ENGINEERS 4 EUROPE

Engineers *for* Europe Monitoring Report III

What Engineers Want

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eani
Fédération Européenne d'Associations Nationales d'Ingénieurs
European Federation of National Engineering Associations
Föderation Europäischer Nationaler Ingenieurverbände

Engineers for Europe Monitoring Report 3

What Engineers Want

A detailed analysis of needs of engineering professionals as regards career development innovation in six pilot countries (Edition 2020)

Benedikt Gräfingholt
Editor

May 2020

ENGINEERS *for* EUROPE (E4E)

Preface

The Engineers Europe Advisory Group (EEAG) was launched in Brussels on 11 September 2018 with the aim to promote the engineering profession. The EEAG consists of signatories which are professional organizations of engineers, employer associations and institutions of higher education in engineering. A list of signatories is added to this report.

The EEAG immediately initiated a project to improve the engineering education in Europe, to bridge the skills gap and enhance engineering careers. The project is called "Engineers for Europe" or E4E. A list of partners is added to this report.

Two of the five main outcomes of the project[1] will be the E4E Competence Badge and the E4E Matching App, which will be developed as two innovative and essential career development services for engineering professionals:

1) E4E Competence Badge
The Badge will validate an individual's engineering skills, indicating learning outcomes linked to the eight European Qualifications Framework (EQF) levels. Badges will be kept in EuroPass compatible wallets and count towards individual learning accounts. The badges will be piloted in six countries.[2]

2) E4E Matching App
The Matching App connects learners, jobseekers, qualified professionals and project partners in engineering education, innovation and the labour market with temporary and permanent positions, funding opportunities, traineeships, coaching and mentorships.

Work on Innovative Engineering Careers is preceded by a detailed analysis (mapping) of needs of engineering professionals as regards career development innovation and existing tools to address these needs in the six pilot countries laid down in this report. Mapping was focused on three key aspects:

- Recognition of competences
- Job search and recruitment practices
- Career development support mechanisms

The report contains first findings on the prevalence of weaker and stronger correlations found in the six pilot countries. A more complete picture will be provided in the 2021, 2022 and 2023 editions. The mapping in the report will help to design the E4E career development tools and make sure they respond to the needs of the engineering profession in the pilot countries.

The report is the result of desk research, partner- and expert hearings, analyses, writing and editing. Desk research was done in June-September 2019. Hearings were held in September-November 2019. Analyses, writing and editing took place from December 2019 to April 2020. The report will be published in May 2020.

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[1] The other three outcomes are the E4E Monitor, the E4E Competences Compass and the E4E Micro-credentials Register.

[2] France, Germany, Ireland, Italy, Portugal and Poland.

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Abbrev.

Content

1. Introduction

The Engineers for Europe project (E4E) Knowledge Alliance partnership draws its strength from being built bottom up by national associations of engineers (FEANI), complemented by engineering students (BEST) and employers (REHVA). These professionals from the world of work and business have joined forces with partners from academia in an Erasmus+ Knowledge Alliance to ensure that results will benefit both education and professional life. Academic partners include universities of applied sciences, research universities and associations thereof. They combine knowledge of curriculum design, teaching, learning assessment (HEIs) with day-to-day grassroots knowledge and experience of the world of work (membership organizations with FEANI, BEST, REHVA). The purpose behind the E4E project is to complete our knowledge and insights on engineering professionals in Europe and to make this knowledge and insights serve directly the quality of engineering education and the innovative capacity of the engineering workforce. An online platform, reports and leaflets will make this knowledge easily accessible and digestible. Bridging tools will connect education and practice towards innovation. New services will incite the engineering professionals to take their careers in their own hands.

This report is part of a three-fold series of reports that focus on the following key aspects of a professional engineer's life:

- Do We Know Our Engineers?
- Engineering Education in Practice
- What Engineers Want

2. Methodology

This report was prepared by an extended E4E partner online survey. Available data from Germany, France, Ireland, Italy, Portugal and Poland was gathered and included into this report. The main aim was to answer the following questions for the selected countries:

Recognition of competences

The professional landscape is changing fast. Engineers acquire new competences every day, be they technical or social. The report will discuss options on how to organise recognition and validation of new competences. What function for self-assessment and what role for peers? Is badging a way out?

Job search and recruitment practices

How easy is it to find a first job? How smooth are job transitions later in the career? Is the labour market transparent enough? Which media are most effective? What role for networking? The report will discuss various job search methods and recruitment practices.

Career development support mechanisms

Professionals need development support at every stage of their career, be they independent or employees. Do they take their careers into their own hands? The report will discuss the function of personal development plans and the role of mentors and coaches.

3. What Engineers want in…

a. Germany

Recognition of competences

Describe what tools exist in Germany to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience? Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

In accordance with the European Qualification Framework, Germany has implemented a national framework called Deutscher Qualifikationsrahmen (DQR). The DQR is an instrument for classifying the qualifications of the German education system. On the one hand, it is intended to give orientation in the German education system and, on the other, to contribute to the appropriate evaluation and comparability of German qualifications in Europe. In order to make more transparent which competences are acquired in the German education system, it defines eight levels, which correspond to the eight levels of the European Qualifications Framework (EQF). The EQF is used as a translation tool that helps to make national qualifications easier to understand throughout Europe. As a national implementation of the EQF, the DQR accords due consideration to the specific characteristics of the German education system and assists to make equivalences and differences between qualifications more transparent and to use this as a vehicle for supporting permeability and mobility.
https://www.dqr.de/content_en/home.php (19.11.2019)

Job search and recruitment practices

Describe what tools exist in Germany to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives). What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable). What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)? Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Most of the listed practices are not specific for engineers but general practices.

			STUDENTS	GRADUATES	ACTIVE ENGINEERS	EMPLOYERS
	Data found	**Source**				
University						
Career Services Job placement (internships, student work, starting positions for graduates) job fairs to initiate contacts between students and companies	After the recommendation of the German Rectors Conference in 2011, most of the universities in Germany have established Career Services.	https://www.hrk.de/positionen/beschluss/detail/empfehlung-career-services/	x[3]	x		
Job placement via network of lecturers and professors (=informal recruitment & networking)			x	x		
World Wide web						
Online job exchange		*list of selected websites attached, THGA Career Service	x	x	x	
Social media: skills profiles, vacancies, contacts to HR managers and recruiters		www.xing.de www.linkedin.com	x	x	x	x Company profiles, active use of social media for recruitment
Web search for appropriate companies (job offers on company websites)			x	x	x	x Company web pages with vacancies
Public Sector						
Public employment agency EURES (European Employment agencies)		www.arbeitsagentur.de https://ec.europa.eu/eures/public/de/homepage	x	x	x	x

[3] (x) Passive practice
x Active practice

Private Sector						
Commercial job fairs		**list with examples for the Ruhr region attached, THGA Career Service	x	x	x	x
Informal Recruitment : 60-70 percent of all vacancies are filled informally (networks, recommendations, personal contacts) Example: Networking in professional associations	VDI: Verband Deutscher Ingenieure VDE: Verband der Elektrotechnik Elektronik Informationstechnik	https://karrierebibel.de/verdeckter-stellenmarkt/ (24.06.2019)	x	x	x	x
Recruitment Strategies						
Employees recruit employees		https://de.statista.com/statistik/daten/studie/241995/umfrage/relevanz-von-personalbeschaffungskanaelen-deutscher-firmen/	(x)	(x)	(x)	x
Building up talent pools			(x)	(x)	(x)	x
Establishing Dual Study Programs			(x)			x
Special marketing activities for students and graduates		Example: https://karriere.mckinsey.de/event/eintauchen	(x)	(x)		x
Trainee Programs				(x)		x
Recruiting agencies/ Head Hunting					(x)	x
Journals, newspapers		Example: VDI-Nachrichten	(x)	(x)	(x)	x
Personnel leasing				(x)	(x)	x

Percentages of vacancies filled through these tools

The Table shows search- and job matching strategies of German companies in 2015 (not specific for engineers but for graduates).

