Access to higher education is highly regulated through a National Access Competition and several special admission competitions*

Access to public higher education in Portugal is highly regulated. The main entry for admission to bachelor's programmes and integrated master's[2] in public HEIs (universities and polytechnics) is the National Access Competition, through which most students enter programmes (73% in 2019/20). Prospective students can list six options of study programme and HEI in the National Access Competition and are placed in the option corresponding to the score they obtained, which is the weighted average of the result of the national exams (worth 35%-50%) and the average of all grades obtained during the three years of upper secondary education (worth 50%-65%). If students do not accept the offered option, they have to apply again at a later stage, to the vacancies that may be available at that time. Admission to private HEIs occurs primarily through competitions organised by each institution.

Admission to short-cycle programmes (ISCED 5), offered by polytechnics, is organised separately and is academically less demanding. For master's and doctoral degree programmes, HEIs have their own admission criteria and procedures.

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[1] Micro-credentials are typically short-cycle or accelerated learning programmes offered by HEIs (outside of formal educational qualifications) and resulting in a certificate or badge that attests to the skills or competencies acquired during the programme (Kato, Galán-Muros and Weko, 2020[37]).

[2] An integrated master's degree is a first-level degree offered only in universities with 300 to 360 ECTS credits and a normal duration of between 10 and 12 semesters.

Several special admission competitions provide non-traditional entry routes into public HEIs. So far, the largest one has been the M23 competition for prospective first-cycle students above 23 years of age, for which HEIs have to reserve at least 5% of study places. In practice, public universities have consistently admitted very close to the minimum share of students possible through the M23 competition since it was introduced, whereas public polytechnics have used this admissions stream somewhat more – though overall, private institutions have been by far the most active in admitting M23 students (Directorate General for Higher Education, 2019[4]).
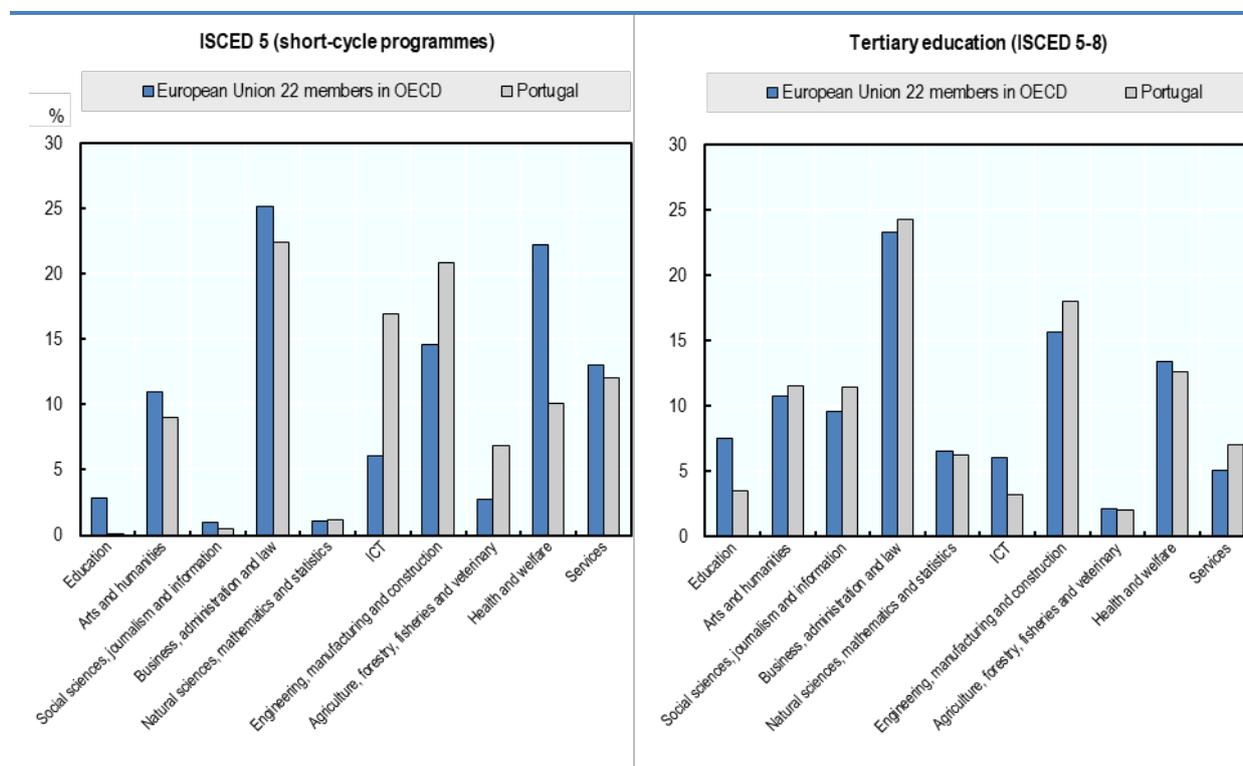
In 2020, the Ministry for Science, Technology and Higher Education approved legislation to introduce a new access competition to higher education for students from vocational and specialised artistic upper secondary schools. There are also special admission competitions for master's and doctoral degree programmes. International students are excluded from this process and go through a direct selection process organised individually by HEIs.

Student demand for short-cycle programmes in Information and Communications Technology (ICT) and engineering is high

Portugal has a high concentration of students in short-cycle programmes in ICT, which at 17%, is much higher than the EU-22 average of around 6%. Also in engineering, enrolment in short-cycle programmes is also above the EU-22 average (18% vs. 16% in 2019) (OECD, 2022[5]). Continuation in bachelor's programmes upon successful completion of short-cycle programmes is high.

Figure 1. New entrants by field of study in higher education and short-cycle programmes, Portugal and EU-22 (2019)

Distribution of new entrants by field of education at ISCED 5-8 level and ISCED 5 level

Note: Graduates/new entrants in each educational field as a percentage of the sum of graduates/new entrants in all fields, latest available data.

These programmes have the potential to increase student enrolment in bachelor and postgraduate fields of study that are connected with the digital and technological transition of the economy, and so far have seen low enrolment. In 2021, 25% of study places offered in ICT (369 out of 1 468) remained vacant, a larger proportion than in the higher education system as a whole (11%). The situation was similar for engineering and related fields, where 23% of places offered remained vacant (DGEEC, 2021[6]). The success of short-cycle programmes as pathways to further study will require a combined approach of improved study guidance and student support.

Access to higher education in less populated areas has increased

Enhancing the educational offer in less-densely populated areas through the expansion of the polytechnic sector is expected to decrease geographical access barriers to higher education. In addition, a greater share of study places has been allocated to rural areas for the national competition with mobility grants to incentivise and support higher education studies at public institutions in less populated areas.

Key challenges in aligning the supply of and demand for higher education graduates in Portugal

In 2019, the employment rate of higher education graduates in Portugal (ISCED 5-8, aged 25-34) was 86.1%, slightly above the OECD average (84.7%). The unemployment rate for those with higher education attainment was at 6.9% slightly higher than for those with upper secondary or upper secondary non-tertiary education (6.2%) (OECD, 2022[7]).

However, unemployment rates of higher education graduates vary by type of HEI and field of study (DGEEC, 2022[8]). In 2019/20, unemployment rates were lower for graduates of private polytechnics and public universities (4.8% and 4.9%) than for graduates of public polytechnics (6.3%) and private universities (6.5%). Unemployment rates increased in 2021, following a period of continuous decrease between 2016 and 2020. Unemployment rates show considerable variation across the most popular programmes, from below 1% for nursing and medicine to over 10% for tourism and marketing-related degrees in 2019/20. Graduates from the arts and humanities, in particular, tend to face longer spells of unemployment, lower job stability and lower wages than graduates in highly-demanded fields such as health and law (Suleman and Conceição, 2020[9]).

The risk of automation of jobs is estimated to be relatively high in Portugal, also for occupations typically filled by higher education graduates. Over the next 10 to 20 years, close to 40% of technicians and associate professionals may risk being affected by automation, around 30% of professionals, and close to one in five managers (OECD, 2021[10]). This places greater attention on the articulation of higher education with the labour market, particularly in terms of monitoring labour market developments and emerging skill demand, curricula update, study and career guidance for learners, and the role of higher education institutions in the provision of upskilling and reskilling of workers.

The analysis of labour market outcomes of higher education graduates, carried out between March and December 2020 by the OECD review team, identified the following key challenges that impede the alignment of higher education and the labour market in Portugal:

- In bachelor's programmes, low rates of completion within the theoretical duration make transition into the labour market with a degree lengthy.
- The skills developed in higher education programmes are not always clear to employers.
- While structural challenges in the economy affect the retention of graduates, greater collaboration between HEIs and start-ups could increase graduate job opportunities.

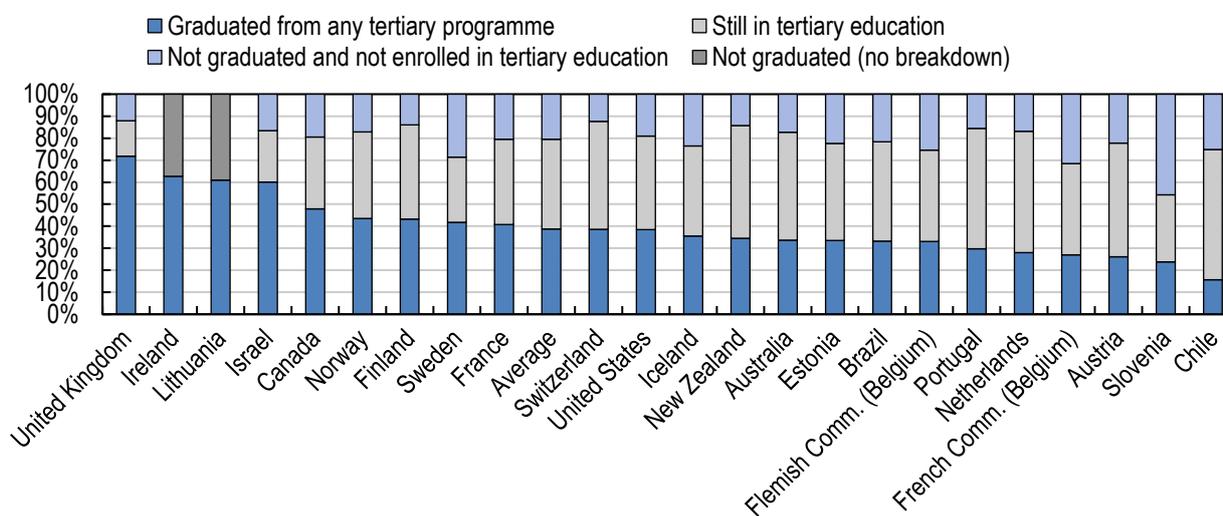- HEIs currently play a limited role in upskilling and reskilling.

These challenges are discussed in the following section.

In bachelor's programmes, low rates of completion within the theoretical duration make transition into the labour market with a degree lengthy

Low completion rates within the theoretical duration is a common phenomenon across the OECD: 39 % of full-time bachelor's students graduated within the theoretical duration (Figure 2). In Portugal, 30% of bachelor's students completed their degree within the theoretical duration, while the majority of students (55%) were still in higher education and 16% had dropped out by that time. Three years after the theoretical duration of bachelor's or equivalent degrees, completion increases to 65%, similar to the OECD average of 67%. Three types of students fall into the category "still in tertiary education": those who study at a slower pace and will later drop out of their programme, those who study at a slower pace and will later graduate in their chosen degree programme, and those who study longer due to a change in study programme.

Particularly the first year of higher education can be challenging. Around 10% of students at Portuguese HEIs suspend or terminate their studies at the end of the first year (see below Supporting students to succeed in higher education and the labour market). Curricula design and student support tailored to the needs of learners could help to improve completion rates and reduce study time. In addition, better study guidance can help students to select a study programme and HEI that suits their aptitudes and career plans, stay focused and complete their studies more swiftly.

