Higher Education

Higher Education in Mexico

LABOUR MARKET RELEVANCE AND OUTCOMES

OECD

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Please cite this publication as:
OECD (2019), *Higher Education in Mexico: Labour Market Relevance and Outcomes*, Higher Education, OECD Publishing, Paris.
https://doi.org/10.1787/9789264309432-en

ISBN 978-92-64-30940-1 (print)
ISBN 978-92-64-30943-2 (pdf)

Series: Higher Education
ISSN 2616-9169 (print)
ISSN 2616-9177 (online)

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Foreword

Over the last decade, the number of students in higher education in Mexico has doubled, and more than half a million graduates enter the labour market every year. Finding adequate employment is difficult and too many young graduates work in occupations for which they are overqualified, or end up in jobs without social security or pension coverage.

Mexico is not alone in this situation. In many OECD countries, weaker-than-expected outcomes of higher education are a disappointment for graduates and their families, who expect good quality and well-paying jobs as a return on their investment in education. Weak returns are also a concern for governments, who invest in the development of skills to boost national and regional productivity and innovation.

In responding to these concerns, the OECD is undertaking an in-depth analysis of the labour market relevance and outcomes of higher education systems. The aim is to help countries improve policies and institutional practices through a better understanding of enablers and barriers, and through recommendations that help close gaps. Mexico was one of the first countries to join this exercise, together with Norway and the United States.

Three aspects stand out from the analysis and make this report a relevant read for policy makers and higher education stakeholders. First, Mexico's higher education system is large and complex, but it lacks diversity of fields and levels of study to match labour market needs. Quality assurance has developed in the last decade but is still voluntary, fragmented, unclear and overlapping.

Second, students need better support to succeed. Pockets of innovative approaches to learning and teaching exist, but are not common practice. Smaller institutions lack the resources and connections to organise effective engagement with employers and work-based learning. Social service, which every undergraduate needs to complete before graduating, is a commendable practice of giving back to society, and potentially a very effective way to develop transversal skills. However, as this analysis shows, initiatives such as these need to be well regulated and managed. Students, who in many cases need to combine work and studies, need more flexibility and the ability to exit and return to higher education at a later stage in life to complete or continue studies at an advanced level.

Finally, in Mexico, as in other OECD countries, strengthening the connections between higher education and the labour market calls for a whole-of-government approach and the involvement of all higher education stakeholders. Mexico needs better connected, up-to-date information and projections of future labour market needs to allow institutions, students and employers make better choices and plan ahead.

Promising steps in all of these areas have been made, and the OECD is ready to support Mexico in going forward.

Acknowledgements

This report is part of a series of country reviews developed for the in-depth analysis of the labour market relevance and outcomes of higher education strand of work as part of the OECD's Enhancing Higher Education System Performance project.

The work was carried out in close collaboration with the companion report, *The Future of Mexican Higher Education: Promoting Quality and Equity* (OECD, 2019[1]), which focuses on broader issues in higher education, including governance, funding, quality and equity, as well as two key sectors of higher education: teacher education colleges and professional and technical institutions.

The OECD would like to thank the Mexican Secretariat of Public Education (*Secretaria de Educación Pública,* SEP), under the leadership of Rodolfo Tuirán Gutierrez, Vice-Minister of Higher Education, for its continued support of the project. In particular, the OECD would like to express its gratitude to Salvador Malo, Director General for University Higher Education, for acting as the national co-ordinator for the project. His support, input, and feedback throughout the project was invaluable.

The OECD is also grateful to the National Council for the Accreditation of Higher Education (*Consejo para la Acreditación de la Educación Superior*, COPAES) for coordinating the project in Mexico. The OECD is especially thankful to Vicente López Portillo Tostado, Director General of COPAES, for his leadership and ability to bring key stakeholders into the project. The OECD would also like to thank members of the COPAES leadership team: Isabel Almada Calvo, Juan Carlos Del Castillo Vázquez, Gerardo de Jesús Villavicencio Obregón, and Pedro María Salcedo for their assistance during the country review visit to Mexico and for helping to foster a strong understanding of the higher education system and policy issues in Mexico. The OECD is also thankful to Gabriela Esteva and the team of ESMART Consultores for the compilation of the country background information and their support during the project.

The OECD would also like to recognise the supportive role played by the Permanent Representative of Mexico to the OECD, Ambassador Mónica Aspe, and her staff, in facilitating contacts and information gathering in Mexico.

This report benefitted immensely from interviews conducted with government ministries, public agencies and higher education stakeholders from 30 January to 1 February 2018 in Mexico City and the videoconferences in the following months. The OECD would like to thank the following organisations for the critical knowledge and perspectives provided during the interviews: the Secretariat of Labour and Social Welfare (STPS) through the Sub-secretariat of Employment and Competitiveness; the Secretariat of Economy (SE) through the Sub-secretariat of Industry and Trade; the National Institute of Statistics and Geography (INEGI); the National Association of Universities and Higher Education Institutions (ANUIES); the Federation of Mexican Private Higher Education Institutions (FIMPES); the National Productivity Committee (CNP); the National Technological Institute of Mexico (TecNM); the General Coordination of Technological and

Polytechnic Universities (CGUTyP); the National Science and Technology Council (CONACyT); the National Council for Standardisation and Certification of Labour Competencies (CONOCER); the National Centre for Higher Education Assessment (CENEVAL), the Business Co-ordinating Council (CCE); the Confederation of Workers in Mexico (CTM); the Confederation of Employers (COPARMEX); the Mexican Institute for Competitiveness (IMCO); the Higher Education-Industry Foundation (FESE); Exponential México; Valle de México University (UVM); Anáhuac University; School of Banking and Commerce (EBC); Kimberly-Clark; Cryoinfra; Grupo BAL; the National Autonomous University of Mexico (UNAM); the National Polytechnic Institute (IPN); the Autonomous University of Puebla (BUAP); and the University of Guadalajara (UdG).