Tabelle 2

Such– und Besetzungswege bei Neueinstellungen 2015 nach Qualifikation

Anteile in Prozent

	Verwendete Suchwege[1]			Besetzungsweg			Erfolgsquote		
	Ungelernt	Mittlere Qualifikation[2]	Akademiker	Ungelernt	Mittlere Qualifikation[2]	Akademiker	Ungelernt	Mittlere Qualifikation[2]	Akademiker
Eigene Inserate in Zeitungen oder Zeitschriften	36*	39*	22*	13*	16*	7*	35*	41*	34*
Eigene Homepage	40*	51*	72*	4*	12*	18*	9*	23*	26*
Internet-Jobbörsen[3]	35*	38*	55*	7*	10*	26*	21*	25*	47*
Soziale Medien[3]	16*	14*	17*	2*	1*	2*	10	6	10
Kontakt zur Arbeitsagentur[4]	55*	52*	32*	17*	15*	6*	30*	29*	18*
Bewerberliste oder Initiativbewerbungen	43*	27*	27*	15*	9*	8*	35	32	30
Private Arbeitsvermittlung	11	9	10	2*	3*	6*	21*	29*	62*
Interne Stellenausschreibung	11*	23*	37*	3	2	2	23*	8*	6*
Über eigene Mitarbeiter/persönliche Kontakte	62*	48*	41*	36*	29*	20*	58*	60*	50*
Auswahl aus Azubis/Leiharbeitern/Praktikanten	3*	7*	7*	2*	4*	2*	-	-	-
Sonstige Wege	1*	3*	3*	0*	1*	2*	-	-	-

* Die Unterschiede zwischen den Qualifikationsanforderungen sind mindestens auf dem 5%-Niveau signifikant.

[1] Mehrfachnennungen sind möglich. [2] Personen mit Berufsausbildung, Techniker und Meister. [3] Ohne Internetdienste der Arbeitsagenturen. [4] Kontakt zur BA oder BA-Jobbörse.

Lesebeispiel: Bei 36 Prozent aller Neueinstellungen auf Positionen für Ungelernte wurden eigene Inserate in Zeitungen und Zeitschriften für die Suche genutzt. 13 Prozent aller Neueinstellungen in diesem Segment wurden über diesen Weg besetzt, was einer Erfolgsquote von 35 Prozent entspricht. Die Erfolgsquote ist die Relation aus dem gewählten Suchweg und dem erfolgreichen Besetzungsweg x 100.

Quelle: IAB-Stellenerhebung.

Source: http://doku.iab.de/kurzber/2016/kb0416.pdf (06.08.2019)

	Search Strategies	Way of staffing	Success rate
Advertisements in newspapers and journals Company homepage Online job exchange Social media Public Employment Agency Talent pool or unsolicited applications Private employment agencies Internal job advertisement Employees recruit employees/ networks Apprenticeships, Internships, Temporary work Other ways of recruiting	Right column = Graduates	Right column = Graduates	Right column = Graduates

Trends

<u>Upwards trends:</u> Company Homepages and Social Media, Informal recruitment

Downwards trends: Advertisements in Newspapers and journals

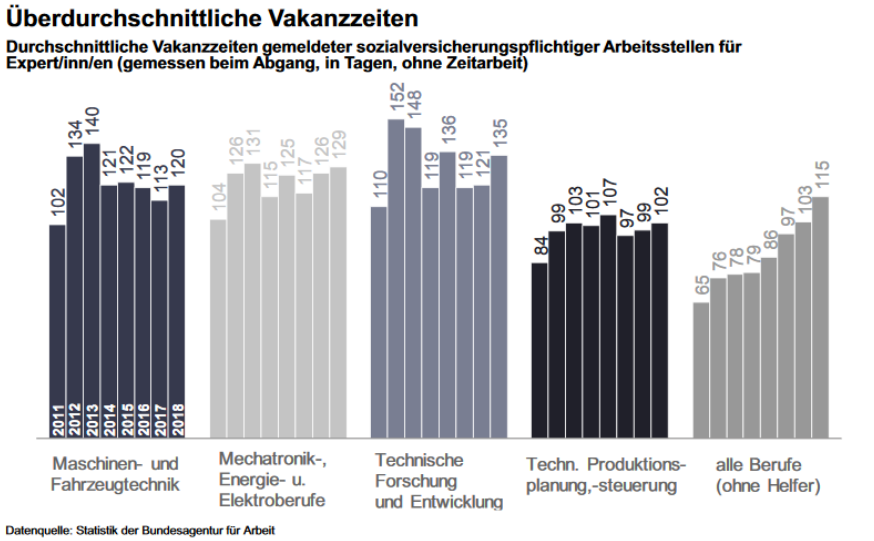
Sources and gaps in data

Most of the data are not specific for the engineers' labour market.

Average vacancy time in the main engineering categories

The image shows, average vacancy times (number of days) in the main engineering categories "machine and vehicle technologies", "mechatronics, energy sector, electrical and electronic engineering" "Research and development", "Production planning and control". The last column shows other professions in comparison.

Abbildung 37



Source: https://statistik.arbeitsagentur.de/Statischer-Content/Arbeitsmarktberichte/Berufe/generische-Publikationen/Broschuere-Akademiker.pdf (06.08.2019)

*Online-Jobbörsen

Die besten allgemeinen Jobbörsen für Ingenieure in Deutschland:[4]

StepStone Deutschland	www.stepstone.de
Staufenbiel Institut	www.staufenbiel.de
XING Stellenmarkt	www.xing.com
Indeed.de	https://de.indeed.com
Monster Deutschland	www.monster.de

Berufs- und branchenspezifische Börsen

Stellenbörse des VDI	https://jobs.ingenieur.de
Stellenbörse mit ausführlichen Unternehmensprofilen	www.get-in-engineering.de/jobsuche
Stellenbörse für Ingenieure allgemein	www.ingenieurjobs.de/
Stellenbörse für Ingenieure allgemein	www.meinejobs-ingenieure.de
IT, Science und Engineering	https://jobtensor.com
Jobbörse v. a. Maschinenbau, Elektrotechnik, Verfahrenstechnik	www.ingenieurweb.de
Jobbörse der Geo-Branche	www.geojobs.de/
Karriereportal der Elektronik	www.mut-job.de

Regionale Jobbörsen

Stellenangebote in Bochum	www.jobs-in-bochum.de
Stellen im Ruhrgebiet	https://ruhrgebietjobs.de
Jobbörse für Studierende im Ruhrgebiet	www.jobportal-edu.de
Jobbörse der RUB	www.stellenwerk-bochum.de

Jobangebote im öffentlichen Dienst

Stellenportal des Öffentlichen Dienstes	www.interamt.de
Öffentlicher Dienst in NRW	www.stellenmarkt.nrw.de
Stellenangebote des Bundes	www.service.bund.de

[4] Quelle: https://crosswater-job-guide.com (03.01.2019)

Stellenangebote in Wissenschaft und Forschung

Hochschulen und Forschungseinrichtungen	www.academics.de
Akademische Stellenbörse der ZEIT	https://jobs.zeit.de

**Jobmessen & Karrieretage

Der Besuch von Jobmessen ist ein guter Weg, Unternehmen direkt kennenzulernen.