Figure 2. Status of full-time bachelor's students at the end of theoretical programme duration, OECD countries (2017)

Note: cohort data only. Data from Ireland, Canada, France and the United States are from earlier years.
Source: OECD (2019[11]). *Education at a Glance 2019*, "OECD Indicators, Indicator B5. How many students complete tertiary education?",
http://statlinks.oecdcode.org/edu-2019-3777-en-t124.xlsx (accessed on 10 January 2022).

The skills developed in higher education programmes are not always clear to employers

Employer representatives interviewed for this project indicated difficulties in understanding the skills profiles of graduates from different higher education programmes, as curricula are not always clearly distinguishable across similar programmes and types of institutions. In part, this could be related to the restructuring of study programmes as part of the Bologna Process that harmonised academic degree standards and quality assurance standards throughout Europe, and which Portugal started in 2006 and completed in 2009. The reform shorted the duration of bachelor's degree programmes, with implications for how employers may place less value on a shorter bachelor's degree (Alves, Morais and Chaves, 2018[12]). There is a tendency that employers in Portugal require higher education graduates to have either a pre-Bologna bachelor's degree or a post-Bologna master's degree.

The interviews highlighted that graduates on their first job may need substantial amount of time to adapt to the demands of the workplace, which are different to those of academia and require a different set of skills. Partly, this could be due to a lack of information on the side of students on which skills they should develop in addition to the subject-specific skills they acquire as part of their study programmes. One way how students could obtain this information are work-based learning activities, which allow students to gain insights into tasks and working environments and the related transferable skills requirements. The offer of work-based learning varies across programmes and field of study. They are an integral part of short-cycle programmes, and are more common in integrated master's and master's programmes than in bachelor's programmes. Across the sector, polytechnics have traditionally developed strong collaboration with employers, while universities have been emphasising collaboration with employers particularly in master's and doctoral degree programmes.

Recent national studies pointed to low levels of co-operation and mobility between industry and higher education as potential factors the insufficient employer understanding of skills and weak alignment (Suleman and Laranjeiro, 2018[13]). The interviews conducted for this project confirmed this and highlighted the need for greater collaboration, and the important role of staff mobility in understanding emerging employer skill demand. It was pointed out that in addition to monitoring skill demand, HEIs would need effective mechanisms to communicate and signal the skill content of study programmes to employers and prospective learners, particularly with regard to the growing importance of upskilling and reskilling.

While structural challenges in the economy affect the retention of graduates, greater collaboration between HEIs and start-ups could increase graduate job opportunities

High-tech jobs represent a relatively small share of total jobs in Portugal and are concentrated in the Lisbon metropolitan area: 60% of jobs in information and communications technology (ICT), 56% of jobs in financial and insurance activities, and 50% of jobs in professional, scientific, technical and support activities (OECD, 2021[10]). The government has implemented a series of measures to increase the number of graduate jobs across the country, including through programmes focused on upskilling and firm competitiveness (OECD, 2021[10]). These measures have seen some success: employment in knowledge-intensive services, as share of total employment, has increased by 12% between 2012 and 2019 and is above 30% across all regions (OECD, 2022[14]).

Policy stakeholders interviewed for this project highlighted poor management practices as one of the factors that negatively influence the retention of graduates and the attractiveness of certain sectors of the economy for graduates. A 2016 survey among Portuguese firms showed that those with a more structured level of management practices (more common among large firms) employed more higher education graduates than other firms. The survey showed that the educational attainment of managers tends to be higher among large firms: around 83% of top managers have at least a bachelor's degree, compared to 61% in small and medium-sized firms (SMEs) and 44% in micro enterprises (Portuguese Statistical Office, 2016[15]). International research has suggested that management practices, including target setting,

incentives and people management, are positively influenced by the educational attainment of managers (Bloom et al., 2012[16]).

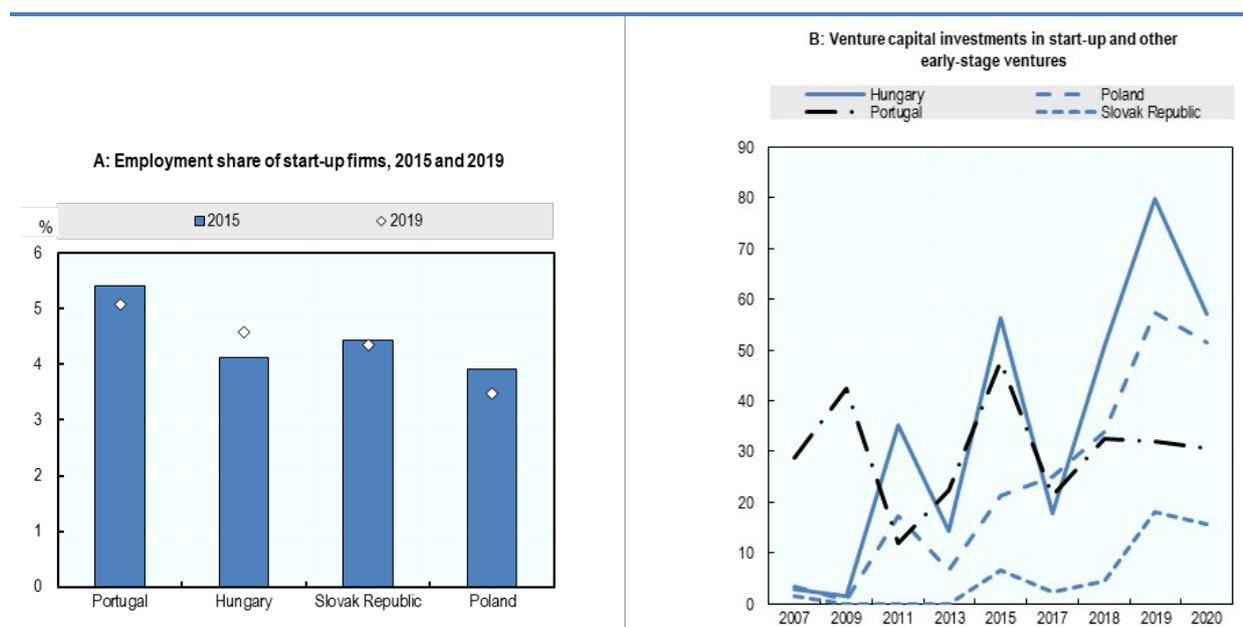### Portugal has a highly dynamic start-up scene

A group of firms that tend of have a higher rate of higher education graduates in top management positions are high-tech start-ups (Malerba and McKelvey, 2020[17]). In 2019, newly created businesses accounted for around 5% of total employment (Eurostat, 2022[18]), and the share of medium- and high-growth enterprises, in terms of job creation, has continuously increased from 7.1% in 2011 to 13.9% in 2019 as the percentage of all firms with at least 10 employees (OECD, 2019[19]).

Portugal's main strengths, according to the European Innovation Scoreboard 2021, are an attractive research system, and progress in digitalisation of the economy and in the use of information technologies (European Commission, 2021[20]). Several of the approximately 170 incubation facilities in Portugal are located close to HEIs, for example Instituto Pedro Nunes (Coimbra), UPTEC (Porto) and Startup Braga (Minho). However, venture capital investment, which often invests in start-ups in the proximity of HEIs, seems to be lower for start-ups in Portugal than for start-ups in other European countries with a similar share of employment, as the comparison with Hungary, Slovak Republic and Poland shows (Figure 3).

Figure 3. Employment share and venture capital investment in start-ups in Portugal
A: Percentage of persons employed in start-up enterprises out of total number of persons employed in active enterprises.
B: Venture capital investments in start-up and other early-stage ventures, USD millions, current prices.

Source: Adapted from Eurostat (2022[18]), "Business demography main derived indicators. Employment share of enterprise birth (V97120)", https://ec.europa.eu/eurostat/databrowser/view/TIN00142/default/table (accessed on 14 January 2022) for Panel A; OECD (2022[21]), "Entrepreneurship Financing Database: Venture capital investments", http://dotstat.oecd.org/OECDStat_Metadata/ShowMetadata.ashx?Dataset=VC_INVEST&ShowOnWeb=true&Lang=en (accessed on 14 January 2022) for Panel B.

Intensified collaboration between HEIs and start-ups could help to increase the attractiveness of start-ups in Portugal for venture capital investment. The government has started several initiatives to strengthen connections between industry, HEIs and public research organisations in Portugal, and 41 "collaborative

laboratories" (CoLABs) are located across the country, connecting companies and research groups at HEIs (Pinto, Nogueira and Edwards, 2021[22]). The involvement of companies in doctoral degree programmes and co-supervision of doctoral research is possible in all fields of study and is expected to increase as part of the current expansion of postgraduate schools through the recently started *Impulsos* government initiative. Furthermore, a tax credit system provides benefits for start-ups, with 120% coverage of the salaries of PhDs hired by companies and a benefit of 110% for projects with an ecological design (OECD, 2021[10]). These interventions are expected to have wide-ranging effects on collaboration between start-ups and HEIs, and the creation of graduate job opportunities.

HEIs currently play a limited role in upskilling and reskilling

There is clear potential for HEIs to play a stronger role in the upskilling and reskilling of the workforce. Higher education graduates in Portugal have a growing interest in adult learning[3], which takes place predominantly outside of higher education, offered by further education and training providers, and in the form of non-formal education (Eurostat, 2022[23]). In 2016, 98% of adults aged 25-64 with a higher education degree participated in non-formal education and training activity. In comparison, the EU 28 average was 74%. In Portugal, individuals with tertiary education attainment also spend more time in education and training than in other European countries. In 2016, the average number of instruction hours across formal and non-formal education and training was 171 in Portugal, compared to 131 in EU 28 countries.

However, higher education in Portugal is largely oriented to the needs of the traditional age groups of students. In 2018, the share of new entrants in higher education aged 30 years and over into higher education programmes (ISCED 5-8) was 11%, half that of Nordic countries such as Finland and Sweden (around 22%), and lower than the OECD average of around 15% (OECD, 2022[24]). A commonly mentioned barrier for the limited role of HEIs in upskilling and reskilling is that HEIs offer only moderately diversified and relatively inflexible study opportunities. Current policy targets foresee 10 000 new adult learners entering higher education annually until the end of 2023 and a total of 50 000 adult learners graduating from higher education by 2030. Making progress on this will require HEIs to be more active in upskilling and reskilling of adult learners.

Priority areas for policy and practice development

These challenges for improved labour market outcomes of higher education graduates were further analysed with a focus on institutional practices and processes. As a result, four priority areas for policy and practice development were identified:

1. strengthening the capacity of HEIs to collect, analyse and use labour market information;
2. guiding student choice;
3. supporting students to succeed in higher education and in the labour market;
4. strengthening the role of higher education in the upskilling and reskilling of workers.

The following section briefly presents the higher education system context for each of the four priority areas, highlighting the challenges faced by HEIs. This is followed by a discussion of what can be learned from current institutional practice and a presentation of policy options for public authorities to help HEIs scale up their current practice.

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[3] Adult learning refers to any formal or non-formal education and training adults undertake after leaving initial education including formal schooling, university and initial vocational training.

The policy options were developed following initial analysis carried out by the OECD review team between January and December 2020 on labour market outcomes experienced by graduates and employers and potential drivers and barriers affecting these outcomes. Further evidence was collected during peer-learning activities, organised between January 2021 and March 2022, both within the country and across the four countries, involving HEIs and higher education policy stakeholders.

