



Adapting missions and profiles in binary systems

Committee on Education and Science
Assembleia da República

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Adapting missions and profiles

An OECD perspective

1. Different models of binary systems in OECD countries
2. The mission of the polytechnic system in Portugal
3. The recommendation from 2019 [OECD Review](#)



Models of binary system in the OECD



Profiling professionally oriented institutions

Different approaches, although some common trends

	Weak research mission	Stronger research mission
Differentiated institution types	Denmark Flemish Community of Belgium United States Canada	Ireland Finland Portugal Netherlands
Single institution type		United Kingdom Australia Norway

1. Professionally oriented institutions generally take the needs of professions and regions as their point of departure
2. Education seeks to train skilled professionals for the fields targeted (supplying skilled labour for regions)
3. Research is strongly focused on improving professional practice and innovation in related sectors (supporting productivity and innovation in public and private sectors)



Education in non-university institutions

Different educational levels, but a consistent focus on professions and regions

	Institution type	Teaching mission (extracts from legal basis)	ISCED 5	ISCED 6	ISCED 7	ISCED 8	Transitions
Denmark	Business Academy	Education must be based on R&D knowledge within the relevant subject areas and knowledge of practice in the professions to which the education is directed.	Academy Profession (AP) (120 ECTS)				AP gives access to related professional bachelor's (top-up)
	University College			Professional bachelor's degree (180-240 ECTS)			Limited access to Master's from professional bachelor's
Flemish Community of Belgium	University College	University colleges and universities work in the field of higher education in the interest of society	Associate degree (120 ECTS)	Professional bachelor's degree (180 ECTS)			Bridging programme needed to access Master's
Finland	University of Applied Science	Higher education for professional expert tasks ... based on the requirements of the world of work		UAS bachelor's degree (210-270 ECTS)	UAS master's degree (60-90 ECTS)		UAS master's typically require 3 years relevant work experience Limited access to university master's
Netherlands	University of Applied Science	Higher professional education: the development of skills in close connection with professional practice	Associate degree (120 ECTS)	Professional bachelor's degree (240 ECTS)	Professional master's degree (60 ECTS)		Limited access to university master's from professional bachelor's
Portugal	Polytechnic	Polytechnic education focuses in particular on vocational training and advanced, professionally oriented technical training	Higher Technical Professional Programmes - CTeSP (120 ECTS)	Polytechnic bachelor's degree (180-240 ECTS)	Polytechnic master's degree (120 ECTS)	Not implemented	Transition to master's degrees in similar fields theoretically possible
Ireland	Technological University	Teaching and learning reflect[s] the needs of individuals, business, enterprise , the professions , the community, local interests and other stakeholders in the region	Higher Certificate (120 ECTS)	Ordinary or Honours bachelor's degree (180 or 240 ECTS)	Taught master's degree (90 ECTS)	Graduate schools	Admission to master's programmes based on applications



Research in non-university institutions

A focus on improving professional practice and sectoral innovation

	Institution type	Research mission	Staff qualification requirements	Dedicated research staff	Core funding for research	Research quality assessment
Denmark	University College	The purpose of the R&D activities is to provide new knowledge and concrete solutions to challenges within the professions [covered by] university college programmes (Law on University Colleges)	Master's = typical [no open data on qualifications profile]	Research staff may be employed, but this is rare	5.5% of core funding is for practice and application-oriented research Linked to education funding	Research is one aspect of "knowledge base" in Danmarks Akkrediteringsinstitution guidelines
Flemish Community of Belgium	University College	University Colleges are active in the field of practice-oriented scientific research (Codex Hoger Onderwijs)	Master's = typical [no open data on qualifications profile]	Research staff may be employed, but this is rare	4% of core funding is for "Practice-oriented research" (PWO)	No systematic evaluation of research in university colleges
Finland	University of Applied Science	Applied research, development and innovation activities ... that serve education in UAS, promote industry, business and regional development (UAS Act)	Master's = typical 16% teaching staff have PhD 13% RDI staff have PhD	"RDI staff" account for 17% of FTE positions in UAS sector in 2021	19% of core funding is for R&D External R&D funding Master's degrees Publications/outputs	RDI activities covered in institutional audits conducted by Finnish Education Evaluation Centre
Netherlands	University of Applied Science	UAS undertake "design and development activities or research focused on professional practice " (practice-oriented research) HE and Research Act	Master's = typical [no open data on qualifications profile]	"Lectors" (PhD qualified) lead research groups (but also involved in teaching)	3% of core funding (Design and Development) Linked to education funding	NVAO institutional audit does not include focus on research
Portugal	Polytechnic	Creation, transmission and dissemination of ... professional knowledge , through the articulation of study, teaching, applied research and experimental development RJIES	Aspiration for academic staff to hold PhDs In 2021: 45% of lecturers held PhDs	Staff are expected to engage in research (very few in "research career")	Research Council (FCT) funds R&D units based on results of periodic evaluation.	Periodic evaluation of R&D units (last in 2018), based on peer review panels
Ireland	Technological University	Support a "body of research that includes research relevant at regional, national and international levels and pursue excellence in the conduct of that research" TU Act 2018	Master's = typical [no open data on qualifications profile]	Not at present – workload model for new TUs currently being developed	No core funding specifically for research (PhDs are factor in core funding formula)	Research taken into account in assessment of learning environment by QQI