Die THGA veranstaltet jeweils am letzten Dienstag im Oktober die hausinterne Jobmesse **„Kontakt: Ingenieur“**, dieses Jahr am **29. Oktober 2019 von 11.00-16.00 Uhr.**

Ausgewählte Jobmessen

Jobmesse „Einstieg“: Dortmund, 06.-07. September 2019, Messe Dortmund

www.einstieg.com/messen/dortmund.html

VDI Recruiting Tag: Dortmund, 13. September 2019, Kongresszentrum Westfalenhallen

www.ingenieur.de/recruiting-tage/dortmund

Jobmesse Essen: 28.-29. September 2019, Grugahalle Essen

www.jobmessen.de/essen

Bonding Firmenkontaktmesse Bochum: 15.-16. Oktober 2019, RUB Bochum

www.bochum.firmenkontaktmesse.de

Jobvector Career Day Düsseldorf: 15. November 2019, Classic Remise Düsseldorf

www.jobvector.de/karrieremesse/duesseldorf

Stellenwerk Jobmesse: 21.- 22. April 2020; RUB Bochum

www.stellenwerk-jobmesse.de/bochum

Career development support mechanisms

Describe what tools exist in Germany to support career development (e.g. personal development plans, training, mentoring). Do all engineers have access to these tools? How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)? Indicate trends in uptake (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

What **tools** exist to support career development in Germany?
The table shows selected examples.

STUDENTS		
	Data found	**Source**
Career services at universities Objectives: • Information on labour market • Develop individual career pads • Prepare the start into working life • Support employability of students Tools • Career advice in general • Analysis of competences • Individual coaching • Workshops (social and personal competencies etc.) • Mentoring programs in different stages of engineering study • Publications etc.	Example Mentoring program for young students in engineering sciences (Universität Duisburg-Essen)	https://csnd.de/ (12.08.2019) www.uni-due.de/iw/de/studium/mentoring.php (12.08.2019)
Networks for special student groups Objectives: • Contact and exchange with experienced engineers • Build up networks • Get in contact with companies • Access to knowledge • Acquire needed skills and competences Tools: • Mentoring Programs • Summer schools • Seminars and workshops • Network events • Excursions	Examples VDI: mentoring program etc. Women of Wind Energy: Network, Mentoring, Career Building FemTec: international career platform for women in sciences and technics; including Career Building Program	https://zukunftspiloten.vdi.de/zukunftspiloten/mentoring/ (12.08.2019) https://womenofwindenergy.wildapricot.org/ (12.08.2019) https://www.femtec.org/de/studentinnen (12.08.2019)

Internships and bachelor/master thesis in companies Objectives: • Deepen theoretical knowledge • Get work experience/ work in relevant fields • Access to companies and vacancies	Internship placement and search for thesis topics via universities or search by students (via internet etc.)	Example https://praktika.ingenieur.de/ (12.08.2019)
Start-up initiatives at universities Objectives: • Information and advice • Develop skills and competences regarding entrepreneurship • Accompaniment trough the start phase Tools: • Workshops and seminars • Individual advice • Start-up competitions/ Pitches	Examples: Start-Up imitative of the University Duisburg-Essen Start-up initiative of the TU Dresden	www.uni-due.de/innovationhub www.dresden-exsits.de (13.08.2019)
GRADUATES		
Trainee programs in companies: 12 to 18-month entry-programs for graduates, mostly in larger, international companies Objectives: • Candidate selection for different positions in the company • Prepare graduates for a long-term employment in the company • Transfer of needed skills and competences/ initial training Tools: • Job rotation within several departments • Temporary work stays abroad • Network meetings	Trainee-examples for engineers Accenture: Trainee Software Engineering – Java Schott AG: Trainee Product Management / International Graduate Program Rexroth: Trainee - Graduate Specialist Program - Technical Sales Mobile Hydraulics	www.stepstone.de (13.08.2019)
Further training/ HR development in companies Objectives: • Transfer of needed skills and competences • Prepare young employees for higher positions • Development planning		

Tools: • Annual employee review/ target agreements/ development plans • Training courses • Training on the job • etc.		
Career advice and coaching in the private sector Objectives: • Individual career counselling, for example for people, planning a job change • Individual career counselling, for special groups, for example people after parental leave • Individual (external) coaching during different stages in the professional life Tools: Individual advice and coaching	Example of career counselling for engineers Example of parental leave Example of external coaching for professionals	www.coaching-personalmanagement.de/karriereberatung-ingenieure https://karriereberatung-pfeffer.de/berufsruckkehrer/ https://www.strobel-coaching.de/fuehrungskraefte-coaching.html (13.08.2019)
ACTIVE ENGINEERS		
Further training/ HR development in companies (see information above) Support for specialist or management careers • Technical/expert seminars • Individual Coaching • Mentoring programs • Management Trainees • Job shadowing		
Career advice and coaching in the private sector (see information above)		
Support for entrepreneurs Objectives: • Acquire needed skills and competences • Develop a business plan and concept	Start-up competitions "Senkrechtstarter": Business plan competition in the Ruhr Area	www.senkrechtstarter.de/

• Accompaniment through the start phase Tools: • Workshops and seminars • Individual coaching • Mentoring • Start-up competitions	Public business start-up initiatives Start-up initiative of the German government Chamber of industry and commerce Private counselling and advice for entrepreneurs	https://www.existenzgruender.de/ www.ihk.de/gruendungsberatung Example www.imc-services.de/gruendungsberatung.php (13.08.2019)
EMPLOYERS		
	Data found	**Source**
See mentioned information above, for example HR-development tools and trainee programs…		

Do all engineers have access to these tools?

There are no valid data accessible for the group of engineers.

Career development support for students

In general, (nearly) all students have access to the mentioned offers, but access to mentoring and career programs or to internships etc. happens on a competitive basis.

Furthermore, places in seminars and workshops at universities are limited.

Trainee programs

➔ The access is mostly through a multi-level application procedure.

HR-development in Companies

http://www.bmas.de/SharedDocs/Downloads/DE/PDF-Publikationen/a876-monitor-personalentwicklung.pdf?__blob=publicationFile&v=4 (13.08.2019)

As above-mentioned publication shows, access to HR-development depends on the size of the company. Small companies do not have their own HR-development departments.