Summary of key findings and policy options

Table 1. Summary of key findings and policy options

Priority areas for policy and practice development	Higher education system context and challenges for HEIs	What can be learned from current institutional practices?	Policy options
Strengthening the capacity of HEIs to collect, analyse and use labour market information	• Publicly available information for HEIs on the labour market outcomes of their graduates is limited to unemployment rates • Lack of incentives, rewards and support structures for academic staff are common barriers to greater collaboration with businesses	• Central units within HEIs can facilitate the collection, analysis and use of labour market information • Involvement of students in collaborative research projects is often the "foot-in-the-door" for wider collaboration with businesses and increased practice-based learning opportunities across all levels of study	• Further develop the publicly available labour market information for HEIs with a single portal for multiple, high-quality sources of national and regional data • Build organisational capacity by providing guidance and support for HEIs to use labour market information to update curricula and guide student choice
Guiding student choice	• Not all secondary schools offer their students study and career guidance • Finding information on the study environments, academic requirements and labour market prospects of programmes can be challenging for prospective students resulting in hasty choices • HEIs make little use of labour market information to guide student choice	• Connections between peer-delivered study guidance and HEIs' central units help design targeted services • Alumni can be a source of labour market information for current students, providing guidance for higher-level study choices	• Strengthen study guidance in secondary schools • Further develop study guidance with a single, easily accessible and user-friendly web portal with study and labour market information
Supporting students to succeed in higher education and in the labour market	• The first year can be challenging with significant attrition • HEIs have difficulties meeting the needs of international students and students from non-traditional entry routes	• Informal events are widely used to raise student awareness of support services • HEIs have started to design curricula with the aim of reducing early dropouts, though not at scale • HEIs have adopted an increased focus on transferable skills development to enhance study skills and employability • Frequent contact and academic writing support to help students with their bachelor's and master's dissertations have shown success • Some HEIs have started to use predictive analytics and proactive advising to support students at risk of attrition	• Support HEIs to develop a student monitoring system to help design inclusive student support services

Priority areas for policy and practice development	Higher education system context and challenges for HEIs	What can be learned from current institutional practices?	Policy options
Strengthening the role of higher education in up- and reskilling of workers	• Non-degree postgraduate courses (*pós-graduação*) are not widely recognised in the labour market and HEIs do not have information on employer skill demand to design a more strategic and future-oriented offer • Study guidance offered by HEIs is focused on first degree programmes and does not meet the needs of learners seeking upskilling and reskilling • Adapting new teaching styles depends largely on the personal motivation of the individual teacher • There are no incentives for HEIs to stimulate a more interdisciplinary study offer at higher levels of study	• Peer learning is a way to introduce new pedagogical approaches • HEIs are recruiting learners who seek upskilling and reskilling through alumni	• Develop study guidance for learners who seek upskilling and reskilling in higher education through an online platform and counselling services • Support HEIs through a national centre/network to upscale existing innovation in teaching and learning to meet the needs of a more diverse group of learners

Strengthening the capacity of HEIs to collect, analyse and use labour market information

Higher education system context and challenges for HEIs

Publicly available information for HEIs on the labour market outcomes of their graduates is limited to unemployment rates

The main publicly data for HEIs available on the labour market outcomes of their graduates are unemployment rates for bachelor's and master's programmes for those graduates that have registered for unemployment benefits. There is no labour market outcome data for graduates from short-term programmes, doctoral degree holders or graduates who have left the country. Difficulties in merging administrative databases and other sources, such as the annual compulsory business survey (*Quadros de Pessoal*, or "Personnel Records" in English), have slowed down government efforts to provide HEIs with comprehensive data on the labour market outcomes of their graduates. Portugal's participation in the EUROGRADUATE project is expected to have a positive long-term impact on the collection of labour market outcome data of higher education graduates.

HEIs have been addressing this information gap by collecting their own data using various means and methodologies. Most common is regular contact with employers, often organised directly by faculties/departments, programme co-ordinators or individual academic staff. Graduate surveys are also a frequently used method of collecting information on the transition of graduates into the labour market, time between graduation and first employment, type of employment, and the perceived relevance of the study programme.

The institutional survey conducted for this project showed that more than two-thirds of the surveyed HEIs (69%) have institution-wide practices in place to monitor and ensure the labour market relevance of their educational offer (Figure 5, Annex A). Institution-wide practices were most common among the surveyed non-integrated polytechnic schools (*escola politécnica não integrada*) (100%) and in the private universities (83%) (Figure 6, Annex A). Further developing this area was a medium-term priority for most of the non-integrated polytechnic schools (75%), and for all of the surveyed private polytechnics, whereas the other

types of HEIs surveyed seem to be satisfied with their current level of practice in monitoring the labour market relevance of their educational offer (Figure 7, Annex A).

While HEIs use their own labour market data to update curricula and design new programmes, current approaches are often small-scale, not co-ordinated and therefore prevent comparability and aggregation of data. The analysis of case studies and interviews showed that employer consultations are often unstructured, and labour market insights are not systematically shared within the institution. Furthermore, the labour market data collected by HEIs lacks robustness to be used systematically in study guidance (see section HEIs make little use of labour market information to guide student choice).

Lack of incentives, rewards and support structures for academic staff are common barriers to greater collaboration with businesses

Stakeholder interviews in Phase 1 highlighted the need for greater collaboration, and the important role of staff mobility for identifying emerging employer skill demand. It was pointed out that in many HEIs, collaboration with businesses (e.g. collaborative research projects, internships and other forms of work-based learning and tailored training courses for workers), remains largely dependent on a small number of highly engaged individuals. The results of the institutional survey conducted for this project confirm this.

Collaboration with employers to build a common understanding of graduate skills does not seem to be a key focus of HEIs; around one-third of the surveyed HEIs (36%) reported institution-wide policies in this area (Figure 5, Annex A) with public universities reporting the lowest value (28%). In contrast, 36% of public polytechnics reported institution-wide policies in this area (Figure 6, Annex A). Skills-related collaboration with employers was the least identified area for medium-term development (18%) (Figure 7, Annex A).

Commonly cited barriers to greater collaboration with businesses are a lack of incentives, rewards and support structures for academic staff, as well as the general perception that working with industry is less valued than publications (Pinto, Nogueira and Edwards, 2021[22]). These barriers are common across many countries (OECD, 2019[25]), and addressing them would require HEIs to review career structures and to introduce incentives.

In the short-run, and with regard to the aim of building a common understanding of graduate skills between employers and HEIs, technology transfer units and innovation centres could play a greater role in the identification of emerging skill needs and in making this information available for programme co-ordinators and others involved in updating curricula. Technology transfer units and innovation centres can also play a role in signalling to employers the skills developed in study programmes (OECD, 2022[26]).

What can be learned from current institutional practices?

Involvement of students in collaborative research projects is often the "foot-in-the-door" for wider collaboration with businesses and increased practice-based learning opportunities across all levels of study

The involvement of students in collaborative research projects with businesses, like internships, is often the "foot-in-the-door" to initiate wider collaboration. These practices can help HEIs to communicate to employers the skills and competencies developed through higher education programmes and courses. As noted by one of the interviewed HEI leaders: this can help bridge gaps between "languages and perspectives belonging to different universes of rationality: the labour market associated with principles of speed of decision, utility, efficacy and know-how; higher education associated mainly with principles of broad and deep knowledge, long-term training, processes and cultural competencies".

The involvement of students in collaborative research projects is commonly practiced in Portugal and includes students across all levels of study. Students may be an important first contact for businesses, particularly for small companies that seek to establish collaborations with HEIs. As one of the interviewed study programme leaders highlighted, "students listen more willingly than professors". These programmes also have important benefits for academic staff; their role being re-envisioned from the traditional lecturing role, towards much a much more facilitative or even entrepreneurial role. Academic staff work with colleagues at other institutions in the project and participate in training in areas such as design thinking and intercultural awareness.

An example is the "Link me UP – 1 000 ideas" initiative. Student teams work through a process of understanding a challenge, redefining the challenge and refining the work, ideation and prototyping, and then testing prototypes. Students engage in multicultural and interdisciplinary teams working across countries, often using English and navigating differences in time zones. They learn about design-thinking and work closely with faculty mentors, tackling real-world problems (Link me UP, n.d.[27]). Project participation is recorded in diploma supplements, which helps students to show employers the extra-curricular activity they have undertaken.

However, the involvement of students in collaborative research projects, although widely practiced, is not yet a structural part of teaching and learning. Integrating students' involvement in research projects into study programmes, with defined expected learning outcomes, reflection and assessment instruments would allow a much larger number of students to benefit from practice-based learning. In study programmes without a mandatory internship, the involvement of students in collaborative research projects allows students to gain valuable insights into employer skill demand, particularly with regard to transferable skills which employers demand in addition to subject-specific skills. Furthermore, making this a structural part of teaching and learning would help to signal the skills developed and employers and learners.

Central units within HEIs can facilitate the collection, analysis and use of labour market information

The analysis of case studies and interviews showed that although informal communications with employers have the benefit of being less bureaucratic, it is more difficult to share the information gathered with others across the HEI. The advantages of an institutionalised approach, often through a central unit, are co-ordination, up-scaling and continuous development. The analysis of case studies and interviews across the four countries participating in the project showed that central units (e.g. technology transfer units, innovation centres, alumni services, career centres and internal quality assurance units) can play an important role in co-ordinating the efforts of HEIs to collect, analyse and use labour market information (OECD, 2022[26]).

The four Portuguese HEIs visited during the study visit have central units to co-ordinate outreach and collaborations with external partners. Some have also developed digital platforms to help structure the information received through various channels, track labour demand and share the information more widely within the HEI. However, the lack of publicly available information on the labour market outcomes of graduates and comparable information on employer skills demand makes it difficult to develop the collection, analysis and communication of labour market information as a standard task for these units.

The analysis of case studies and interviews suggested that there are signs that some HEIs have started, with the support of central units, to expand existing incentives and support structures to stimulate greater collaboration with businesses to anticipate employer demand for skills and to use this information to identify areas for improvement in the educational offer (e.g. curricula update, new courses and programmes).

Policy options

Further develop the publicly available labour market information for HEIs, with a single portal for multiple, high-quality sources of national and regional data

For HEIs to make greater use of labour market information in updating curricula and guiding student choice, including switching study programmes and choosing specialisations, they need more publicly available information, ideally in the form of a single portal for multiple, high-quality sources of national and regional data, which is openly accessible to a wide range of potential users. Currently, one of the main problems is the lack of interoperability between different data sources at the national level.

An example of how public policy can address the issue of interoperability and provide HEIs with publicly available labour market information is "LMI for All", implemented by the Institute for Employment Research at the University of Warwick and funded by the UK Department for Education (LMI for All, n.d.[28]). LMI for All uses technological solutions to bring together different sources of labour market data to support HEIs in their efforts to anticipate new and emerging jobs and skill needs, create study programmes that are relevant to changing labour markets, and rethink how to communicate with learners on future careers and with employers on graduate skills.

LMI for All is an open data project which supports the use and re-use of government data sets. Data are made freely available via an Application Programming Interface (API) for use by developers. By optimising access to these high-quality datasets, and others, through LMI for All, data are made available in a way that allows them to be used in a number of career-related interfaces, supporting individuals to make more informed decisions on education, training and work.

Build organisational capacity by providing guidance and support for HEIs to use labour market information to update curricula and guide student choice

It will be important to support HEIs in Portugal to build organisational capacity to use labour market information to update curricula and guide student choice. The national quality assurance agency could develop and promote guidelines on how HEIs can use labour market information to revise existing study programmes and develop new ones, including in relation to their educational offer for lifelong learning. This could be either in the form of binding guidelines and standards or support and guidance materials developed and promoted by the national quality assurance agency.

An example of how public policy can support HEIs in this respect is Atrack, a government-funded initiative in Austria implemented by the National Statistics Agency, that supports public universities to use labour market information to update their curricula and provide study and career guidance for students (OECD, 2022[26]). Statistics Austria provides data cubes that anonymously combine university data with social security and unemployment data, as well as factsheets that facilitate the analysis of labour market outcomes for HEIs, providing graphs on graduates' labour market status, time between graduation and first employment, gross monthly income, and many other labour market-related indicators.