Polytechnics in Portugal



A key role in widening access

CTeSPs provide key opportunities for students from VET and adults seek to upskill and reskill

Progression from vocational secondary education to higher education

Proportions of students graduating from vocational upper-secondary tracks in 2019/20 transition to higher education by secondary school district.

Secondary school of origin		Situation after one year		
District	Number of students completing vocational upper-secondary education in 2019/20	Degree-conferring programmes (e.g. bachelor's programme)	TeSP (short-cycle programmes)	Not enrolled in higher education
Évora	336	8%	8%	84%
Porto	5 133	11%	10%	79%
Vila Real	433	8%	14%	78%
Lisboa	5 143	14%	8%	78%
Viseu	1 149	11%	10%	78%
Braga	3 000	8%	15%	77%
Aveiro	2 379	13%	10%	77%
Portalegre	259	7%	17%	76%
Faro	1 039	13%	11%	76%
Coimbra	1 114	15%	9%	76%
Beja	427	7%	18%	76%
Continental Portugal	27 205	12%	12%	76%
Setúbal	1 840	10%	15%	75%
Viana do Castelo	789	12%	16%	72%
Santarém	1 363	12%	19%	69%
Castelo Branco	569	17%	15%	68%
Guarda	397	19%	14%	67%
Leiria	1 554	17%	21%	62%
Bragança	281	16%	25%	59%

Transition rates from upper secondary VET are still too low



A much less prominent role in research

Few research centres in polytechnics, despite comparatively flexible research assessment

FCT-funded R&D units coordinated by public polytechnic institutes

Ratings received R&D units coordinated by public polytechnic institutes (IP) in the 2017/18 FCT evaluation exercise and number of units (rated “good” and above) in receipt of FCT funding for the period 2020-23 .

Institution	Enrolment index 2020/21*	Insufficient	Weak	Good	Very good	Excellent	Total submitted	Total FCT funded
IP Porto	100%		3	6		2	11	8
IP Leiria	59%			3		1	6	6
IP Bragança (D)	44%			2		2	4	4
IP Cávado e do Ave (IPCA)	28%				2		2	2
IP Tomar (D)	12%			1	1		2	2
IP Viana do Castelo (D)	24%		1	2			3	2
IP Viseu (D)	29%			2			2	2
IP Coimbra	55%				1		1	1
IP Portalegre (D)	11%				1		1	1
IP Lisboa	69%			1			1	1
IP Santarém (D)	20%			1			1	1
IP Beja (D)	16%						0	0
IP Castelo Branco (D)	22%	1	3				4	0
IP Guarda (D)	17%						0	0
IP Setúbal	35%	1	1				2	0
Total for public polytechnic institutes		2	8	18	5	5	40	30

Note: * Total enrolment in 2020/21 as a proportion of total enrolment at IP Porto. Public polytechnic institutes are presented in descending order of the number of R&D units receiving FCT funding and the rating received in the 2017/18 evaluation exercise. D: institutions in regions experiencing demographic decline.