In addition to the interviews and videoconferences, this report gained valuable insight from workshops with higher education students, alumni, academic faculty, staff and employers, held on 29 January and 2 February 2018. The OECD would like to thank all of the workshop participants for taking the time to participate in these productive sessions. The OECD is especially grateful to the Autonomous University of Nuevo León (UANL); the Monterrey Institute of Technology and Higher Education (ITESM); the Autonomous University of Chiapas (UACH) and the Polytechnic University of Chiapas (UPCH) for hosting the workshops, recruiting participants and for their warm hospitality.

The OECD would also like to show appreciation to Eugenio Cetina for his diligent work in reviewing the report and for his indispensable insight, which contributed greatly to the final report.

The OECD's Higher Education team in the Directorate for Education and Skills produced this report. The development of the report was overseen and guided by Dirk Van Damme. The authors of the report were Shane Samuelson, Victoria Galán-Muros and Andrea-Rosalinde Hofer; statistical support was provided by Massimo Loi, Theodore Berut and Cuauhtémoc Rebolledo-Gómez. The authors are grateful for the input, feedback and support received from colleagues across the Directorate for Education and Skills: Margarita Kalamova, Liam Lynch, Massimo Loi, Gara Rojas Gonzalez, Jose-Luis Álvarez-Galván, Cassandra Morley and Patricia Akamp.

The authors also drew on multidisciplinary expertise from colleagues working across the OECD and would like to thank Thomas Weko, Simon Roy, Daniel Trujillo, Sonia Araujo, Glenda Quintini and Marieke Vandeweyer for their helpful comments.

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Reader's guide

The reader's guide provides information on the OECD's in-depth analysis of the labour market relevance and outcomes of higher education. It presents the methodology used in the Mexico review and concludes with a brief overview of the chapters in this report.

Across the OECD, one of the main objectives of higher education systems is to provide graduates with the skills needed to succeed in the labour market. The skills developed in higher education, both discipline-specific and transversal (Figure 1), can improve the economic well-being of individuals and support the productivity, innovation and economic growth of nations.

The credentials that graduates receive from higher education institutions upon the successful completion of their studies are crucial in signalling to employers that they have the capacity, interest, relevant technical and professional skills, and knowledge to do a job successfully within a specific domain. In fact, a higher education qualification is no longer simply an advantage to gaining access to the field, but an essential requirement for many occupations.

As a result, when higher education functions well, it serves to promote strong labour market outcomes for graduates in the form of higher earnings, greater labour market security, and better working conditions. These labour market outcomes are also key factors that shape an individual's overall well-being, as shown by the OECD's Better Life Initiative, the OECD Job Quality Framework, and research in the fields of psychology, economics and sociology. People with higher levels of education are more likely to be civically engaged, more likely to have better health outcomes, and less likely to be involved in criminal activity. Overall, they are more likely to be satisfied with their lives.

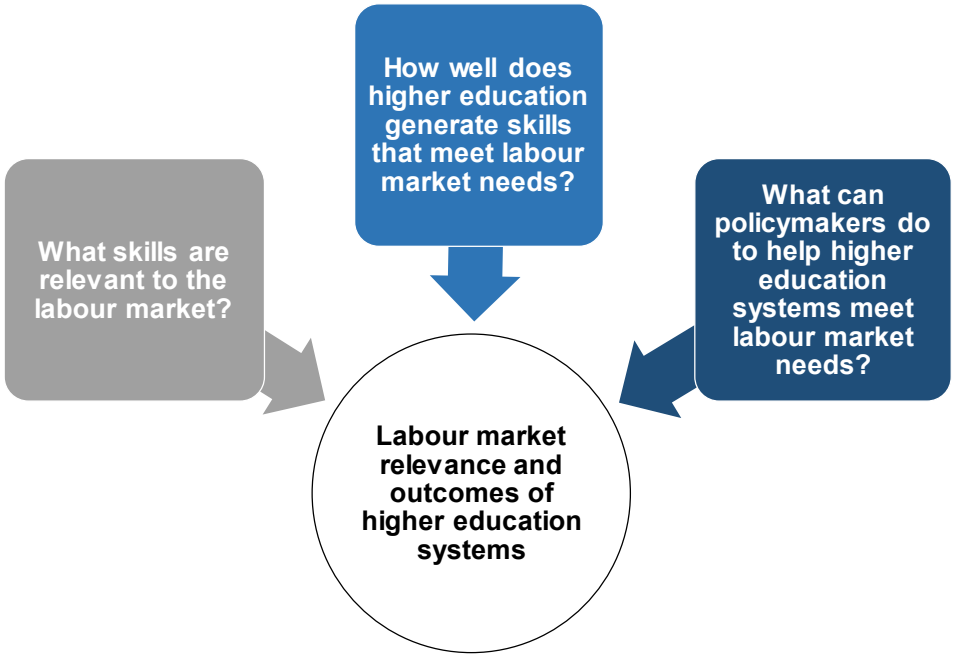
However, not all higher education graduates are doing well in the labour market. The distribution of graduate earnings premiums across OECD countries indicates that a significant minority of graduates are not achieving the labour market success that might be expected of them. In particular, some higher education graduates have trouble transitioning to the labour market, while others are unable to find jobs that correspond to their academic training and qualifications. Higher education graduates are also discovering changing skills demands brought about by broad-based trends like globalisation, technological change and rapid population ageing. This brings into question both the relevance and the quality of the skills developed in higher education.