Advice and Coaching in the private sector

Private counselling and coaching have to be paid individually; access depends on the private financial situation.

Support for entrepreneurs

➔ Most offers are open to all interested people.

How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)?

➔ There are no valid data accessible for this question.

Indicate trends in uptake (upwards, downwards, stable)

➔ There are no valid data accessible for this question.

b. France

Recognition of competences

Describe what tools exist in France to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience? Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

- Valorisation des acquis de l'expérience (VAE) – Valorisation of acquired experience

The CNAM (Conservatoire National des Arts et Métiers) is a public institution for professional and continuing education. It has an expertise in the evaluation of acquired knowledge and experience of the experienced adult.
VAE is to validate competences, knowledge and skills developed during professional engineering activities (e.g. management, foreign language).

To apply to the CNAM for VAE, the engineer needs to have at least three years of relevant experience. It is a way to add value to the learning process followed outside of an educational institution, in professional situations.

VAE allows to active workers wishing to go back to their studies to be granted exemptions on certain modules, reductions of the duration of the degree, or access to first and second cycles without fulfilling the academic conditions.

Source : http://ecole-ingenieur.cnam.fr/vae/validation-des-acquis-de-l-experience-vae--848556.kjsp

- Continuing education in universities or Grandes Ecoles (Higher Schools)

In 2017, universities, public engineering schools and the CNAM are training 447,600 interns in continuing education, against 436,300 in 2016 and 454,200 in 2007.

Source : Depp – « Repères et références statistiques sur les enseignements, la formation et la recherche 2019 », https://cache.media.education.gouv.fr/file/2019/55/6/depp-rers-2019-chap5_1162556.pdf

The CNAM welcomes 83,300 interns which represent one person in continuing training in higher education out of five. Around half of them are young students.
In engineering schools and other public institutions, 71% of interns are employees.

Source : L'enseignement supérieur, de la Recherche et de l'Innovation en France
https://publication.enseignementsup-recherche.gouv.fr/eesr/FR/

MINES Paris Tech: Many engineering cycles were created for professionals wishing to reorient themselves, develop new competences, deepen their knowledge of their profession. The school offers around 15 graduating engineering cycles open to continuing education, either in their totality or for some modules.

Source : http://www.mines-paristech.fr

- Recognition by IESF

IESF (the French society for engineers and scientists) can recognize the engineering title for those who do not have a diploma but have demonstrated their quality as engineers by their achievements. This, however, remains very marginal.

- Commission des titres d'ingénieurs (CTI) – Commission of engineering titles

CTI is a commission accrediting engineering programs to deliver engineering titles, through periodic evaluations. It works to ensure the academic and professional recognition of the French engineering title abroad. It also participates in the recognition in France of foreign degrees and professional certifications. When programs are evaluated and accredited by the CTI, they are recognized by the State. Agreements of mutual recognition are concluded on programs, diplomas and qualifications. CTI has also developed a cooperation with international and European accrediting agencies for mutual recognition of accreditations and professional qualifications.

Source : https://www.cti-commission.fr/

- European title and accreditation

EUR ING – FEANI: The EUR ING title delivered by FEANI is designed as a guarantee of competence for professional engineers, based on the European Engineering Education Database gathering recognized engineering programs across Europe.
(https://www.feani.org/feani/eur-ing-title/what-eur-ing-title)

EUR-ACE – ENAEE: The EUR-ACE label is a certificate awarded by an authorised agency to a HEI (Higher Education Institution) in respect of each engineering degree program which it has accredited.
(https://www.enaee.eu/eur-ace-system/)

- Conférence des Grandes Ecoles - BADGE

The Conference of Higher Schools has created the BADGE for the recognition of short trainings and their inclusion in a graduating cycle. It validates a precise competence joining the theoretical basis to professional practices. This is a tool to broaden, deepen, update the competences, to demonstrate the ability to have a certain professional position, to help mobility. It can also be part of a promotion or be a step towards a degree through capitalization. The BADGE includes the notion of VAE.

The BADGE program comprises approx. 250 hours of teaching, on a period from seven weeks to 24 months, including theoretical and practical courses, as well as team projects, and a compulsory work-study period in a company when it lasts more than six months.

Source : http://www.mines-paristech.fr

- Certification SNIPF

SNIPF is the National Society of French Professional Engineers. The Certification SNIPF is a validation of acquired competences after graduation, all along the professional life. SNIPF has its own certification organization complying with ISO/CEI 17024 requirements. The

certification is a label recognizing that a person has exercised the function of an engineer in a specific specialty.

Source : https://www.iesf.fr/offres/doc_inline_src/752/180628_Presentation-Certification-SNIPF.pdf

Job search and recruitment practices

Describe what tools exist in France to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives). What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable). What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)? Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

- APEC (Agence pour l'emploi des cadres)

APEC is the Agency for executives' employment, which is a job portal, including engineering positions.

Source : https://www.apec.fr/?&gclid=Cj0KCQjwoqDtBRD-ARIsAL4pviBmfjPbM2Q_E5owlXHge7uvmrKDvnGLVonFiWb6Lgimvm8dfIxw18YaAhCKEALw_wcB#xtor=SEC-4000

- Alumni's offices of careers

- AEPF : it is the Alumni's association of the engineering school EPF. Its role is to support previous students in their job search, their career management, to make professional exchanges easier and manage social activities. It offers the Alumni's book with contacts in recruiting firms and companies looking for engineers. The "Careers and Jobs' Service" offers a regular synthesis of job offers received by the association.

Source : https://www.aepf.fr

- ISIS Alumni: the association works in collaboration with the engineering school ISIS and companies in the health sector to develop advantageous offers to the school's graduates. It regularly organizes events for graduates in the main French cities. It also follows-up on the graduates' career, with a survey conducted yearly to have an overview of the careers pursued by the engineers from ISIS since their graduation. The survey is then dispatched to all the members, the school administration and the students.

Source : www.isis-alumni.fr

- Careers' Office – Telecom Paris: the office offers different kinds of services to old students such as interviews with counsellors focusing on their career, advice in the

elaboration of their CVs, workshops and events, jobs offers, a tool on e-reputation (a board to assess one's digital reputation).

Source: https://www.telecom-paris-alumni.fr/page/espace-carrieres

- Ecole Polytechnique Alumni: besides the usual services already mentioned, the association also proposes mentoring programs, an online platform "JOBMAKER" helping in the reflection on the professional project, and "WATs4u" – a matching tool between job offers and professional profiles.

Source: https://ax.polytechnique.org/page/services-anciens-eleves

- School services

Example of EPF: after graduation, engineers from EPF still benefit from the Professional Insertion Service to help them in their search for their first job. This service organizes conferences with large companies, coaches students on their CVs and interviews.

Forum Enterprises: organized once per year, it gathers more than 45 representatives from all engineering areas, offering internships and first jobs.

Since 2016, EPF is also organizing a Forum SME & Innovative Start-up.

Source: https://www.aepf.fr

Career development support mechanisms

Describe what tools exist in France to support career development (e.g. personal development plans, training, mentoring). Do all engineers have access to these tools? How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)? Indicate trends in uptake (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

- Alumni

See previous chapter.