Guiding student choice

Higher education system context and challenges for HEIs

Not all secondary schools offer their students study and career guidance

In Portugal, study and career guidance is more common in vocational upper secondary schools than in general academic upper secondary schools. Some students may therefore miss an important first opportunity for early career orientation.

The analysis of case studies and interviews in the four countries participating in this project showed that subject teachers in secondary schools have an important role to play in study and career guidance. Particularly for Science, Technology, Engineering and Mathematics (STEM) subjects, teachers in secondary schools play an important role in study and early career orientation by demonstrating how STEM knowledge and skills are applied in the world of work.

A promising initiative in Portugal that creates opportunities for secondary school students to experience science and research is *Ciência Viva*, which organises activities for schools and summer activities for learners in primary and secondary education across the country (Ciência Viva, n.d.[29]). Further expanding activities to reach more students and involve more teachers will be particularly relevant given Portugal's priority to significantly increase the number of graduates from STEM programmes. The recently started school network "*Ciência Viva na Escola Club Network*" is a promising step in this direction (Clubes Cienciaviva, n.d.[30]).

Prospective students lack information on the study environments, academic requirements and labour market prospects of programmes, resulting in hasty choices

Prospective students need information that explains the study environment and academic requirements of programmes as authentically as possible. More realistic expectations of students may reduce field of study changes, or facilitate faster changes, and reduce dropouts. This information is best provided by HEIs, for example in the form of open days and entrance interviews where prospective students meet with teaching staff, programme co-ordinators and students from higher years.

Accessing relevant information seems to be challenging for prospective first-degree students in Portugal. Interviewed student representatives pointed out that decisions are taken late: "often even one to two weeks before the application deadline, prospective students still don't know what they want to apply for", and seemingly hastily, "for many, the prime decision factors for choosing a study programme are geographic location and field of study. Most students don't know about the teaching methods and the academic student support of their selected programme before they arrive on campus".

Online guidance on higher education study programmes is available through various web portals in Portugal. The *InfoCursos* web portal, created by the Ministry for Science, Technology and Higher Education, provides data on admission scores, continuation rates in year two, and unemployment rates for all higher education degree programmes (DGEEC, 2022[8]).However, the web portal is not well known and peaks in visits are typically within the period of up to eight weeks before the application deadline. There is little targeted outreach to under-represented student populations, for example female students in STEM fields or adult learners. It will be important to further develop the *InfoCursos* web portal with information on the study environment and academic requirements of study programmes, as well as information on existing and emerging occupational profiles, for example a catalogue of emerging occupations in a particular sector, typical employment conditions and information on employment prospects and earnings. Furthermore, the interviewed student representatives underlined that it is very important for secondary students to have opportunities to consult with current higher education students as part of their decision-making process.

HEIs make little use of labour market information to guide student choice

Labour market information does not play a large role in study guidance in Portuguese HEIs. Around one-third (36%) of surveyed HEIs have institution-wide policies to use labour market information to guide study choices (Figure 5, Annex A). For public universities, this figure is 14%, whereas for public polytechnics, it is 40% (Figure 6, Annex A). This institutional difference may, in part, be explained by the size of the institutions, as larger institutions are less likely to have institution-wide policies in this area. However, using labour market information to guide student choice is a medium-term priority for 18% of HEIs overall, with more public polytechnics placing a focus on this (27%) than public universities (18%) (Figure 7, Annex A).

A reason for this might be that the publicly available information that HEIs have on the labour market outcomes of their graduates is limited to unemployment rates for bachelor's and master's programmes. Any other information HEIs need to collect, analyse and prepare for further use in study guidance. This requires dedicated resources.

What can be learned from current institutional practices?

Connections between peer-delivered study guidance and HEIs' central units can help design targeted services

In many Portuguese HEIs, the student body contributes substantially to the provision of study guidance, for example by being a first point of contact or referral to the relevant services. A benefit of this approach to peer-delivered guidance, whereby students organise information events and answer questions, is that it makes information highly accessible and relevant to prospective students.

The analysis of case studies and interviews showed that close connections between peer-delivered study guidance and the HEIs' central units responsible for outreach to prospective students can provide information on student groups currently under-represented in certain programmes for the design of targeted campaigns. An example is the greater emphasis on information on academic support services for prospective students from Portuguese-speaking African countries and Brazil.

However, institutionalised study guidance, for example provided by the HEIs' career centres, may be better positioned to ensure a continuous service than students taking sole responsibility for this task. A combination of both seems to work best. In the interviewed polytechnics, central units carried out a mapping of academic requirements to guide students in their choice of higher-level studies. When enrolling in short-cycle programmes, students are informed which bachelor's degree programmes they are eligible to enter upon graduation.

Alumni can be a source of labour market information for current students, providing guidance for higher-level study choices

The analysis of case studies and interviews showed that alumni are a rich source of labour market information for current students, with the potential to guide them in their choice of specialisations and higher-level studies. Alumni can be important role models – they build career aspirations by making a credible link between the learners' view of themselves today and an aspirational view of their future selves. Furthermore, alumni participating in curricula delivery through challenge-based learning, and as guest lecturers, can provide students with insights from the work of world. This was widely practiced in the visited polytechnics and to some extent in the other visited HEIs.

Policy options

Strengthen study guidance in secondary schools

Study and career guidance has the potential to set or revise prospective first-degree students' expectations of study programmes and related careers, and support them in finding a good match with their own aspirations and talents, independent of their background . Subject teachers in secondary schools can play an important role in this, and particularly in raising interest in STEM subjects by illustrating how subject-specific theories, the foundations of which are taught in secondary school, are applied in daily life and through on-the-job practice. An engaged subject teacher can also have a positive effect on parents and caregivers, who play a fundamental role in study and career choices in secondary school and earlier.

One learning model could be an Austria-wide initiative that brings together schools, school authorities, teacher training colleges and universities (OECD, 2022[26]). IMST, which stands for Innovations Make

Schools Top, supports teachers in devising and implementing pedagogic innovations in the teaching of STEM subjects. The initiative receives funding from various sources, the largest share coming from the Austrian Federal Ministry of Education, Science and Research. IMST supports pre-service and in-service teacher training through teaching materials and a teacher network. The main idea is help teachers become "reflective practitioners". As part of this, teachers are asked to prepare "innovation papers" of around 20 pages. Young teachers often have no idea what innovative teaching means, but they can get inspiration from producing these papers as a way of reflecting on their own work. Teachers are also encouraged to look at critical moments in classroom management and teaching practice. IMST has an online search engine with teaching materials, including 1 600 innovation papers.

Students need information that explains the study environment and academic requirements of programmes as authentically as possible. This information is best provided by HEIs. Involving current students as guides can give authentic help to prospective students as the guides are young enough to remember their first steps into higher education themselves. One learning model could be *Studieren Probieren*, launched in 2009 by the Austrian National Union of Students with the aim of connecting secondary schools and HEIs, guiding prospective students in their higher education choices and helping them to navigate the high number of study programmes. The process starts with a team of students visiting secondary schools to present their experience of higher education to class groups and in one-to-one meetings and smaller groups. Students have diverse backgrounds and language skills and come from different fields of study. The next step is for students to sign up for an accompanied visit to an HEI and programme of their choice. This gives prospective students the opportunity to reflect on whether the study programme, the HEI and the location could be a good fit for them. This is a very different first experience compared to visiting a higher education fair. A current student will accompany a group of prospective students to a lecture and will answer any questions related to the study experience, student life, housing and work. It is free for prospective students to participate in these guided visits. A priority target group is "first academics", i.e. students who are the first in their families to enter higher education and who would not otherwise have had the opportunity to get an authentic taste of higher education (OECD, 2022[26]).

Further develop study guidance with a single, easily accessible and user-friendly web portal containing study and labour market information

Prospective students need information that explains the study environment and academic requirements of programmes as authentically as possible. Sourcing relevant information on the study environments and academic requirements of programmes seems to be challenging for prospective first-degree students in Portugal. The creation of an easily accessible, trustworthy and user-friendly web portal with comparable information on higher education programmes, labour market outcomes and typical career pathways would help to inform student choice. An example is Careers Portal (LMRO Partnership Initiative, 2020[31]), the one-stop national career information portal in Ireland, which serves five target groups: i) secondary school students; ii) HEI students and graduates; iii) job seekers and those who wish to change their careers; iv) parents and guardians; and v) career counsellors. All tools and databases, including self-assessment tools, the course-finder database, the occupational database, information on upskilling opportunities and support, and HEI profiles are integrated into a unique architecture that allows information to flow freely between sections. The site has over two million visitors per year.

Supporting students to succeed in higher education and the labour market

Higher education system context and challenges for HEIs

The first year can be challenging, with significant attrition

Recent government policies aim to address social and geographical inequalities in access to higher education in Portugal. For these measures to be successful, it will be important to adapt and complement

pedagogies, curricula and student support to reflect increased student diversity and to monitor the study success of students.
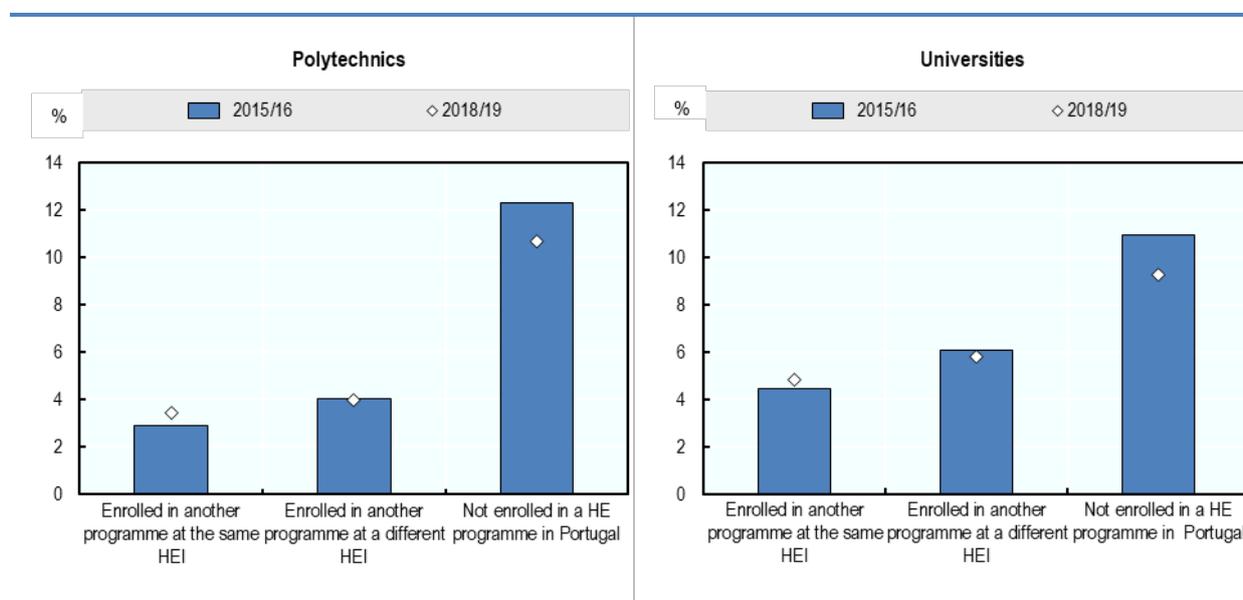
The number of students who suspend or terminate their studies at the end of the first year is above 10%, slightly higher in polytechnic institutes than in universities (Figure 4). In the academic year 2018/19, the maximum percentage of students that changed programmes within the same HEI was around 50% for bachelor's programmes in both universities and polytechnics (DGEEC, 2022[8]). Over the years, and on average, changes between study programmes and HEIs occur more often in universities than in polytechnics, however the percentage of students that drop out of higher education is slightly higher in polytechnics.