Weaker-than-expected outcomes across the OECD raise multiple concerns. They are a disappointment for individual graduates and their families, who have invested in higher education and expect a good return on their investment in the form of well-paying jobs. Weak returns are also a concern for governments, which play a major role in funding higher education systems. Policy makers expect higher education to produce skills that

will foster productivity and innovation, meet the needs of employers and raise the overall quality of life of citizens.

It is with these concerns in mind that the OECD launched the in-depth analysis of the labour market relevance and outcomes of higher education. This project aims to help countries improve the labour market relevance and outcomes of their higher education systems through a better understanding of the links between the knowledge and skills developed in higher education and graduate outcomes; and how policies and practices can stimulate and enhance the development of more labour market relevant knowledge and skills. Three key questions guide the analysis to help countries identify what they can do to ensure that higher education graduates develop the skills needed for good labour market outcomes (Figure 1).

Figure 1. In-depth analysis of the labour market relevance and outcomes of higher education: key questions



Source: (OECD, 2017[2])

This report presents the analysis of the current level of alignment of higher education in Mexico with the labour market, and provides recommendations for improvement. In January-February 2018, an OECD review team visited Mexico City, Monterrey and Tuxtla Gutiérrez. The review team conducted workshops and interviews with a wide range of stakeholders to identify and discuss current practices and policies in the higher education system to support labour market relevance and outcomes. During the visit, the OECD review team held workshops in four higher education institutions with the participation of students, graduates, academic staff, non-academic staff and employers. In addition, the review team undertook face-to-face interviews with employers, trade union representatives, rectors, and representatives from private, public and direct-provision higher education institutions and associations. Telephone interviews were also conducted throughout 2018 to gather further opinions, experiences and good practices from key stakeholders. In March and April 2018, an online survey on practices collected the views

of over 6 500 higher education students, academic staff, non-academic staff and rectors in Mexico.

The analysis of the labour market relevance and outcomes of Mexico's higher education system:

- Identifies the knowledge and skills needed in the Mexican labour market, taking into account other factors that are beyond the realm of the higher education sector (Chapter 2), and the structure and governance of the higher education sector (Chapter 3).
- Assesses how well the Mexican higher education system is developing these labour market relevant skills by looking at graduate skills and labour market outcomes (Chapter 4).
- Identifies approaches in higher education in Mexico that facilitate or hinder the development of labour market relevant skills (Chapter 5).
- Explores and assesses the effectiveness of the policy levers that Mexico's policy makers are using to influence the development of labour market relevant skills in higher education and good labour market outcomes for graduates (Chapter 6).

Box 1. What skills matter?

To succeed in the labour market, individuals need a mix of knowledge and skills. The OECD Skills Strategy defines skills as "the bundle of knowledge, attributes, and capacities that enable individuals to successfully and consistently perform an activity or task, and that can be built up and extended through learning" (OECD, 2012[3]). This project focuses on the following broad sets of skills that are important for good labour market outcomes.

Discipline-specific knowledge and skills

Good technical, professional and discipline-specific knowledge and skills reflect a solid theoretical and practical understanding of subject matter. At the higher education level, this is typically codified by academic disciplines. Skills are not developed solely to meet labour market needs, and some disciplines develop technical skills that do not have an obvious labour market match. However, many technical and professional qualifications send a signal to employers that a graduate may have the skills, interest and capacity required to engage in specific types of work; and a concrete set of technical and professional skills is an essential requirement for many jobs (OECD, 2014[4]). Employers often use these qualifications as a first lens to screen individuals for jobs (Montt, 2015[5]). At the level of the overall labour market, an adequate supply and mix of these skills is an important precondition for good economic growth.

Transversal skills

Graduates need to apply their knowledge in uncertain and evolving circumstances. For this, they will need a broad range of skills, including cognitive and metacognitive skills (e.g. critical thinking, creative thinking, learning to learn and self-regulation); social and emotional skills (e.g. empathy, self-efficacy and collaboration); and practical and physical skills (e.g. processing new information and using communication technology devices). These are transversal skills, which graduates can readily take from one employment context to another.

Good generic cognitive and information processing skills involve the understanding, interpretation, analysis and communication of complex information, and the ability to apply this information to situations in everyday life (OECD, 2015[6]). These are the skills that people use in all kinds of work and support effective participation in social and economic life. They also help individuals adapt to a changing economy. Cognitive skills such as critical thinking support positive outcomes in the workplace by allowing individuals to proactively and effectively deal with non-routine challenges (OECD, 2015[6]). The ability to undertake analysis and synthesis is increasingly important for labour market success.

The social and emotional skills involved in achieving goals (perseverance, self-control and passion for goals), working with others (sociability, respect and caring) and managing emotions (self-esteem, optimism and confidence) are also very important in the world of work (OECD, 2015[6]); (OECD, 2015[7]). These skills are often hard to measure, but they allow individuals and companies to thrive, help build synergies within and across teams, and enable individuals to deal effectively with clients and others. There is evidence to suggest that employers are prioritising social and emotional skills more and more (AACU, 2013[8]).

These three primary skillsets are supported by metacognitive skills, or the ability of individuals to recognise their own knowledge and skills, attitudes and values, and unique way of learning. Metacognitive skills help individuals step back from what is simply presumed, apparent or accepted, and bring other perspectives to a situation.

The use of this broader range of knowledge and skills is mediated by attitudes and values such as adaptability; openness to others, new ideas and new experiences; curiosity; a global mind-set; proactivity; respect for others; trust; responsibility; integrity and equity.