- Trainings internally suggested by the companies or administrations

- Training programs supported by the State

- Droit individuel à la formation – Individual Right for Training :

Every public and private worker has an Individual Right for Training which is measured in the time the employer has to give to his employee for training and in the financing of the training program that the employer has to bear at the request of the employee.

The State also recognizes a certain number of trainings (and training organizations) as being eligible for being compulsory financed by the employer at the request of the employee.

- Crédit d'impôt à la formation - Credit on tax for training

This credit granted by public authorities is destined to SMEs, individual companies, associates of commercial societies, for those with management positions.
Trainings eligible for this credit have to be linked with continuing professional education: acquisition of new knowledge, in-depth learning, assessment of competences, operations of prevention and promotion, professional conversion, etc. They can also be trainings related to the company's economy and to the VAE. The objective is to encourage CEOs to follow such trainings while compensating losses for the time spent in training.

Source : https://cnfse.fr/credit-impot-formation-chef-entreprise/

- Compte personnel de formation - Personal account for training

It allows any active person, from the beginning to the end of his/her career, to acquire rights for training that can be used all along the professional life. This account is being reformed to be calculated in Euros and no longer in hours, which should be easier for those using online learning and should better take into account the differences between the different kinds of trainings.

An app is being developed to inform about the acquired rights, to register and pay directly for a training without an intermediary. The app also allows to know about the different certifying trainings in a specific professional area, the satisfactory rates and the insertion rate.

Source: http://www.leparisien.fr/economie/formation-professionnelle-500-euros-de-credit-par-an-pour-les-salaries-05-03-2018-7591488.php

- Conseil en évolution professionnelle : Council in professional evolution

Any active person can receive free counselling on his/her professional project. The Council aims at increasing its competences and qualifications, mainly by making easier its access to professional training.

Source : https://travail-emploi.gouv.fr/formation-professionnelle/

c. Ireland

Recognition of competences

Describe what tools exist in Ireland to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience?
Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable).
Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Useful data are missing in this section, which should be completed in the next edition of the report.

Job search and recruitment practices

Describe what tools exist in Ireland to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives).

Engineers Ireland - https://www.engineersireland.ie/Services/Employment-Services/Job-Desk/Search-for-a-job.aspx

Irish jobs.ie - https://www.irishjobs.ie/Jobs/Engineering-Utilities/

Indeed Ireland - https://ie.indeed.com/Engineers-Ireland-jobs

Hays recruiting experts worldwide - https://www.hays.ie/job/engineering-jobs

LinkedIn

Morgan McKinley - https://www.morganmckinley.ie/engineering-jobs

Engineering Jobs - http://engineeringjobs.ie/

CPL jobs - https://cpljobs.com/ie/job-category/engineering/

The Engineering Council (UK) is working with Engineers Ireland to facilitate mobility of engineering professionals between the UK and Ireland - https://www.engc.org.uk/news/press-releases/pr2018/agreement-to-facilitate-professional-mobility-with-engineers-ireland/

What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable).
What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)?
Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Data are missing to answer these questions.

Career development support mechanisms

Describe what tools exist in Ireland to support career development (e.g. personal development plans, training, mentoring).

Some tools exist in Ireland to support engineers' career development:

- CPD Certificate in Professional Engineering
- CPD Diploma in Professional Engineering
- Complementary e-learning courses (on communication, finance, coaching skills, etc.)5
- Engineers Ireland developed a career consultancy service to help engineers look for, plan and develop their careers[6].

Informative material is easily available on the internet[7].

Do all engineers have access to these tools?

For some of the tools mentioned above e.g. the CPD, a membership with Engineering Ireland might be required.
Becoming a member is doable for all engineers holding the qualifications listed in the FEANI database, for example. The applications are reviewed individually.

[5] https://www.engineersireland.ie/CPD-Training/CPD-Training/Online-CPD.aspx

[6] https://www.engineersireland.ie/Services/Employment-Services/Career-Consultancy.aspx

[7] Examples of some documents made available on the internet by Engineers Ireland: https://www.steps.ie/cmspages/getfile.aspx?guid=83dd8070-794d-45fe-a511-79e5ecf81f4b&forceattachment=1

How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)?
Indicate trends in uptake (upwards, downwards, stable).
Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Table 1 Demand for engineers in 2019 by industry and discipline

	Construction	Consultancy	Manufacturing	Other	All industries
Chemical & Process	14	15	81	42	152
Civil & Building	166	1004	121	770	2,060
Electrical & Electronic	429	163	320	714	1,626
Mechanical & Manufacturing	465	113	346	252	1,175
Other/General	0	532	89	378	999
All disciplines	**1,074**	**1,828**	**956**	**2,156**	**6,014**

Source:
http://engineersireland.ie/EngineersIreland/media/SiteMedia/communications/publications/Engineering-2019-report.pdf

Table 2 Demand for engineers in 2019 by experience and discipline

	5+ years	3-5 years	0-2 years	All
Construction	310	411	353	1,074
Consultancy	744	604	480	1,828
Manufacturing	332	242	383	956
Other	1,232	504	420	2,156
All industries	**2,617**	**1,760**	**1,636**	**6,014**

Engineering Ireland releases since 2018 an annual report about professional engineers in Ireland, the employment situation, perspectives and education. The report offers surveys results as well as statistical data related to the mentioned topics.

Key figures:

The demand for engineering recruits is growing and exceeds 6,000 in 2019.
A young engineer today can expect to earn more than 21% than 5 years ago.
Gender gap in engineering persists: just 13% of last year's graduates are female.

94% of employers consider a shortage of experienced engineers to be a barrier to growth and 48% expect this situation to get worse next year.
57% of Irish adults feel uncomfortable explaining what engineering is about.
Engineering Ireland commits to support lifelong learning, on-going self-improvement. The focus is to be made on emotional intelligence, creativity, communication, ethics and leadership.

A lot of interesting insights about the engineers' situation in Ireland can be found in the full report:
http://engineersireland.ie/EngineersIreland/media/SiteMedia/communications/publications/Engineering-2019-report.pdf

d. Italy

Recognition of competences

Describe what tools exist in Italy to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience? Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Useful data are missing in this section, which should be completed in the next edition of the report.

Job search and recruitment practices

Describe what tools exist in Italy to facilitate job *search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives). What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable). What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)? Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).*

Most of the listed practices are not specific for engineers but general practices.