Reasons for changing programmes can be related to various factors, such as academic failure, entry regime and access to scholarships. HEIs in Portugal have data on several of these factors, but often only in the form of raw data not suitable for use by programme directors and course co-ordinators to identify patterns and reach conclusions (Ferreira et al., 2020[32]).

Another significant reason for attrition after the first year is that the study programme does not meet student expectations. In the academic year 2017/18, on average 5.5% of students in polytechnics changed programme either within their institution or by enrolling in another HEI in Portugal. This was highest in bachelor's programmes (7.4%), followed by short-cycle programmes (5.4%) and lowest in master's programmes (2.5%). The percentage of students that changed study programme in universities was, at 6.7%, slightly higher than in polytechnics. This was highest in integrated master's programmes (11.7%), followed by bachelor's programmes (7.4%) and lowest in master's programmes (3.9%) (DGEEC, 2022[8]). Bachelor's students who want to change study programmes can either do so by re-enrolling in the National Access Competition or by applying through a special competition.

Figure 4. Students changing study programme or leaving higher education after the first year

Percentage of students at the end of the first year, academic years 2015/16 and 2018/19

HEIs have difficulties meeting the needs of international students and students from non-traditional entry routes

An important area for policy and institutional practice development in Portugal is addressing the lack of academic support and guidance services for higher education students (OECD, 2018[33]). Results of the institutional survey conducted for this project showed that more than half of all surveyed HEIs (54%) have institution-wide policies in place to support their students (Figure 5, Annex A). This percentage is similar for public polytechnics (53%) although much lower for public universities, where only 14% of institutions have such policies (Figure 6.). Only 15% of all surveyed HEIs reported this area as a medium-term priority (7% of public polytechnics and 14% of public universities) (Figure 7.).

Certain typical features of bachelor's programmes set a very high bar for students' prior academic preparation, causing students who may not have the most advanced or the most recent academic preparation to feel discouraged or simply unable to succeed academically. Some HEIs have started to offer preparatory programmes designed specifically to prepare for the entry exams, for example for prospective students aged 23+ or those with a vocational secondary school background. These preparatory programmes are in high demand and have provided good results so far. To support mature students, in particular, many HEIs offer a working student status with certain benefits in terms of class attendance or assessments and/or part-time programmes, however further support to enhance student success may still be needed. The analysis of case studies and interviews highlighted the importance of a co-ordinated approach to the design and delivery of student support. Limited communication between different units within the same HEI hinders the development of an effective and efficient student support offer (e.g. academic services, mental health support units and programme directors).

The interviews and case studies also highlighted the importance of targeted student support. Students with less social and economic support from their families may need greater support from their HEIs. Furthermore, international students[4], particularly from Portuguese-speaking African countries and Brazil, may face particular difficulties in adapting to life and studies in Portugal, with many having limited financial resources. It was indicated that students who are officially recorded as scholarship students may in fact receive part or all of their scholarship upon graduation.

What can be learned from current institutional practices?

Informal events are widely used to raise student awareness of support services

Students are not always aware of the support services available to them. In particular, students who work and/or have caring responsibilities alongside their studies may spend less time on campus and therefore not be as fully informed about these services.

In Portugal, student services are either provided at faculty-level or across the institution, depending on the organisational set-up and history of the institution. A federated approach to student services, delivered at the level of faculties/study programmes can have advantages given the proximity to students' academic experience and can potentially reflect the geographic distribution of relevant physical spaces, but this approach can also have disadvantages in terms of co-ordination and professionalisation, particularly as the effectiveness of data management and analysis increases and benefits from greater scale.

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[4] In the academic year 2018/19, around 70% of international students in Portugal came from Portuguese-speaking countries (Brazil, Angola, Mozambique, Cape Verde, São Tomé and Príncipe, Guinea-Bissau, and East Timor). Most were enrolled in master's programmes (41%), followed by bachelor's programmes (36%) and doctoral degree programmes (20%). The remaining 3% were enrolled in short-cycle programmes and postgraduate specialisations (Sin et al., 2021[38]).

Informal events are an effective way to raise student awareness of the support services available to them (see section *Connections between peer-delivered study guidance and HEIs' central units can help design targeted services*). Student tutors also play an important role, especially at the beginning of first-cycle programmes, when "students may not dare to pose questions directly to the lecturer and don't want to admit to the lecturer when they don't understand", as mentioned by one of the interviewees.

HEIs have started to design curricula with the aim of reducing early dropouts, though not at scale

According to the interviewed programme directors and course co-ordinators, going from practice to theory (rather than vice versa) and the use of group work can be a highly inclusive approach with the potential to reduce early dropouts. Students' understanding of what they learn and why can have a motivating effect and builds the perseverance for increased complexity as the programme advances. Group work prevents students from "getting stuck" as they might on their own, develops important social skills and helps students integrate socially into higher education. Starting this practice in the first semester allows students to adapt to higher education at a slower pace.

The interviews showed that students are involved in curricula design. While it is important to listen to students when designing elements of the curricula, it can be difficult to get this right; for student evaluations to make sense students need to have realistic expectations of the content and delivery mode of a course right from the beginning, as highlighted in the interviews.

HEIs have adopted an increased focus on transferable skills development to enhance study skills and employability

The analysis of case studies and interviews revealed a broad focus on the development of transferable skills, not only through a dedicated offer (in many cases provided by the HEI's career centre), but increasingly also in the form of teaching methods and learning environments that centre around active learning methodologies, such as challenge-based, problem-based and project-based learning. Interview partners noted that the embedding of transferable skills development into curricula through active learning methodologies has also helped to lower resistance against embedding "soft skills" in the curricula of more traditional and/or specialised fields of study. These more active formats have also become more present in short-cycle programmes, which have traditionally concentrated on technical skills development.

Several interview partners mentioned a greater orientation of transferable skills based on larger questions of societal relevance, such as climate change, digital transformation, volunteering and ethics, and the development of these skills through experiential learning. It was also highlighted that teaching students to find and solve challenges they encounter in their daily lives is a way to strengthen their autonomous citizenship. Most HEIs support students in the development of entrepreneurial skills and many also support students and researchers to advance with business start-up projects.

The interviews showed that curricula reform toward a greater focus on transferable skills development has been driven internally by HEI leadership through a desire to keep up with the practices of leading institutions globally. Comparative reviews of practices have been particularly important for generating the buy-in and commitment of programme directors, course co-ordinators and academic staff.

Frequent contact and academic writing support to help students with their bachelor's and master's dissertations have shown success

Writing a bachelor's or master's dissertation can be a stumbling block for students, particularly for those students needing to combine study and work. In second-cycle programmes, the risk of attrition can be particularly high when students have completed most/all of their course obligations and are expected to write their final thesis. One of the reasons for attrition is that students in this phase of their studies tend to

have less contact with academic staff. Some of the visited HEIs have created incentives for supervisors to keep close contact with their students and offer prizes for supervisors whose students finish their final dissertation on time. Another example are symposia where students present first drafts of chapters and receive help from a wider group of peers and academic staff. This is perceived as particularly helpful for students that combine study and work, as one of the interviewed students in this situation pointed out: "For students like me, the most difficult part is the thesis. It is very abstract and we don't see practical applications of our research work. Real problems in the community would be much more relevant as research questions for the final theses."

The analysis of case studies and interviews showed that many HEIs have expanded academic writing support, initially directed at international students from Portuguese-speaking countries and gradually rolled out into an offer for all students. Analysis from the other countries participating in this project has shown that activities that take students out of their day-to-day student life are particularly effective, allowing them to dedicate time and full attention to the writing process, accompanied by elements of peer-review and expert feedback.

Some HEIs have started to use predictive analytics and proactive advising to support students at risk of attrition

Analysing attrition in a systematic way and using the results for the design of early identification and prevention measures is not yet widespread practice among Portuguese HEIs. The common approach is reaching out to students who drop out of higher education to find out why or to encourage them to resume their studies. It also builds on informal structures where faculty or other staff may or may not observe and intervene with students who appear to be having difficulties.

Some institutions are exploring the use of artificial intelligence (AI) to develop drop-out indicators and to design a more structure and institutional approach to mitigate attrition. The national quality and accreditation agency, A3ES, is also active in this area. One of the pioneer projects in this area is the FICA project (*Ferramentas de Identificação e Combate ao Abandono*), or *Tools for Identifying and Combatting Dropout* in English, which was started in 2015 by the University of Aveiro (Ferreira et al., 2020[32]). FICA collects information on seven indicators: i) academic success rate below 50%; ii) students who delay payment of tuition fees; iii) students who failed to obtain a scholarship; iv) students with an entry score below 120/200 points; v) absence from courses; vi) life satisfaction composite indicator generated from questionnaire data; and vii) student experience composite indicator generated from questionnaire data.

Programme directors, department directors and HEI leadership have access to FICA data, though with different access rights. Also of note is that some of the indicators are generated on a monthly basis and not just at the end of each semester. The range and presentation of data are continuously being further developed and since 2021 the data has been presented as set of dashboards. Going forward, the aim is to build greater synergies between the data and student support services to enhance the effectiveness of early identification and prevention measures.[5]

Policy options

Support HEIs to develop a student monitoring system to help design inclusive student support services

The analysis of case studies and interviews showed that HEIs in Portugal lack information about students at risk of attrition. Often, early identification relies on teaching staff. Addressing this information gap

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[5] For a brief description of the FICA project, see Seminar Brochure "**Raising study success through student support and improved career-study linkages**" at https://www.oecd.org/education/higher-education-policy/.

requires public policy support for HEIs to develop a student monitoring system, including tracking students who have changed study programmes across different HEIs, and making this information available to HEIs so they can design student support measures accordingly. This also includes capacity-building for HEIs to design and effectively deliver inclusive student support services.

An example of how public policy can support HEIs in collecting data to design inclusive student support services is "Student Monitoring", a publicly funded initiative in Austria, involving nine public universities (OECD, 2022[26]). The main focus is on study progression (completion, drop out and transfer) and examination activity, as well as the effects of labour market integration and socio-demographic factors on study behaviour, performance and progress. The initiative is designed as a pilot (with the potential to scale up) to establish a comparative analysis of the study and labour market-related behaviour of students at the participating universities to strengthen inter-university co-operation. The universities' quality assurance units are collaborating in the development of relevant measurement figures, supported by a private research organisation. Key success factors are a good level of commitment from HEI leadership, strong capacity in data collection and analysis, not only to implement predictive analytics but more generally to be able to identify effective and ineffective practices, as well as broader staff skills, particularly for staff in administrative functions to understand, effectively implement and monitor support measures.

Strengthening the role of higher education in the upskilling and reskilling of workers

Higher education system context and challenges for HEIs

Non-degree postgraduate courses (*pós-graduação*) are not widely recognised in the labour market, and HEIs do not have information on employer skill demand to design a more strategic and future-oriented offer

Around half of the curricula units in master's programmes in Portugal can be accredited as specialisation courses or postgraduate courses (*pós-graduação*) with a certificate that can also be recognised within a master's degree. The aim is to equip students with work-relevant skills through a flexible and adaptive educational offer. However, these courses are not yet widely recognised in the labour market; as noted by interviewed stakeholders, and learners seeking upskilling and reskilling prefer to enrol in a full master's degree programmes.. Many HEIs have been responding to this demand by offering courses in master's programmes in the evenings and on weekends to allow working students to attend classes.