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Abbreviations and acronyms

Acronyms	Spanish version	English version
ALCUE	*Espacio Común de Educación Superior de la Unión Europea, America Latina y el Caribe*	Higher Education Common Area of the European Union, Latin America and the Caribbean
AMECYD	*Lifelong Learning Asociación Mexicana de Educación Continua y a Distancia*	Mexican Association of Continuous and Distance Education
AMPEI	*Asociación Mexicana para la Educación Internacional*	Mexican Association for International Education
ANUIES	*Asociación Nacional de Universidades e Instituciones de Enseñanza Superior*	National Association of Universities and Higher Education Institutions
BIS	*bilingüe, internacional y sostenible*	bilingual, international and sustainable
CCE	*Consejo Coordinador Empresarial*	Business Co-ordinating Council
CEFESCDC	*Comisión Especial de Fortalecimiento a la Educación Superior y la Capacitación para Impulsar el Desarrollo y la Competitividad*	Special Committee on Strengthening Higher Education and Training to Promote Development and Competitiveness
CENEVAL	*Centro Nacional de Evaluación para la Educación Superior*	National Centre for Higher Education Assessment
CGEIB	*Coordinación General de Educación Intercultural y Bilingüe*	General Coordination of Intercultural and Bilingual Education
CGUTyP	*Coordinación General de Universidades Tecnológica y Politécnicas*	General Coordination of Technological and Polytechnic Universities
CIDAC	*Centro de Investigación para el Desarrollo*	Research Centre for Development
CIEES	*Comités Interinstitucionales para la Evaluación de la Educación Superior*	Inter-institutional Committees for Higher Education Assessment
CIFRHS	*Comisión Interinstitucional de Recursos Humanos en Salud*	Inter-institutional Commission for the Education of Human Resources in the Health Sector
CNBES	*Coordinación Nacional de Becas de Educación Superior*	National Co-ordination of Higher Education Scholarships

CNP	*Comité Nacional de Productividad*	National Productivity Committee
COCOEES	*Comisión Coordinadora de Organismos de Evaluación de la Educación Superior*	Commission for the Co-ordination of the Higher Education Evaluation Agencies
COEPES	*Comisión Estatal para la Planeación de la Educación Superior*	State Commission for Higher Education Planning
CONACyT	*Consejo Nacional de Ciencia y Tecnología*	National Science and Technology Council
CONAEDU	*Consejo Nacional de Autoridades Educativas*	National Council of Education Authorities
CONAHEC	*Consorcio para la Colaboración en la Educación Superior en América del Norte*	Consortium for North American Higher Education Collaboration
CONEVAL	*Consejo Nacional de Evaluación de la Política de Desarrollo Social*	National Council for the Evaluation of Social Development Policy
CONOCER	*Consejo Nacional de Normalización y Certificación de Competencias Laborales*	National Council for Standardisation and Certification of Labour Competencies
COPAES	*Consejo para la Acreditación de la Educación Superior*	Council for the Accreditation of Higher Education
CORPES	*Consejos Regionales para el Planeamiento de la Educación Superior Regional*	Councils for Higher Education Planning
CUMex	*Consorcio de Universidades Mexicanas*	Consortium of Mexican Universities
DESCAES	*Desarrollo y Evaluación General de Competencias para el Aprendizaje en Educación Superior*	Skills Development and Evaluation for Higher Education Learning
DGAIR	*Dirección General de Acreditación, Incorporación y Revalidación de la Secretaría de Educación Pública*	General Directorate of Accreditation, Incorporation and Revalidation of the Secretariat of Public Education
DGESPE	*Dirección General de Educación Superior para Profesionales de la Educación*	General Directorate of Higher Education for Education Professionals
DGESU	*Dirección General de Educación Superior Universitaria*	General Directorate of University Higher Education
ECEST	*Espacio Común de la Educación Superior Tecnológica*	Common Space for Technological Higher Education
EDM	*exámen diagnóstico de matemáticas*	diagnostic mathematics exam
EGEL	*Exámenes Generales para el*	General exams for graduates

	Egreso de la Licenciatura	of bachelor's programmes
EHLL	*Exámen de Habilidades Lingüísticas y Lógicas*	
EIC	*Espacio Iberoamericano del Conocimiento*	Ibero-American Knowledge Space
ENCOP	*encuesta de competencias profesionales*	survey on professional competences
ENILEMS	*Encuesta Nacional de Inserción Laboral de los Egresados de la Educación Media Superior*	National Survey of Labour Market Outcomes for Upper Secondary Education Graduates
ENOE	*Encuesta Nacional de Ocupación y Empleo*	National Survey of Occupation and Employment
ESG	*Normas y Directrices Europeas para la Garantía de Calidad en la Educación Superior*	European Standards and Guidelines for Quality Assurance in Higher Education
EXANI II	*exámen general de ingreso a la educación superior*	general examination for entering bachelor's education
EXANI III	*exámen general de ingreso al posgrado*	general examination for entering postgraduate education
EXUBI	*examen de ubicación del idioma*	language examination
FEMIA	*Federación Mexicana de la Industria Aeroespacial*	Mexican Federation of the Aerospace Industry
FESE	*Fundación Educación Superior-Empresa*	Higher Education-Industry Foundation
FIE	*Foro Internacional de Emprendedores*	International Entrepreneurs' Forum
FIMPES	*Federación de Instituciones Mexicanas Particulares de Educación Superior*	Federation of Mexican Private Higher Education Institutions
FOBESII	*foro bilateral sobre educación superior innovación e investigación*	bilateral forum on higher education, innovation and research
FONABE	*Fondo Nacional de Becas*	National Scholarship Fund
GDP	*Producto Interno Bruto (PIB)*	Gross Domestic Product
HEA	*autoridad de educación superior*	higher education authority
HEI	*institución de educación superior*	higher education institution
ICT	*Tecnologías de la información y la comunicación*	Information and Communication Technologies
IDAP	*Indicador Desempeño Academico por Programa*	Academic Performance Indicator by Program
IDB	*Banco Interamericano de Desarrollo*	Inter-American Development Bank
IMCO	*Instituto Mexicano para la Competitividad*	Mexican Institute for Competitiveness
INADEM	*Instituto Nacional del Emprendedor*	National Institute for Entrepreneurship
INAI	*Instituto Nacional de*	National Institute of