Source: FCT (2021_[17]) *Financiamento Plurianual de Unidades de I&D para o período 2020-2023 (Multi-annual funding for R&D units for the period 2020-2023)*, <https://www.fct.pt/apoios/unidades/unidadesid.phtml.pt> (accessed on 12 July 2022).



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Source: FCT (2021₁₁₇) *Financiamento Plurianual de Unidades de I&D para o período 2020-2023 (Multi-annual funding for R&D units for the period 2020-2023)*, <https://www.fct.pt/apoios/unidades/unidadesid.phtml.pt> (accessed on 12 July 2022).



PhD production is already concentrated

Over 75% of doctoral graduates come from five universities

Doctoral graduates by public university in 2020/21

	Number of doctoral graduates in 2020/21	Share of all doctoral graduates in Portugal in 2020/21	Total graduates in 2020/21	Doctoral graduates as a share of total graduates
Universidade Nova de Lisboa	245	12.6%	4 757	5.2%
Universidade do Porto	384	19.8%	7 557	5.1%
Universidade de Aveiro	132	6.8%	2 670	4.9%
Universidade de Évora	63	3.2%	1 335	4.7%
Universidade Aberta	27	1.4%	597	4.5%
Universidade do Minho	207	10.7%	4 639	4.5%
ISCTE - Instituto Universitário de Lisboa	98	5.1%	2 311	4.2%
Universidade de Coimbra	215	11.1%	5 624	3.8%
Universidade de Lisboa	432	22.3%	11 557	3.7%
Universidade da Beira Interior	56	2.9%	1 812	3.1%
Universidade da Madeira	15	0.8%	570	2.6%
Universidade do Algarve	24	1.2%	938	2.6%
Universidade de Trás-os-Montes e Alto Douro	36	1.9%	1 452	2.5%
Universidade dos Açores	6	0.3%	538	1.1%

Note: Universities are listed in descending order of the share of doctoral graduates in total graduate numbers in 2020/21.

Source: DGEEC (2022[12]) Estatísticas - Ensino Superior (Statistics - Higher Education), <https://www.dgeec.mec.pt/np4/18/> (Accessed on 8 July 2022).



Recommendations from 2019 OECD Review



2019 Policy Option for PhD awarding authority

1. Consider revising the legal basis for polytechnics, permitting the carefully controlled award of doctoral degrees by polytechnics. This should be permitted in applied research fields where institutions have a clearly demonstrated capacity to do so, and where there is a strong economic rationale for the offer of doctoral awards.
2. Where there is a close connection between the work of polytechnics and universities – in fields such as agriculture – consideration should be given to joint doctoral programmes between universities and polytechnics.
3. A strictly controlled and strategically guided process of doctoral authorisation at the level of school or faculty -- rather than the polytechnic as a whole -- is advisable.
4. The authorisation process should require a clear demonstration of capacity for high quality doctoral training, evidence that the programme is aligned to the institutional profile and mission, and relevant to the economic and social needs of external stakeholders served by the institution.



The review team suggested an approval process:

A PhD programme approval process could require, for example:

1. Approval by the polytechnic's President and General Council, in which the proposed doctoral programme is clearly linked to the institution's profile;
2. Review by A3ES (as is done for university PhD programmes);
3. Participation of the programme's academic staff in R& D centres recognised as very good, excellent, or exceptional by the FCT.
4. Participation of the academic staff in a multi-institutional graduate school, organised along lines of discipline or professional specialisation, on the model, e.g. of doctoral training programmes in the Netherlands.
5. An externally reviewed motivation for the proposed PhD demonstrating a close connection between the doctoral programme, professional practice and regional needs. This process would look for representatives of industry, the public sector, or voluntary organisations to identify how the high-level skills of doctoral recipients would be used to improve their organisation's products, processes, and practices.



The alternative to a binary system?

- A binary framework is crude, but effective at ensuring diversity of missions are served by the nation's HEIs
- An alternative? HEIs that are responsible for developing each their own mission and profile, and these are coordinated through policy to create a coordinated institutional landscape
- Ireland – “a coherent system of diverse institutions with distinct missions”.
- Commenced in 2012, and in 2022 is at mid-point?
- “Landscape” and “Technological University Transformation Fund” is running at €25-35m per year supplementary funding for system with 245K students.



OECD Higher Education Team

<https://www.oecd.org/education/higher-education-policy/>