In the institutional survey conducted for this project, most of the surveyed HEIs (85%) reported to have either pilot initiatives underway in particular programmes or institution-wide practices in place to adapt curricula in response to changes in the economy and the labour market (Figure 5, Annex A). Institution-wide practices were most common among the non-integrated polytechnic schools (*escola politécnica não integrada*) and the university institutes (*instituto universitário*) (100%), and least common among the surveyed private polytechnics (25%) and public universities (29%) (Figure 6, Annex A).

Overall, less emphasis is placed on adapting the offer to meet the needs of learners who seek upskilling and reskilling: 64% of HEIs had at least pilot initiatives underway (Figure 5, Annex A). Institution-wide practices were most common among the university institutes (100%) (Figure 6, Annex A). Adapting the study offer in terms of curricula, the mix and flexibility of programmes, and qualifications was the highest ranked medium-term priority for the surveyed HEIs (67%), particularly for public universities (87%) (Figure 7, Annex A). Adapting the educational offer to meet the needs of learners seeking upskilling and reskilling was a medium-term priority for less than half of the surveyed HEIs (44%), mostly among the surveyed university institutes (67%) (Figure 7, Annex A).

With the postgraduate courses and master's programmes there are different options for learners seeking upskilling and reskilling in higher education. Collaborations between HEIs and professional bodies have

aimed to increase the attractiveness of postgraduate courses. Making progress on this would require HEIs to have information on employer skill needs to develop a more strategic and future-oriented education offer for learners seeking upskilling and reskilling, beyond courses that meet the immediate needs of partner companies. This is an area were further development is needed, as currently, collaboration with employers to build a common understanding of graduate skills is not a key focus of institutions. Around one-third of the surveyed HEIs (36%) report having institution-wide policies in this area (Figure 5, Annex A). At the same time, the integration of postgraduate courses into existing quality assurance mechanisms could be considered, since one of the reasons why prospective learners prefer traditional programmes could be that for these programmes quality assurance mechanisms are in place.

Study guidance offered by HEIs is focused on first degree programmes and does not meet the needs of learners seeking upskilling and reskilling

Currently, the study guidance offered by HEIs in Portugal is focused on prospective students for first degree programmes. This may not meet the information needs of current students choosing higher-level study options or specialisations or of learners seeking upskilling and reskilling. The increasing number of study programmes, including interdisciplinary programmes, the option to choose a certain amount of European Credit Transfer and Accumulation System (ECTS) credits from other programmes and the policy aim to increase the offer of micro-credentials, in form of specialisation courses or postgraduate courses (*pós-graduação*), makes study guidance for higher-level studies an important area for HEI and public policy action.

A more structured approach to study guidance for higher-level studies, going beyond the common current practice of individual teaching staff referring students to courses they are familiar with, could reach a greater number of students with broader information. So far, the tendency has been for students to remain in the same field for their higher-level studies. The interviewed students noted that having a "blueprint" of the skills and competencies developed through educational activities, along with the associated labour market prospects, would greatly help them in their decision-making.

Adapting new teaching styles depends largely on the personal motivation of the individual teacher

Learners who seek upskilling and reskilling in higher education expect a clear return on investment. Teaching methods and learning environments will need to take into account prior knowledge and differences in learning styles.

The analysis of interviews and case studies showed that it can challenging for institutional leaders to ensure teaching staff have the time and skills necessary to use more innovative teaching methods. Many staff may be comfortable with a more traditional teaching style that is not adapted to new methods, or they may simply not have the time to teach (or learn how to teach) differently. In essence, faculty time is taken up with regular responsibilities which means that time spent developing alternative pedagogies is not rewarded.

Older teaching staff seem to have less of a focus on advancing innovation. The age of teaching staff could partly explain the focus on individual teachers in advancing innovation in teaching and learning. The number of academic staff aged 50 or above has been steadily increasing over the last two decades in relation to the number of staff aged 39 or below. The ageing of academic staff is much more prevalent in universities than in polytechnics.

Given this context, the interviewed higher education stakeholders recommended a greater emphasis on continuous professional development and a review of existing incentive schemes. It can be difficult to motivate staff to change their teaching methods, especially when the existing incentive structure and institutional culture pushes staff to focus on research. As one of the interviewed HEI leaders pointed out,

the current limitation of teaching hours in programmes offered for adult learners during weekends and in the evenings (*regime pós-laboral*) makes it "very difficult to mobilise the best teachers to teach who would highly raise the credibility of postgraduate training".

Another area for development is creating incentives and support for the inter-sectoral mobility of academic staff. At present, there are substantive barriers to the movement of academic staff between higher education and industry (and among HEIs). Academics note a lack of funding and insufficient work time as the main obstacles to greater co-operation (OECD, 2018[33]).

The institutional survey showed that current practices to enhance innovation in teaching and learning are concentrated at programme level. Less than half of the surveyed institutions (44%) have institution-wide policies around the use of practices, learning environments and assessment methods that equip students with skills valued by employers (Figure 5, Annex A). Teaching methods at public universities are least often regulated at the institutional level (14%) (Figure 6, Annex A). Policies exist at an institutional level to help staff keep up to date with innovation and societal challenges linked to their discipline, and to reflect this in their teaching in around half of the surveyed HEIs (46%) (Figure 5, Annex A). Half of the surveyed public polytechnics have institution-wide policies to support staff, along with 57% of public universities. These policies are most common among the surveyed non-integrated polytechnic schools (75%) (Figure 6, Annex A).

Using teaching methods that equip students with skills valued by employers and supporting staff to keep up-to-date with innovation and societal challenges linked to their discipline, and to reflect this in their teaching, are medium-term priorities for half of the surveyed HEIs (49% and 51%, respectively) (Figure 7, Annex A). Four in ten public polytechnics report that teaching methods are a medium-term priority and six in ten have a medium-term focus on supporting staff. Among public universities, institutions have an even greater focus on these two areas (71% and 67%, respectively).

Upscaling programme-specific practices require institutional structures for a quality review process of teaching and learning, including teacher training and pedagogical surveys of students. The interviews showed that it is not easy to foster the update of new pedagogical approaches when there is little to no reward for this in the end-of-year performance evaluation. Results from student surveys and teaching evaluations may be disregarded by staff as they have no real consequences; as one interviewee pointed out: "the problem is, there are no incentives for teachers to choose different teaching methods. As long as curricula units have a good success rate, they're fine".[6]

There are no incentives for HEIs to stimulate a more interdisciplinary study offer at higher levels of study

An interdisciplinary study offer may be particularly relevant for learners seeking upskilling and reskilling through higher education as it can support opportunities for career advancement. Analysis of job vacancies shows that businesses commonly seek non-ICT graduates with advanced digital skills to fulfil ICT roles . These graduates can come from a range of study fields, including business, management, marketing and related support services, and engineering. In addition to cognitive skills, ICT job vacancies, particularly in the field of artificial intelligence (AI), show an increasing demand for socio-emotional and cognitive skills, particularly communication, teamwork and problem-solving skills, along with creativity and writing skills (Sameki, Squicciarinii and Cammeraati, 2021[34]). Ideally, HEIs would respond to this demand with an educational offer that develops the package of skills required for ICT jobs.

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[6] For examples of institutional structures and processes to upscale programme-specific practices to innovate in teaching and learning, see Seminar Brochure "**Supporting improvement in teaching and learning to address students' needs and labour market demands**" at https://www.oecd.org/education/higher-education-policy/.

While there are incentives for HEIs to offer bachelor's programmes that involve different scientific fields or institutions, a major challenge for the creation of interdisciplinary study programmes at higher levels of study (i.e. master's and postgraduate courses (*pós-graduação*) is the lack of incentives for collaboration across faculties within and across HEIs. As stakeholders point out, greater collaboration could result in student mobility for higher-level studies. This has budgetary implications, as a considerable share of public funding comes through fees for higher-level degree programmes.

Furthermore, interviewees noted that the accreditation of interdisciplinary study programmes can be challenging and lengthy, for example, when the review board is composed of disciplinary researchers who may perceive there is not "enough" content from their discipline in an interdisciplinary programme. Addressing challenges related to the accreditation of interdisciplinary programmes is an issue not confined to Portugal, and generally requires a dual approach of both reviewing academic standards and values, along with legislative requirements, and incentives to enhance collaboration. This tends to be a long-term endeavour.

A common approach, practiced by Portuguese HEIs, is to build interdisciplinarity through curricula units which are exempted from external accreditation and are offered across different study programmes. While, in principle, this allows students to develop knowledge beyond the disciplinary boundaries of their study programmes, study guidance is required for students to choose among a potentially wide range of curricula units; the means to signal to employers the skills developed in these curricula units are also required. A good starting point for a more structured interdisciplinary study offer to develop advanced digital skills is the "Upskill" Initiative, which started in 2020 and provides funding to higher education institutions to further develop their upskilling and reskilling offer (Upskill, n.d.[35]).

What can be learned from current institutional practices?

HEIs are recruiting learners who seek upskilling and reskilling through alumni

The analysis of case studies and interviews showed that alumni are considered a main channel to reach learners who seek upskilling and reskilling, including those who wish to complete suspended or terminated studies. The idea is to reach those adults who have completed secondary education but are reluctant to undertake tertiary studies because they judge the benefits of continued education to be low. Alumni build career aspirations by making a credible link between the learners' view of themselves today and an aspirational view of their future selves. Building an active alumni network has become a priority for careers services at HEIs across the sector.

Peer learning is a way to introduce new pedagogical approaches

Innovation in teaching and learning can be time-intensive for teaching staff, who need to engage with and adopt new teaching methods, prepare curricula changes and have these accredited. Peer learning within the HEI or in the form of international projects can provide short-term rewards for staff engaged in innovative teaching methods.

In Portugal, various discipline-based networks foster practice and stimulate research into active forms of learning and student-centred approaches, particularly regarding the needs of a more diverse group of learners. The four visited HEIs have dedicated physical spaces to support innovation in teaching and learning, where staff have room for exchange and can receive training. Another example is a mentoring system for newly hired professors, co-ordinated by the centre for academic development. The aim is to build a critical mass of peers involved in new approaches in teaching and learning so eventually everyone can be brought on board.

Innovation in teaching and learning and scaling up effective practices requires an approach that is manifested in the institution's strategy along with the right incentives for staff to make teaching a greater

priority and to recognise excellent teachers and their work on developing teaching methods. Teaching awards can help to start a change in institutional culture, along with student feedback on the implementation of new approaches.

Policy options

Develop study guidance for learners who seek upskilling and reskilling in higher education through an online platform and counselling services

To further strengthen the role of HEIs in the provision of upskilling and reskilling, it will be important to further develop study guidance at the higher education system level. Easy access to meaningful and comparable information on study programmes is important for making study choices, particularly for people with busy working lives.

A learning model could be the recently launched website of the Universities of the Netherlands (UNL), which went online in November 2021 with information on all online and offline courses ranging from postgraduate master's degrees for professionals to one-week short courses (OECD, 2022[36]). The website supports professionals to easily identify courses that are relevant to their work. It has an English language option and the universities have an automatic link that updates the courses on a daily basis. An important outcome with policy relevance is that the collation of the information on online and offline courses for professionals into one platform has stimulated a dialogue between public universities (and the rest of the higher education sector), employers and government authorities on the role of higher education in the provision of lifelong learning and continuing education.

In addition to the provision of online information, it will be important for HEIs to offer study guidance for learners who seek upskilling and reskilling. At the local and regional levels, this could be organised together with business representative organisations and industry clusters.

Support HEIs through a national centre/network to scale up existing innovation in teaching and learning to meet the needs of a more diverse group of learners

Several HEIs in Portugal are involved in discipline-based networks that foster innovation in teaching and learning, particularly regarding the needs of a more diverse group of learners. These efforts could be scaled up across disciplines and the higher education sector as a whole. One learning model could be Ireland's National Forum for the Enhancement of Teaching and Learning in Higher Education, which was established by ministerial order in November 2012. The creation of the National Forum represented the beginning of a new era for Irish higher education. Ireland's National Strategy for Higher Education to 2030 outlined the importance of ensuring the centrality of teaching and learning in Irish higher education and the National Forum became the national body responsible for leading and advising on the enhancement of teaching and learning across the higher education sector (OECD, 2022[36]).