	Transparencia, Acceso a la Información y Protección de Datos Personales	Transparency, Access to Information and Personal Data Protection
INEE	*Instituto Nacional para la Evaluación de la Educación*	National Institute for the Evaluation of Education
INEGI	*Instituto Nacional de Estadística y Geografía*	National Institute of Statistics and Geography
INNOVAPYME	*innovación tecnológica para microempresas y pequeñas y medianas empresas*	technological innovation for micro firms and small and medium-sized enterprises
INNOVATEC	*innovación tecnológica en grandes empresas*	technological innovation in large companies
IPN	*Instituto Politécnico Nacional*	National Polytechnic Institute
ISCED	*Clasificación Internacional Normalizada de la Educación International (CINE)*	International Standard Classification of Education
ITESM	*Instituto Tecnológico y de Estudios Superiores de Monterrey*	Technological Institute of Monterrey
ITH	*Instituto Tecnológico de Hermosillo*	Hermosillo Institute of Technology
JIMA	*Programa Jóvenes de Intercambio México-Argentina*	Mexico-Argentina Youth Exchange Programme
LGE	*Ley General de Educación*	Federal Education Act
MEXFITEC	*México Francia Ingenieros Tecnología*	The Mexico-France Programme for Engineering Students
MOOCs	*cursos abiertos masivos en línea*	massive online open courses
NAFTA	*Tratado de Libre Comercio de América del Norte (TLCAN)*	North American Free Trade Agreement
NEET	*no en educación, empleo o formación*	not in education, employment or training
OECD	*Organización para la Cooperación y el Desarrollo Económico (OCDE)*	Organisation for Economic Co-operation and Development
PADES	*Programa de Apoyo al Desarrollo de la Educación Superior*	Programme to Support Higher Education
PAEES	*Programa de Asistencia a Estudiantes de Educación Superior*	Higher Education Student Aid Programme
PAEP	*Prueba de Admisión a Estudios de Posgrado*	Postgraduate Admission Test
PAME-UDUAL	*Programa Académico de Movilidad Educativa– Unión de Universidades de América Latina y el Caribe*	Academic Programme for Student Mobility of the Association of Universities in Latin America and the Caribbean
PECiTI	*Programa Especial de Ciencia, Tecnología e Innovación*	National Science, Technology and Innovation Programme
PEI	*Programa de Estímulos a la Innovación*	Innovation Stimuli Programme

PEIA	*Plan Espacial Industria Automotriz*	Industry Programme for the Automotive Sector
PEFRHME	*Programa Estratégico de Formación de Recursos Humanos en Materia Energética*	Strategic Plan for Human Resources Development in Energy
PEMEX	*Petróleos Mexicanos*	
PFCE	*Programa de Fortalecimiento de la Calidad Educativa*	Strengthening Education Quality Programme
PIAAC	*Programa para la Evaluación Internacional de las Competencias de los Adultos*	OECD's Programme for the International Assessment of Adult Competencies
PIDES	*Planeación Integral de la Educación Superior*	Comprehensive Higher Education Planning
PIFI	*Programa Integral de Fortalecimiento Institucional*	Comprehensive Programme for Institutional Strengthening
PIMA	*Programa de Intercambio y Movilidad Académica*	Programme of Academic Mobility in Latin America
PIMA-OEI	*Programa Iberoamericano de Movilidad Académica*	Ibero-American Programme for Academic Mobility
PISA	*Programa Internacional de Evaluación de los Alumnos*	Programme for International Student Assessment
PLANEA	*Plan Nacional para la Evaluación de los Aprendizajes*	National Plan for the Evaluation of Learning
PNP	*Padrón Nacional de Posgrados SEP-CONACyT*	SEP-CONACyT National Registry of Graduate Programmes
PNPC	*Programa Nacional de Posgrados de Calidad*	National Programme of Quality Postgraduate Studies
PPP	*paridad de poder de compra (PPC)*	purchasing power parity
PRODEP	*Programa para el Desarrollo Profesional Docente*	Programme for the Professional Development of Academic Staff
PRONABES	*Programa Nacional de Becas para la Educación Superior*	National Programme of Scholarships for Higher Education
PRONAE	*Programa Nacional de Educación*	National Education Programme
PUENTES	*Programa Universitario Emergente Nacional para la Terminación de Estudios Superiores*	National Emergent University Programme for Higher Education Studies Completion
R&D	*investigación y desarrollo (I+D)*	research and development
RENEC	*Registro Nacional de Estándares de Competencia*	National Registry of Competency Standards
RSA	*Reconocimiento de Saberes Adquiridos*	formal mechanism to recognise prior learning
RVOE	*Reconocimiento de Validez Oficial de Estudios*	Recognition of Official Validation of Studies
SE	*Secretaría de Economía*	Secretariat of Economy