			STUDENTS	GRADUATES	ACTIVE ENGINEERS	EMPLOYERS
	Data found	**Source**				
University						
Career Services Job placement (internships, student work, starting positions for graduates) job fairs to initiate contacts between students and companies	.	https://www.almalaurea.it/	x[8]	x		
Job placement via network of lecturers and professors (=informal recruitment &			x	x		

[8] (x) Passive practice
x Active practice

networking)						
World Wide web						
Social media: skills profiles, vacancies, contacts to HR managers and recruiters		https://it.linkedin.com/jobs https://www.facebook.com/lavoraconnoi.org	x	x	x	x Company profiles, active use of social media for recruitment
Web search for appropriate companies (job offers on company websites)		https://it.indeed.com/offerte-lavoro-Azienda-Settore-Privato https://www.monster.it	x	x	x	x Company web pages with vacancies
Public Sector						
Public employment agency EURES (European Employment agencies)		https://www.lavoroeconcorsi.com/	x	x	x	x
Private Sector						
Commercial job fairs						x
Job Market for Engineers		https://www2.cni-working.it/	x	X	x	x
Recruitment Strategies						
Employees recruit employees		Social media Linkedin https://it.linkedin.com/jobs	(x)	(x)	(x)	x
Recruiting agencies/ Head Hunting	List of head hunting online agencies	https://corsidia.com/materia/ricerca-attiva-del-lavoro/come-trovare-	x	x	(x)	x

		lavoro/siti-utili				
Journals, newspapers		https://lavoro.corriere.it/ https://www.repubblica.it/economia/miojob/	x	x	x	x

There are no data available regarding the percentages of vacancies filled through these tools.

*Online Job recruitment Italy

Most used Head-Hunting web sites Italy

Indeed.com Italy	https://it.indeed.com/
Info jobs Italy	https://www.infojobs.it/
Jobby doo	https://www.jobbydoo.it/
Monster Italy	www.monster.it
Randstat Italy	www.randstat.it
Page Personnel Italy	https://www.pagepersonnel.it/job-search

Online Jobs Portals for Engineers

WorkINg	https://www2.cni-working.it/

Career development support mechanisms

Describe what tools exist in Italy to support career development (e.g. personal development plans, training, mentoring). Do all engineers have access to these tools? How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)? Indicate trends in uptake (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

What **tools** exist to support career development in Italy?

The table shows selected examples.

STUDENTS		
	Data found	**Source**
Career services at universities Objectives: • Information on labour market • Develop individual career pads • Prepare the start into working life • Support employability of students Tools • Career advice in general • Analysis of competences • Individual coaching • Workshops (social and personal competencies etc.) • Mentoring programs in different stages of engineering study • Publications etc.	Information about labour market and careers development for graduates	www.almalaurea.it
Networks for special student groups Objectives: • Contact and exchange with experienced engineers • Build up networks • Get in contact with companies • Access to knowledge • Acquire needed skills and competences Tools: • Mentoring Programs • Summer schools • Seminars and workshops • Network events • Excursions	International Erasmus Student Network	https://www.esnitalia.org/
Start-up initiatives at universities Objectives: • Information and advice • Develop skills and competences regarding entrepreneurship • Accompaniment through the start phase Tools: • Workshops and seminars	Start-up Italian online strategies development	http://italiastartupvisa.mise.gov.it/

• Individual advice • Start-up competitions/ Pitches		
GRADUATES		
Trainee programs in companies: 12 to 18-month entry-programs for graduates, mostly in larger, international companies <u>Objectives:</u> • Candidate selection for different positions in the company • Prepare graduates for a long-term employment in the company • Transfer of needed skills and competences/ initial training <u>Tools:</u> • Job rotation within several departments • Temporary work stays abroad • Network meetings		
Further training/ HR development in companies <u>Objectives:</u> • Transfer of needed skills and competences • Prepare young employees for higher positions • Development planning <u>Tools:</u> • Annual employee review/ target agreements/ development plans • Training courses • Training on the job • etc.		
Career advice and coaching in the private sector <u>Objectives:</u> • Individual career counselling, for example for people, planning a job change • Individual career counselling, for special groups, for example people after parental	Counselling for engineers	https://www.orientamento.it/indice/career-guidance-italy/

leave • Individual (external) coaching during different stages in professional life Tools: Individual advice and coaching		
ACTIVE ENGINEERS		
Further training/ HR development in companies (see information above) Support for specialist or management careers • Technical/expert seminars • Individual Coaching • Mentoring programs • Management Trainees • Job shadowing	Many medium sized and big companies (in public and private sector) have HR development departments and vocational training programs	
Career advice and coaching in the private sector (see information above)		
Support for entrepreneurs Objectives: • Acquire needed skills and competences • Develop a business plan and concept • Accompaniment trough the start phase Tools: • Workshops and seminars • Individual coaching • Mentoring • Start-up competitions	Call for tenders online portals Loans for business Projects Loans and finance for innovation companies and Start-Ups	https://infoplus.gare.it/provagratuitabandi?frmads=true&gclid=CjwKCAiAlO7uBRANEiwA_vXQ--7lndu43zB4vzl5TrTCGBTZz-OFGijr2ssmDVgHJny5-6z0W1ROIhoC3CYQAvD_BwE https://www.invitalia.it/ https://www.idealmio.com/?gclid=CjwKCAiAlO7uBRANEiwA_vXQ-29NWccEhW-JrhJnu3N9lAkHL9rUx56ncfXPP-KvOvgZNQljWvGNThoCn1YQAvD_BwE
EMPLOYERS		
	Data found	**Source**
See mentioned information above, for example HR-development tools and trainee programs…		

All engineers have access to these tools.
Career development support for students

In general, (nearly) all students do have access to the careers offers, they can also join PhD programs and research projects.

HR-development in Companies

Many medium sized and big companies (in the public and private sectors) have HR development departments and vocational training programs.

Support for entrepreneurs

➔ Many offers and calls for tenders are open for all interested people, local business companies and PMI (Small and medium sized enterprises).

How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)?

➔ There are no valid data accessible for this question.

Indicate trends in uptake (upwards, downwards, stable)

➔ There are no valid data accessible for this question.

e. Portugal

Recognition of competences

Describe what tools exist in Portugal to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience? Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Under Portuguese law, professional engineering practice is only accessible to full members of one of the two Portuguese professional engineering associations (Ordem dos Engenheiros or Ordem dos Engenheiros Técnicos).

For admission in one of those associations, it is mandatory to hold a master's or bachelor's degree in an engineering specialty conferred by a Portuguese higher education institution, or a foreign higher academic degree that has been awarded equivalence to one of those degrees.

Thus, the following recognition assignments were mentioned:

Higher engineering programs accreditation: in accordance with the legal regime of degrees and diplomas conferred by higher education institutions, one program accreditation takes place within the framework of the European quality assurance system in higher education under the responsibility of A3ES - Higher Education Assessment and Accreditation Agency.
(www.a3es.pt).

Many of the most prestigious higher engineering programs are accredited by ENAEE – European Network for Accreditation of Engineering Education (the Portuguese authorized agency is Ordem dos Engenheiros), having been awarded the EUR-ACE label.

National Qualifications System: in Portugal and under the terms of the respective legal framework, the National Qualifications System is linked to the EQF - European Qualifications Framework, under the responsibility of DGERT - Directorate-General of the Employment and Labour Relations (dgert.gov.pt).

International mobility: Within the FEANI National Portuguese Committee's activity scope (intervention of the Portuguese National Monitoring Committee), applications for FEANI's mobility instruments (EUR ING title, Engineering Card and EEED database - European Engineering Education Database) are processed.

Recognitions are also practiced under bilateral reciprocity agreements with other countries' professional associations and in particular with Portuguese-speaking countries.