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Annex A. About the project and field work in Portugal

About the project

To support policy makers and HEIs in their shared commitment to enhance the labour market relevance and outcomes (LMRO) of higher education, the European Commission and the OECD launched the LMRO Partnership Initiative in 2019, a collaborative project with the participation of Austria, Hungary, Portugal and Slovenia.

The LMRO Partnership Initiative has three objectives and related strands of work:

1) To assess the alignment of the supply and demand of graduate skills and identify ways to improve this alignment by:

    a. analysing detailed evidence of the labour market outcomes experienced by graduates and employers to identify the potential drivers and barriers affecting these outcomes;

    b. identifying policy options and institutional practices with the potential to overcome existing barriers, increase the connections between higher education and the labour market, and improve associated labour market outcomes – by drawing upon international practice and research evidence.

2) To stimulate peer learning about policy options and institutional practices that can improve the articulation between higher education provision and labour markets.

3) To maximise the impact of research evidence and peer learning on institutional practice by developing a self-reflection questionnaire for higher education institutions on labour market relevance and outcomes (Annex B).

Through policy analysis, peer-learning activities and the development of a self-reflection questionnaire for use by higher education institutions, the project contributed to building national government and higher education institutional capacity to implement future higher education policy reforms. The project informed and supported the European Strategy for Universities, linking its planned aims to national and institutional context and spurring the transformation of the higher education sector.

Country-specific analyses assisted policy makers in the participating countries with the examination of existing policy portfolios, and the identification of policy options that have the potential to improve labour market relevance and outcomes of higher education.

Analytical framework

The analytical framework of the project consists of eight policy and practice areas that public authorities and HEIs can use to enhance the articulation between higher education and the labour market, with the aim of supporting good alignment between skills supply and demand.

The framework, also applied in other projects within the OECD Higher Education Policy Team's strand of work on the labour market relevance and outcomes of higher education, comprises eight areas of policy and practice:

- educational offer: curricula and programme content, programme duration and delivery modes that respond flexibly to current and predicted demand for knowledge and skills, including through programmes aimed at existing workers;

- student support and learning environment: financial and non-financial support that encourages students to develop and obtain knowledge, skills and credentials relevant to the labour market;

- policies governing staff profiles and use of time: to support a focus on developing labour market-relevant knowledge and skills among students;

- labour market information: widely available, reliable and accessible information on labour market skill needs and outcomes of graduates from different programmes that is used by students and graduates to make effective career decisions;

- skills-signalling mechanisms: various mechanisms to help employers understand the skills that graduates from different programmes should possess and to help graduates convey the skills they have obtained through higher education;

- quality assurance and accreditation processes: to ensure that education credentials are of good quality and trusted by employers;

- strategic planning, forecast mechanisms and co-ordination: to help ensure the higher education system delivers programmes in response to both current and projected labour market needs;

- public funding to HEIs: taking into account the real or projected career prospects of graduates to encourage labour market-relevant provision as part of a diversified mix of higher education study options.

The project was organised in two phases. Phase 1, from March to December 2020, focused on analysing the labour market outcomes of higher education graduates with the aim of assessing the supply and demand of graduate skills in each participating country. Phase 2, from January to December 2021, focused on analysing institutional practices that seek to enhance the relevance of the educational offer to the labour market.

Call for Practices

The Call for Practices had three aims:

1) to collect information on the current practices and priorities of HEIs in enhancing the labour market relevance of their educational offer;

2) to analyse current and planned future practices to identify enablers, success factors and barriers, and develop from these a set of statements that HEIs can use for a self-reflection exercise to identify areas for improvement;

3) to identify innovative practices for presentation and review in a series of peer-learning activities, which informed the development of a self-reflection questionnaire for use by higher education institutions.

The Call for Practices was addressed to all HEIs in the country and consisted of two questionnaires: a "Survey on Institutional Priorities" and a "Submission of Practices". The survey period was April - June 2021.

Field work in Portugal

Key higher education policy stakeholders in Portugal formed a National Advisory Group (NAG) and guided important project decisions with their knowledge and expertise. The NAG played a leading role in identifying priority areas for the country-specific analyses, and is expected to provide an important national dissemination channel to ensure involvement of key stakeholders in the implementation of the project's recommendations.

Participation in the project was co-ordinated by the Ministry for Science, Technology and Higher Education. NAG members are: Agency for Clinical Research and Biomedical Innovation; Altran Portugal and VORTEX (Collaborative Laboratory); Citeve (Portuguese Technological Centre for the Textile & Clothing Industries); Council of Rectors of Portuguese Universities (CRUP); Foundation for Science and Technology (FCT); National Commission for Access to Higher Education (CNAES); National Quality Assurance and Accreditation Agency (A3ES); Portuguese Polytechnics Coordinating Council (CCISP); Student unions (*Federação Académica de Lisboa*, *Federação Nacional de Associações de Estudantes do Ensino Superior Politécnico*).

Review of higher education institutional practices

Higher education institutional practices can have a significant impact on the quality and relevance of the skills that graduates develop and the labour market outcomes they experience after completing their studies. To examine these practices, the project team carried out interviews with key higher education policy stakeholders and virtual study visits to a non-statistical sample of HEIs, proposed by the national co-ordinator Table 2.

Table 2. Stakeholder interviews in Portugal

Stakeholder groups interviewed as part of the project	Number of interviewees
Senior management of HEIs (including higher education sector representative bodies)	24
Student representatives and alumni	13
Career centres, student support services in HEIs	11
Employer representatives	10
Study programme co-ordinators in HEIs	9
Teaching staff	8
Ministries or government agencies	7
Third-mission units (e.g. technology transfer offices, science parks)	3
Internal quality assurance offices of HEIs	1
National quality assurance agencies	1
Total number of interviewees	87

Table 3 gives an overview of the virtual study visits and the Call for Practices that were carried out in the project.

Table 3. Study visits and Call for Practices in Portugal

Study visits	Call for Practices
Instituto Politécnico de Setúbal: 9 February 2022, 16 interviews	**Number of submissions: 33**
ISCTE, Instituto Universitário de Lisboa : 10 February 2022, 8 interviews	University institutes: 1 submission
Universidade de Lisboa: 11 February 2022, 25 interviews	Private universities: 2 submissions
Instituto Politécnico do Cávado e do Ave: 14 February 2022: 12	Public polytechnic institute: 7 submissions
	Public universities: 23 submissions

Survey results

A total of 39 responses were analysed from a total of 52 HEIs invited to participate in the survey. The total response rate was 75%. Response rates for the analysed types of institutions were: Non-integrated polytechnic schools (*escola politécnica não integrada*) (80%, 4 HEIs), Public polytechnic institutes (*instituto politécnico público*) (100%, 15), Private polytechnic institutes (*instituto politécnico privado*) (67%, 4), University institutes (*instituto universitário*) (75%, 3), Public universities (*universidade pública*) (54%, 7), Private universities (*universidade privada*) (67%, 6).

Table 4. Portugal of higher education institutional practices

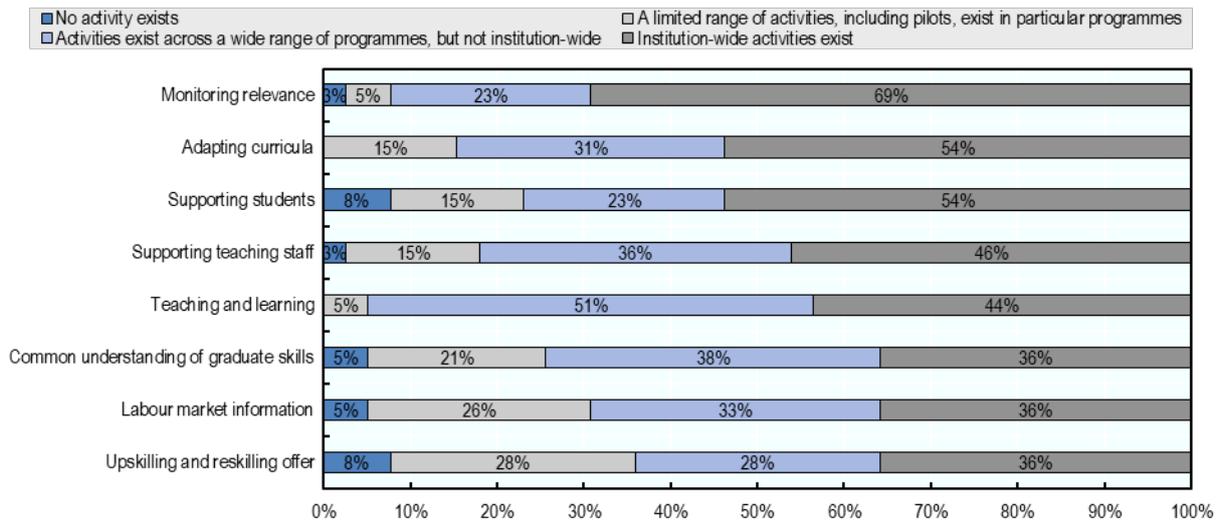| Institutional survey |
|---|
| **Total number of responding institutions:** |
| 39 |
| **Total number of institutions invited to participate:** |
| 52 |
| **Survey response rate:** |
| 75% |
| **Response rate by type of institution:** |
| Non-integrated polytechnic school (*escola politécnica não integrada*): 80% (4 HEIs) |
| Public polytechnic institute (*instituto politécnico público*): 100% (15) |
| Private polytechnic institute (*instituto politécnico privado*): 67% (4) |
| University institute (*instituto universitário*): 75% (3) |
| Public university (*universidade pública*): 54% (7) |
| Private university (*universidade privada*): 67% (6) |

The survey covered eight areas of current practices and priorities of HEIs in enhancing the labour market relevance of their educational offer (**LMRO practices**):

- monitoring and ensuring the continued relevance of the educational offer **(monitoring relevance)**;
- adapting curricula, the mix and flexibility of programmes, and qualifications to respond to evolving labour market demands **(adapting curricula);**
- using teaching practices, learning environments and assessment methods to equip students with skills valued by employers, including transferable skills **(teaching and learning)**;
- supporting teaching staff to keep up to date with innovation and societal challenges linked to their discipline, and to reflect this in their teaching **(supporting teaching staff)**;
- building a common understanding of graduate skills through collaboration with employers and creating trusted mechanisms for students to signal their skills **(common understanding of graduate skills)**;
- using labour market information to guide study choices (enrolling in and/or switching study programmes, and/or choosing specialisations) and career decisions **(labour market information)**;

- supporting students to enrol and succeed in study programmes with high labour market demand **(supporting students)**;
- meeting the needs of learners who seek up- or re-skilling through adapting curricula, the mix and flexibility of programmes, and qualifications **(upskilling and reskilling offer)**.