SENER	*Secretaría de Energía de México*	Secretariat of Energy of Mexico
SEP	*Secretaria de Educación Pública*	Secretariat of Education
SES	*Subsecretaría de Educación Superior*	Sub-Secretariat of Higher Education
SHCP	*Secretaría de Hacienda y Crédito Público*	Secretariat of Finance and Public Credit
SMEs	*Pequeña y mediana empresa (PYME)*	Small and medium-sized entreprises
SNI	*Sistema Nacional de Investigadores*	National System of Researchers
STEM	*ciencia, tecnología, ingeniería y matemáticas*	science, technology, engineering and mathematics
STPS	*Secretaría de Trabajo y Previsión Social*	Secretariat of Labour and Social Credit
TecNM	*Tecnológico Nacional de México*	National Technological Institute of Mexico
UAEH	*Universidad Autónoma del Estado de Hidalgo*	Autonomous University of the State of Hidalgo
UANL	*Universidad Autónoma de Nuevo León*	Autonomous University of Nuevo Leon
UASLP	*Universidad Autónoma de San Luis Potosí*	Autonomous University of San Luis Potosí
UnADM	*Universidad Abierta y a Distancia de Mexico*	Open University of Distance and Online Education
UMAP	*Programa de Movilidad Universitaria en Asia-Pacífico*	University Mobility in Asia-Pacific Programme
UNAM	*Universidad Nacional del México*	National University of Mexico
UNAQ	*Universidad Aeronáutica de Querétaro*	Aeronautical University of Querétaro
UNID	*Universidad Interamericana para el Desarrollo*	Inter-American University for Development
UPAEP	*Universidad Autónoma Popular del Estado de Puebla*	Popular Autonomous University of the State of Puebla
UPN	*Universidad Pedagógica Nacional*	National Pedagogical University
UPQ	*Universidad Politécnica de Querétaro*	Polytechnic University of Querétaro
USMCA	*Acuerdo Estados Unidos-México-Canadá*	United States-Mexico-Canada Agreement
UTJ	*Universidad Tecnológica de Jalisco*	Technical University of Jalisco
UTQ	*Universidad Tecnológica de Querétaro*	Technological University of Querétaro
WEF	*Foro Económico Mundial*	World Economic Forum

Executive summary

Mexico's economy is regionally diverse and increasingly open. The country's strategic sectors – automobile, aerospace, energy and electronics – are expected to continue their growth paths and reforms are underway to increase productivity and innovation in more traditional industries as well. Higher education is expanding, and if current patterns are maintained, 26% of youth will gain a degree at some point in their lifetime. Half a million graduates enter the labour market every year and Mexico relies on these graduates to move upward in the global value chains.

This in-depth analysis examines the governance and structure of the higher education system and the employment outcomes of higher education graduates in Mexico as well as assesses current institutional practices and public policies in view of how to improve the labour market relevance and outcomes of higher education.

Key Findings:

As in most OECD countries, a higher education degree in Mexico results in better labour market outcomes than lower levels of education: higher education graduates are more active in the labour market, have better employment outcomes and have considerably higher salaries. However, working conditions have worsened in the last decade and young workers with higher education degrees face two major and persistent problems that indicate an inefficient use of their skills: informality and over-qualification. Labour market outcomes vary largely by gender, age, fields of study, and across the 32 Mexican states.

Higher education in Mexico needs better alignment with the changing needs of the economy. Almost half of Mexican employers report a lack of skills in their sector and consider the education and training of applicants unsuited to their needs. Raising the relevance and outcomes of higher education requires a strategic vision for higher education, a whole-of-government approach and the involvement of the entire higher education system. Promising first steps in this direction have been made with the inter-ministerial National Productivity Committee and the recent national skills framework.

Mexico's higher education has thirteen subsystems, which differ considerably in their governance structures, funding arrangements, and government influence. Public policies and institutional level initiatives to help improve labour market relevance and outcomes exist, but they lack a cohesive framework and effective mechanisms to evaluate impact. Information on higher education and the labour market needs to be improved and better co-ordinated. All this makes steering the higher education system difficult.

While there is no representative data for assessing the skills of graduates in Mexico, signs suggest insufficient levels of discipline-specific and transversal skills. Raising the quality of higher education has been a longstanding policy priority, but outcomes are mixed. The quality assurance system is voluntary, complex and fragmented; it lacks transparency and

coherence, and is costly. An unknown number of programmes in private institutions operate outside the system. Criteria related to labour market relevance are not integrated into institutional quality assurance mechanisms, and are not thoroughly applied in programme quality assurance mechanisms. Currently, less than half of undergraduates are enrolled in evaluated or accredited programmes.

There is not a strong culture of internal quality assurance, with the exception of some leading institutions. Targeted funding, Mexico's main policy lever to increase quality, reaches only public institutions, which account for 70% of students but less than one third of the 3 762 institutions in the country. There is no targeted funding focused exclusively on raising the labour market relevance and outcomes of higher education, although several targeted funding programmes include this criteria. The effectiveness of targeted funding suffers from the fragmentation of programmes, overlapping and unclear objectives, and complex application procedures. It is also common that institutions use targeted funding to cover basic costs.

The current higher education system is complex, but lacks diversity by field and level of study. Over a third of students are enrolled in business administration and law, and nine out of ten study in bachelor's programmes. Employers are calling for more diversity. However, the lack of information makes it difficult for students to make informed choices. In the absence of formula-based funding with weightings for different fields and levels of study, institutions tend to deliver programmes that are likely to attract high enrolments and less costly to deliver. Changes in the economy also require interdisciplinary programmes, but these are currently very difficult to accredit.

Students need more and better support to succeed in their studies and develop the skills they need in their future jobs. While pockets of good practice exist in some subsystems, overall there is no awareness or recognition of the fundamental role of good teaching. Institutions rely heavily on lecture-based teaching. Innovative methods that are more interactive and engage the students at different levels are rare, and internationalisation efforts are also in the early stages of development.