Job search and recruitment practices

Describe what tools exist in Portugal to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives). What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable). What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)? Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

In Portugal, all the usual job search and recruitment practices are accessible and operational:

- Social Communication
- Engineering schools' intermediation
- Alumni engineering schools
- Professional associations' web pages
- Companies and business associations' web pages
- Fairs and other networking events
- Recruitment agencies
- Internship programs

Since specific statistical data have not been included, the integration of this survey in the objectives to be pursued in the next phases of the project will be relevant.

Career development support mechanisms

Describe what tools exist in Portugal to support career development (e.g. personal development plans, training, mentoring). Do all engineers have access to these tools? How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)? Indicate trends in uptake (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

In this area, diversified initiatives were mentioned:

- Guidance and advice: services for students, providing information about employment opportunities and supporting relevant decisions.

RESASP - Psychological Support Services Network in Higher Education (www.resapes.pt) and GAIVA - Trás-os-Montes and Alto Douro University (www.utad.pt/gaiva)

- Summer trainee programs for Students and Entry trainee programs: first contact with the labour market and candidate selection for long-term employment.

EDP (www.edp.pt), GALP (jobs.galp.com), Siemens Portugal (estagiar.pt)

- Start-up initiatives: information, advice, events, start phase, mentoring.

TECMINHO (www.tecminho.uminho.pt), UPTEC (uptec.up.pt), UATEC Portugal (www.ua.pt/uatec), Instituto Pedro Nunes (www.ipn.pt), Técnico Startup (tecnico.ulisboa. pt), Nova Empreendedorismo (www.unl.pt), Fábrica de Startups (www.fabricadestartups.com)

- Labour market insertion and reintegration: aids for professional insertion.

IEFP - Institute of Employment and Professional Training (www.iefp.pt), Public Employment Exchange (Eportugal.gov.pt)

- Continuous Education: ensured by professional associations, schools of higher education and other specialized institutions.

In next phases of the project, it will be very useful to undertake a more complete survey, both because the current list has not been exhaustive, and because of the importance of knowing the indicators of usage.

STUDENTS		
	Data found	**Source**
Guidance and advice Objectives: • Information on labour market • Support in situations associated with moments of school decision Tools: • Psychological consultation • Mentoring • Development and promotion of social skills • Monitoring the transitions between Secondary and Higher Education and from Higher Education to the Labour Market.	Examples: *RESASP* Psychological Support Services Network in Higher Education (not addressed exclusively to engineering students) GAIVA Universidade de Trás-os-Montes e Alto Douro Labour Market Insertion Support Office (not only for engineering students)	http://resapes.pt/rede-nacional/ https://www.utad.pt/gaiva/
Summer trainees in companies Objectives: • First contact with the labour market • Contact and exchange with experienced engineers Tools:	Examples EDP – Energias de Portugal GALP (Petrogal e Gás de Portugal	https://www.edp.com/pt-pt/carreiras/venha-trabalhar-connosco/estagios-edp https://jobs.galp.com/go/Estágios/1335401/

• Annual student trainee programs • First contact with the labour market • Contact and exchange with experienced engineers	SIEMENS PORTUGAL	http://estagiar.pt/programas-de-estagios-da-siemens-portugal/
Start-up initiatives at universities Objectives: • Information and advice • Develop skills and competences regarding entrepreneurship • Accompaniment through the start phase Tools: • Workshops and seminars • Individual advice • Start-up competitions/ Pitches	Examples: TECMINHO Universidade do Minho UPTEC Universidade do Porto UATEC Universidade de Aveiro Instituto Pedro Nunes Universidade de Coimbra Técnico Startup Instituto Superior Técnico Nova Empreendedorismo	 https://www.tecminho.uminho.pt/showPage.php?url=emp_spinoff_fases.html&zid=318 https://uptec.up.pt/pt-pt/ https://www.ua.pt/uatec/PageText.aspx?id=15825 https://www.ipn.pt/incubadora https://tecnico.ulisboa.pt/pt/tag/startup/ https://www.unl.pt/empreendedorismo/empreendedorismo
GRADUATES		
Trainee programs in companies: Entry-programs for graduates, mostly in larger, international companies Objectives: • Candidate selection for different positions in the company • Prepare graduates for a long-term employment in the company • Transfer of needed skills and competences/ initial training Tools:	Examples EDP – Energias de Portugal GALP (Petrogal e Gás de Portugal	 https://www.edp.com/pt-pt/carreiras/venha-trabalhar-connosco/estagios-edp https://jobs.galp.com/go/Estágios/1335401/

• Job Rotation within several departments • Temporary work stays abroad • Network meetings	SIEMENS PORTUGAL	http://estagiar.pt/programas-de-estagios-da-siemens-portugal/
Labour market insertion and reintegration Objectives: Support for professional (re) insertion through the development of a practical training experience in the workplace. Tools: Remuneration support	Examples: IEFP Instituto de Emprego e Formação Profissional Bolsa de Emprego Público Bolsas de Emprego Linkedin Headhunters	https://www.iefp.pt/estagios Eportugal.gov.pt https://expressoemprego.pt https://bolsaemprego.ordemengenheiros.pt/pt/ https://pt.linkedin.com/jobs/engenheiro-jobs-portugal https://www.e-konomista.pt/headhunter-portugal/ https://expressoemprego.pt/carreiras/fique-na-mira-dos-headhunters/4576
ACTIVE ENGINEERS		
Mentoring - Internationalization Objectives: Acceleration of excellence in supporting the internationalization of start-ups as a bridge in the relationship between the continents of Europe, Asia and South America. Tools: Mentoring programs	Examples Fábrica de Startups	http://www.fabricadestartups.com/program-mentors
Continuous education Objectives: - Knowledge update - Monitoring of innovation - Acquisition of skills - Personal and professional development Tools: - Training programs	Examples Ordem dos Engenheiros	https://www.ordemengenheiros.pt/pt/a-ordem/admissao-e-qualificacao/formacao-continua/

- Accreditation of institutions and programs.		
EMPLOYERS		
	Data found	**Source**
	None	

Do all engineers have access to these tools?

Generally, all engineers have access to these tools, although with inequalities regarding ease of access.

Career development support for students

In general, (nearly) all students do have access to the mentioned offers, but access to mentoring and career programs or to internships etc. happens on a competitive basis.

Furthermore, places in seminars and workshops at universities are limited.

Trainee programs

➔ The access is mostly through a multi-level application procedure.

HR-development in Companies

Access to HR-development depends on the size of the company. Small companies do not have their own HR-development departments.

Advice and Coaching in the private sector

Private counselling and coaching have to be paid individually; access depends on the private financial situation.

Support for entrepreneurs

➔ Most offers are open to all interested people.

How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)?

➔ There are no valid data accessible for this question.

Indicate trends in uptake (upwards, downwards, stable)

➔ There are no valid data accessible for this question.

f. Poland

Recognition of competences

Describe what tools exist in Poland to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience? Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

The Polish Qualifications Framework (PQF) is a reference system for qualifications awarded in Poland. There are 8 levels in the PQF. Each of them is described by means of the general characteristics of the scope and complexity of knowledge, skills and social competences required from persons with a given level of qualifications. In the PQF, the typical characteristics of qualifications given in general, vocational and higher education are taken into account. The Polish Qualifications Framework makes it possible to refer Polish qualifications to the levels of the European Qualifications Framework (EQF) and through the EQF to the levels of qualifications in individual EU countries.