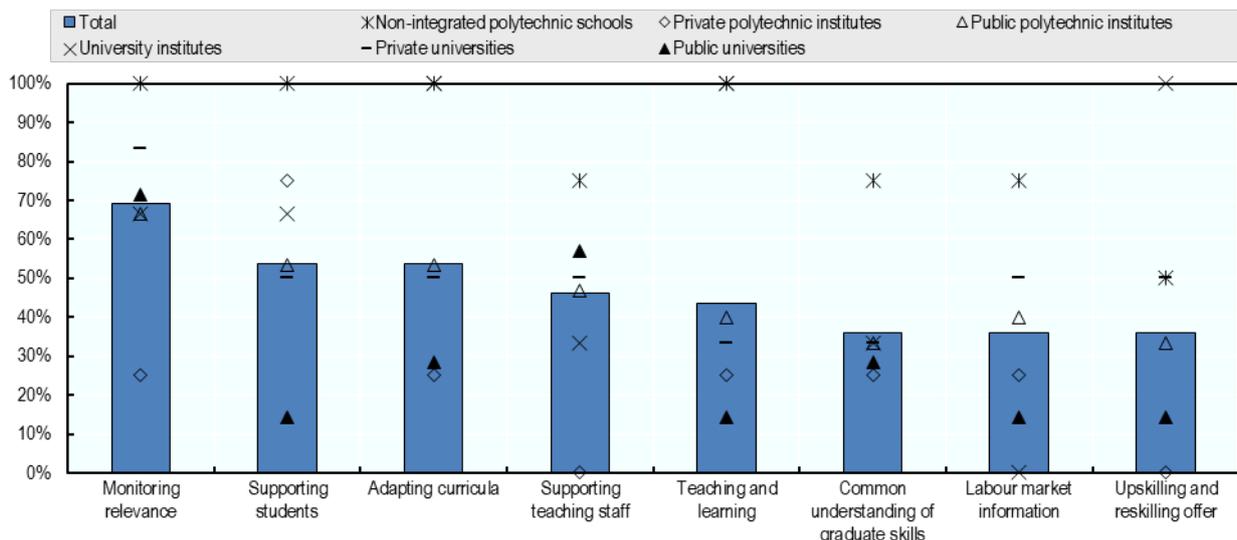## Figure 5. Current coverage of LMRO practices in Portuguese HEIs

Please rate the status quo of the following eight areas:

Note: The questionnaire provided the following explanation for "activity": "An activity includes any form of action undertaken to enhance the labour market relevance and outcomes of the HEI's educational offer."
Source: LMRO Call for Practices: "Survey of Institutional LMRO Priorities". Survey period: April-June 2021.

Figure 6. Institution-wide coverage of LMRO practices by institution type in Portugal
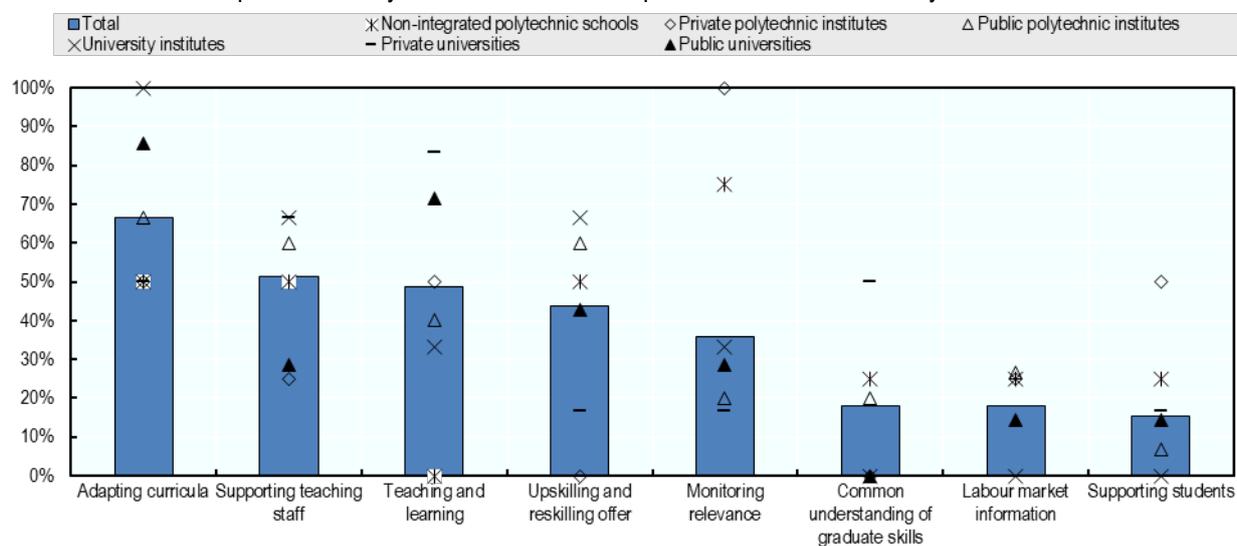

Note: Sorted in descending order for the share of institution-wide activities for total. Percentage of respondents who stated that institution-wide activities exist for each of the eight areas of LMRO practices. The questionnaire provided the following explanation for "activity": "An activity includes any form of action undertaken to enhance the labour market relevance and outcomes of the HEI's educational offer."
Source: LMRO Call for Practices: "Survey of Institutional LMRO Priorities". Survey period: April-June 2021.

Figure 7. Medium-term LMRO priorities of HEIs in Portugal

Which are the most important areas you would like to develop further over the next 2-3 years?

Note: LMRO practices are shown in descending order for total.
Source: LMRO Call for Practices: "Survey of Institutional LMRO Priorities". Survey period: April-June 2021.

Annex B. Self-reflection questionnaire for HEIs on the articulation with the labour market

This self-reflection questionnaire aims to support higher education institutions (HEIs) in Portugal and elsewhere: i) to reflect on the articulation of higher education with the labour market, by identifying strengths and weaknesses of current institutional practices; and ii) to identify and scale up effective institutional practices. The self-reflection questionnaire can stimulate (international) peer learning among study programmes and HEIs, and help HEI leadership to identify strategic institutional development priorities.

This self-reflection questionnaire contains statements in five categories with examples of current institutional practice that were found to have the potential to enhance the articulation between higher education and the labour market and the alignment between skills supply and demand. Each category was examined in a peer-learning event, which gathered an international audience of higher education policy stakeholders, including policy makers, leaders of HEIs, teaching and administrative staff, higher education researchers, and representatives of quality assurance bodies, industry and student unions. Seminar brochures document the discussion and exchange of policy and practice examples among stakeholders, and are a resource for policy makers and practitioners to support new initiatives and further develop existing initiatives (Table 5).

Table 5. Crosswalk: Self-reflection categories and international peer-learning seminars

Self-reflection category	LMRO Partnership Initiative's international seminars
Monitoring the relevance of the educational offering	"Using labour market information to improve learners' choices and curriculum" (November 2020)
Adapting the educational offering and skills signalling	"Stimulating innovation through inter- and trans-disciplinarity in education and research" (March 2022)
Continuous development of teaching practices and learning environments	"Supporting improvement in teaching and learning to address students' needs and labour market demands" (March 2022)
Supporting student enrolment in study programmes with high labour demand	"Widening access and attracting students to fields with high labour market demand" (February 2022)
Supporting student success in higher education and in the labour market	"Raising study success through student support and improved career-study linkages" (February 2022)

1. Monitoring the relevance of the educational offering

The HEI monitors the relevance of the educational offering in light of changing labour market needs.

	Not practiced	Pilot initiatives	Further development underway	Established practice
Use of publicly available information on graduate employment outcomes and current and emerging employer skill demand to monitor relevance of the educational offer, update curricula and support students in their study choices				
Encourage the collection, analysis and use of labour market information by providing guidance for the evaluation of initiatives, and support for the upscaling of successful initiatives				
Use of strategic collaboration with firms to learn about emerging skill needs				
Support for study programmes to make effective use of labour market information for curricula updates and study guidance				

For relevant policy and practice examples and brief descriptions of initiatives, see the Seminar Brochure "**Using labour market information to improve learners' choices and curriculum**". Download the seminar brochure at https://www.oecd.org/education/higher-education-policy/.

2. Adapting the educational offering and skills signalling

The HEI adapts its educational offering (curricula, mix of programmes and qualifications) to evolving labour market needs, and builds a common understanding of graduate skills and trusted mechanisms for students/graduates to signal their skills to employers.

	Not practiced	Pilot initiatives	Further development underway	Established practice across the institution
External and/or internal quality assurance processes of study programmes are used to identify opportunities for adapting curricula				
Courses that equip students with in-demand transferable/transferable skills (e.g. digital skills), and knowledge of relevant cross-disciplinary topics (e.g. environmental sustainability) are offered as specialisations or add-ons to study programmes				
Technology transfer offices, business participation in governing boards, career centres and other HEI units with strategic employer relations are actively involved in communicating the skills content of (new) educational offers to students and employers using/developing well-recognised formats (e.g. micro-credentials, badges, etc.)				
Machine-readable records of study programmes are used to increase the efficiency of quality assurance and curricula update, and are used to improve skills-signalling mechanisms which permit employers to recognise the skills content of study programmes				

For relevant policy and practice examples and brief descriptions of initiatives, see the Seminar Brochure "**Stimulating innovation through inter- and trans-disciplinarity in education and research**". Download the seminar brochure at https://www.oecd.org/education/higher-education-policy/.

3. Continuous development of teaching practices and learning environments

The HEI promotes the continuous development of teaching practices, learning environments and assessment methods that equip students with transferable/transferable skills, and encourages and supports teaching staff to keep up to date with innovation and societal challenges linked to their discipline, and to reflect this in their teaching.

	Not practiced	Pilot initiatives	Further development underway	Established practice across the institution
Support learning among peers within the HEI and in an international context to adopt and further develop teaching practices, learning environments and assessment methods				
Project-based learning is offered across programmes and levels of study to allow students to gain practical experience in the "world of work" as part of their study programme				
Organise the involvement of students in collaborative research projects facilitating transferable skills development, identifying and documenting the skills developed				

For relevant policy and practice examples and brief descriptions of initiatives, see the Seminar Brochure "**Supporting improvement in teaching and learning to address students' needs and labour market demands**". Download the seminar brochure at https://www.oecd.org/education/higher-education-policy/.

4. Supporting student enrolment in study programmes with high labour demand

The HEI supports student enrolment in study programmes with high labour demand.

	Not practiced	Pilot initiatives	Further development underway	Established practice across the institution
Collaboration with secondary schools to demonstrate the societal relevance of in-demand study programmes, for example in science, technology, engineering and mathematics (STEM), to raise interest among learners				
Prospective students receive information that describes the study environment, academic requirements, and labour market prospects of programmes as authentically as possible				
Prospective students are made aware of the academic support available to them (e.g. tutoring, STEM, academic writing)				
Students are offered study guidance for electives, specialisations, higher-level studies and the HEI's upskilling and reskilling offer				

For relevant policy and practice examples and brief descriptions of initiatives, see the Seminar Brochure "**Widening access and attracting students to fields with high labour market demand**". Download the seminar brochure at https://www.oecd.org/education/higher-education-policy/.

5. Supporting student success in higher education and in the labour market

The HEI supports student success in study programmes with high labour market demand, and meets the needs of diverse learners, including those combining study with work/care obligations.

	Not practiced	Pilot initiatives	Further development underway	Established practice across the institution
Use of predictive analytics and proactive advising to identify and support students at risk of attrition				
Diversity-sensitive teaching and curricula designed to have practice-based elements in the beginning of a programme are used to meet the needs of different types of learners and to increase study engagement and success				
Peer-delivered study guidance (e.g. tutoring) and support delivered by the HEI's central units are linked up to increase the effectiveness of guidance and support, and to design targeted services				
Students are informed about the potential adverse impact of the number of hours worked per week on study engagement				
Structured approaches to support students to combine study and work (e.g. partnerships with guidelines for companies defining the maximum amount of working hours per week)				
Frequent touchpoints with supervisors and academic writing support are offered to help students with their dissertations				
Participation opportunities in research groups for doctoral students to benefit from peer connections and learning through observation				
Services of career centres reach students early in their studies and are tailored to different levels of study				
Efforts to meet the needs of learners who seek up/reskilling through adapting curricula, the mix and flexibility of programmes, and qualifications				

For relevant policy and practice examples and brief descriptions of initiatives, see the Seminar Brochure "**Raising study success through student support and improved career-study linkages**". Download the seminar brochure at https://www.oecd.org/education/higher-education-policy/.