Progress has been made to increase the share of qualification levels of full academic staff, but the proportion of casual staff is very high, and there is little practice of professional development of staff in teaching methods. The National System of Researchers (SNI) is effectively assessing the performance of academic staff of both public and private institutions in terms of research quality, knowledge and technology transfer, and contribution to education. However, the quality and impact of teaching are not encouraged, recognised or rewarded.

There is no tradition of engaging with employers and social partners to ensure that the delivery of programmes meets labour market needs; exceptions are the technological subsystems and certain leading institutions. Work-based learning exists, to varying degrees across subsystems and fields of study, in the form of internships, the social service, and dual education and postgraduate programmes with industry. The social service, intended to allow students to give back to society, has the potential to be a powerful mechanism through which every undergraduate could develop transversal skills. However, legislation is unclear, fragmented and contradictory. Furthermore, many institutions lack resources to effectively organise work-based learning and engagement with employers.

The current system has major barriers to pathways into and within higher education. Lifelong learning is poorly developed and higher education lacks the flexibility that

allows students to exit and return to higher education at a later stage in life to either complete or continue studies at an advanced level. Distance and online education can make progress in addressing these issues.

High-technology entrepreneurship could boost Mexico's economy and help address social needs. Interest among students is increasing, but there is not yet a strong entrepreneurship culture or support within higher education, with some notable exceptions.

Mexico's regional diversity offers rich potential. Maintaining a balanced geographic distribution of higher education institutions has been a policy priority and has successfully increased access. However, the absence of an effective planning mechanism has created tensions regarding the allocation of funding and the responsiveness of higher education to regional and local needs.

Chapter 1. Assessment and recommendations

This chapter outlines recommendations for enhancing the labour market relevance and outcomes of the higher education system in Mexico. Each recommendation is accompanied by a policy rationale and a summary of key issues in Mexico. The recommendations, developed for the Mexican Secretariat of Public Education (Secretaria de Educación Pública, SEP), are structured under three headings: aligning higher education with the changing needs of the labour market, helping students succeed in higher education and the labour market, and co-ordinating the higher education system to enhance labour market relevance and outcomes.

Mexico has transformed itself over the last three decades from a relatively protected, oil dependent economy to a manufacturing, international investment and export centre (OECD, 2018[1]). The country has successfully integrated into global value chains, mainly through the North American Free Trade Agreement (NAFTA), which has brought some economic benefits in terms of productivity, diversification and sophistication of production (OECD, 2017[2]).

However, Mexico has not yet closed the productivity gap with highly developed economies, and its gross domestic product (GDP) per capita remains just as far behind the United States as it was in the 1990s, with GDP growth at about 2% per year, reflecting simple population growth. Productivity in small and medium enterprises (SMEs) and labour productivity are particularly weak; large productivity gaps exist in all sectors and between sectors.

Mexico's efforts to improve productivity have included opening up sectors such as telecommunications, electricity and oil to private participation, which are showing signs of some productivity increase (OECD, 2017[3]). Mexico has also developed strategic plans to increase productivity for the retail, tourism and food sectors, which employ a large share of workers but have low productivity. These initiatives aim to increase competitiveness by focusing on a set of industries with high productivity and growth potential, i.e. automotive, agro-industrial, aerospace supply, and electric-electronics, and through research and development (R&D), technological innovation and complex business services.

Increasing productivity and competitiveness would allow Mexico to achieve greater integration into global value chains; however, its ability to do this is limited by the structure of the economy and labour market as there is a large share of informality, a dominance of micro-enterprises and traditional industries, large income inequality, low levels of R&D investment and activities, weak domestic research infrastructure, and an underdeveloped knowledge-based start-up environment (OECD, 2017[2]). In addition, Mexico's efforts are hindered by the low skills levels of its population, along with inefficiencies in putting those skills to use. Levels of educational attainment are the lowest across OECD member countries, and there are quality concerns, with scores in the Programme for International Student Assessment (PISA) at the bottom of OECD countries. The OECD National Skills Strategy of Mexico identified improving the use of skills at work as one of the key challenges facing Mexico (OECD, 2017[4]), including addressing issues around overqualification and the better alignment between skills and the labour market for higher education graduates

Education and skills are the foundation upon which Mexico must build future growth and prosperity (OECD, 2017[4]). Higher education is fundamental to the development of the advanced knowledge and skills that are critical for modern economies. Through higher education, students develop advanced technical, professional and discipline-specific knowledge and skills, as well as transversal skills that qualify them for a range of occupations.

Mexico's higher education system is facing significant challenges in terms of quality and in ensuring that students develop labour market relevant skills so that they go on to achieve good labour market outcomes. Further progress in productivity and competitiveness will require improvements in the quality of education at all levels, from early childhood education to higher education. Addressing the quality of higher education and ensuring greater labour market relevance is therefore of vital importance for Mexico to achieve strong, inclusive and sustainable growth in a global economy.

The Mexican higher education system

The Mexican education system, from primary education to higher education, has grown exponentially since 1950, from 1 to 36 million students, reaching almost universal enrolment up to secondary education. However, a large number of students drop out of upper secondary education, with only 56.3% of Mexicans currently expected to graduate from this level of education (OECD, 2018[5]).

Mexico's higher education system is large and has undergone rapid growth over recent decades. In 1970-1971, there were around 270 000 students enrolled in 385 campuses across Mexico. By 2016-2017, this had grown to approximately 4.4 million students (3.8 million studying in face-to-face programmes and 0.6 million in distance or online programmes) in more than 7 000 campuses and close to 38 000 programmes (SEP, 2017[6]). With 13 subsystems, the Mexican higher education system is highly complex and diverse. The subsystems differ considerably in terms of institutions, programmes, governance structures, funding arrangements, government dependence, and teaching and research intensity and quality.