Source : https://prk.men.gov.pl/en/1en/

- Polish Qualifications Framework as a tool for a modern qualifications system in Poland:

The modernisation of the qualifications system in Poland was undertaken in response to national needs and serves the implementation of policies for lifelong learning. Efforts to modernise the national qualifications system are part of a broader context of change taking place in Europe, related to the implementation of the Recommendation of the European Parliament and of the Council of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning.

The Polish Qualifications Framework includes a variety of qualifications awarded in Poland, enabling the different qualifications systems functioning in the country to be integrated. The PQF has been designed so that its levels correspond to those of the EQF. A unique approach used in Poland is the introduction of two categories of level descriptors, distinguished by their degree of detail – universal (first stage) and typical descriptors for different types of education (second stage). Polish qualifications should be clearer and easier to understand in other countries and qualifications systems in Europe.

Source: REFERENCING REPORT - REFERENCING THE POLISH QUALIFICATIONS FRAMEWORK FOR LIFELONG LEARNING TO THE EUROPEAN QUALIFICATIONS FRAMEWORK
https://ec.europa.eu/ploteus/sites/eac-eqf/files/Polish%20Referencing%20Report.pdf

- Comprehensive, reforming framework:

  - 8 levels of qualifications
  - 3 categories of descriptors of learning outcomes: Knowledge, Skills, Social competences
  - 3 degrees of generic descriptors

Source:
http://ekspercibolonscy.org.pl/www.ekspercibolonscy.org.pl/sites/ekspercibolonscy.org.pl/files/agnieszka_chlon_dominczak.pdf

- European title and accreditation:

- EUR ING – FEANI
- EUR-ACE – ENAEE

Job search and recruitment practices

Describe what tools exist in Poland to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives).

- Students:

There are career offices at the universities, offering students assistance in finding job offers and internships, in creating a CV. Students can also join PhD programs and research projects.

- Internet offers:

The most common job search is via the Internet. The most popular sites are:
www.pracuj.pl, pl.indeed.com, www.olx.pl, www.gowork.pl.

Some pages are dedicated only to engineers:
www.pracadlainzyniera.pl, www.strefainzyniera.pl

Many engineers also use LinkedIn and GoldenLine.

- HR consulting companies:

Those looking for a job more and more often turn to HR consulting companies, which are a bank containing interesting offers for them. Consultants of specialized consulting companies have not only recruitment but also industry knowledge, so they are valued interview partners, both for employers and candidates.

Source: http://www.egospodarka.pl/114029,Inzynierowie-dbaja-o-rozwoj-zawodowy,1,39,1.html

Due to personnel shortages and insufficient number of engineers, it is more and more often companies which are applying for an employee.

“Graduates who work in the majority of cases found jobs while still studying. Over 41% of the graduates declared that they did not have to look for their first job - it was offered to them”.

Source: The data refer to graduates of the Warsaw University of Technology - Report from 2019

“High demand for employees with technical education is one of the basic characteristics of the

contemporary Polish labour market. According to tns oBop research from 2007, over 60% of companies declare a lack of engineering staff."

Source: Ex-ante evaluation study on the estimation of the demand of the economy for graduates of higher education institutions of mathematics, science and technology summary https://www.wsti.pl/pliki/streszczenie_raportu_zapotrzebowanie_na_absolwentow_[1].pdf

Engineers stop focusing on their own career development only through the prism of promotions, more and more often striving to develop towards a particular specialization. Engineers realize that it is important for employers not only to have experience, but also to improve their qualifications. Therefore, they invest in further development, gaining new skills and certificates, such as SixSigma, EWE/IWE or Apics. Knowledge of foreign languages also counts, especially if it is a combination of English and German.

Source: http://www.egospodarka.pl/114029,Inzynierowie-dbaja-o-rozwoj-zawodowy,1,39,1.html

"The type and field of study does not fully determine the professional path today. The knowledge acquired during studies is the basis for future skills, which nowadays must be continuously and dynamically developed.

Many employers in the process of employee selection are guided primarily by the candidate's ability to quickly and effectively assimilate the knowledge needed for a given position. Very often studies are treated as an element of general education. For this reason, people who have not completed studies in a given specialty are often employed, those from related fields of study who have the basic knowledge necessary to get to know the specifics of the job".

Source: Ex-ante evaluation study on the estimation of the demand of the economy for graduates of higher education institutions of mathematics, science and technology summary, https://www.wsti.pl/pliki/streszczenie_raportu_zapotrzebowanie_na_absolwentow_[1].pdf

What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable).
What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)?
Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Data are missing to answer these questions.

Career development support mechanisms

Describe what tools exist in Poland to support career development (e.g. personal development plans, training, mentoring).

Career development support for students

Companies often decide to cooperate with universities, where they have courses under their

"patronage". Students acquire skills and competences desired in the industry, and the best ones are hired immediately after graduation. The advantage for the company is that it can recruit graduates who are better prepared to work in a given profession.

Source : https://www.pulshr.pl/rekrutacja/praca-inzynierowie-pilnie-potrzebni-ktorzy-specjalisci-najbardziej-poszukiwani,44902.html

Engineering associations:
Many engineers join scientific-technical associations with members of similar education and interests. There, they often make contacts that help them find work. They can also participate in seminars, conferences and courses.
A list of associations is available on this link: https://not.org.pl/o-not/stowarzyszenia-naukowo-techniczne-zrzeszone-w-fsnt-not

Do all engineers have access to these tools?

Basically, all engineers have access to these tools. Some courses or activities have a limited number of participants, and to take part in other courses or events, specific skills are needed. However, as a rule, access to courses etc. is open to all.

How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)?
Indicate trends in uptake (upwards, downwards, stable).

Data are missing to answer these questions.

4. Conclusion

The presented data will be the foundation for future work packages in the E4E project proposal. The wide data base for the selected pilot countries proves that engineers have a wide range of opportunities to choose from in order to find out what they want, although most sources are not especially designed for engineers. Therefore, the need for Innovative Engineering Careers tools is obvious.

The work package Innovative Engineering Careers will have to accomplish two sub-outputs: 1) E4E Competence Badge to acknowledge the competence acquired, independent of the learning context and 2) E4E Matching App, a huge endeavour that would help match supply and demand for engineering positions, funding opportunities, traineeships, mentors and mentees across the wider Europe. The app would be a spin-off of the E4E Monitor, ultimately reaching out to millions of students, graduates, active engineers and employers.

5. Annexes

Annex I: Engineers Europe Advisory Group Signatories


"Engineers for Europe" (E4E)
ENGINEERS 4 EUROPE
Consortium Partners
REHVA
AECEF
KU LEUVEN
Technische Hochschule Georg Agricola
DUBLIN
SEFI
BEST
Board of European Students of Technology
U.PORTO
UNIVERSIDADE DO PORTO
UNIVERSITAT POLITÈCNICA DE VALÈNCIA
Associated partners
EDEN
ASD
EuroTech Universities
efca