In 2015, 89% of students in Mexican higher education were enrolled in ISCED 6 level programmes (*licenciatura*) (61%, OECD average), 4.5% in ISCED 5 short-cycle programmes (*técnico superior universitario and profesional asociado*) (20.4%, OECD average), 5.9% in ISCED 7 programmes (*especialización and maestría*) (16%, OECD average), and less than 1% (0.9%) in ISCED 8 doctoral programmes (*doctorado*) (2.4%, OECD average) (OECD, 2017[7]).

The two most popular fields of study are law and business administration, with 35.1% of new entrants; and engineering, manufacturing and construction (24.4%), which are well above the OECD averages (23.3% and 16.5% respectively). Programmes in health and welfare are also relatively common (10.1% vs. 13% OECD average). Natural sciences, mathematics and statistics, as well as information and communication technologies (ICT), have low shares of entrants in Mexico (3.1% and 1.9% respectively), well below the OECD averages (6.5% and 4.6% respectively) (OECD, 2018[5]).

Mexico currently has the lowest share of adults (25-64 year-olds) with a higher education degree across OECD countries (17%), well below the OECD average (37%), and lower than other countries in the region, such as Chile (23%), Colombia (23%), Costa Rica (23%) or Argentina (21%) (OECD, 2018[5]). However, significant progress has been made in increasing higher education attainment levels in Mexico, and over the last 16 years, the share of young adults who completed higher education rose from 17% to 23%. If current patterns are maintained, 26% of young people in Mexico are expected to graduate from higher education at some point in their lifetime (OECD, 2018[5]). Currently, over half a million higher education graduates enter the labour market every year.

Outcomes of higher education graduates in the labour market

Finding a job can be more difficult for young higher education graduates (25-34 year-olds) in Mexico than for their peers in other OECD countries. The employment of young graduates in Mexico (80.7%) is below the OECD average of 84.1% (OECD, 2018), which indicates that a number of graduates are actively seeking, but not finding, suitable jobs. On average, 14.5% of young higher education graduates do not participate in the labour market. This is above the OECD average (10.7%) and places Mexico in a disadvantaged

position, as the skills of these graduates are not used (OECD, 2018[5]). The unemployment rate of young graduates (5.7%) is similar to the OECD average, but as there are no unemployment benefits, and very few active labour market policies in Mexico, registered unemployment is not common.

Young workers with higher education degrees in Mexico face two major and persistent problems that indicate an inefficient use of skills in the labour market: informality and overqualification. Informal employment increased from 26% in 2010 to 27% in 2017, and employment in occupations that do not require a higher education degree increased from 44% in 2010 to 46% in 2017 (INEGI-ENOE, 2017[8]).

The wage premium for young higher education graduates in Mexico is the second highest among OECD countries after Chile. Young higher education graduates earn, on average, 78% more than young workers who have completed only upper secondary education (OECD, 2018[5]). However, graduates who work in occupations for which no higher education qualification is required, or who are employed informally, are less likely to benefit from the wage premium of a higher education degree.

Over half of graduates come from the two most common fields of study: business administration and law (35%), and engineering and construction (21%) (OECD, 2018[5]). Their employment rates are above average and employers state that these graduates are hired for a wide range of occupations. However, high rates of overqualification, 56% and 53% respectively (INEGI-ENOE, 2017[8]), suggest that there are not enough graduate-level jobs for graduates in these fields.

Young higher education graduates are becoming more entrepreneurial, even if this is because they cannot find a suitable job (UVM, 2018[9]). Between 2010 and 2017, the proportion of young graduates who were either self-employed or running a business that employed others increased from 12.7% to 13.8% (INEGI-ENOE, 2017[8]). The fields of study with the highest rates of entrepreneurs were arts and humanities, agriculture, and engineering (INEGI-ENOE, 2017[8]).

Although women represent 53.1% of first-time higher education graduates, over one in five do not participate in the labour market. Their inactivity rate is three times higher than that of male graduates (21.3% vs. 6.9%) and their employment rate is lower (74.2% vs. 87.9%) (OECD, 2018[5]). This can be partially attributed to cultural reasons, but also to business practices that discriminate against women, especially those with young children. In 2016, only 5.2% of Mexican women had a seat on the boards of the largest publicly listed companies (20% OECD average) (OECD, 2017[2]). Highly skilled women who are not participating to their full capacity in the labour market present a particularly large untapped potential to boost Mexico's economy.

Young graduates do not immediately obtain the same benefits from a higher education qualification as older graduates (35-44 year-olds): they have higher unemployment rates (5.7% vs. 3.0%) (OECD, 2018[5]) and a higher prevalence of informal employment (27% vs. 24%) (INEGI-ENOE, 2017[8]). Young graduates from health and well-being programmes, education and natural sciences, and mathematics and statistics are particularly likely to start their professional careers working informally (INEGI-ENOE, 2017[8]).

In 2017, four industry sectors employed more than three-quarters of young graduates: social and other services (31%); professional, financial and corporate services (18%); trade (15%); and manufacturing (13%). The vast majority worked as paid employees (84%), 11% were self-employed, 4% were employers, while 2% were working without

pay (INEGI-ENOE, 2017[8]). More than half of young graduates worked for either small (31%) or micro firms (24%), 19% worked in medium-sized enterprises, 16% in large firms and 9% for the government (INEGI-ENOE, 2017[8]).

There are also major differences in the labour market outcomes of higher education graduates across the different states of Mexico (INEGI-ENOE, 2017[8]). Graduates in northern states have higher employment rates and are less likely to work in the informal economy or be overqualified than their peers in other parts of the country. Despite these differences, only 5% of young higher education graduates moved either within their state or into another state for their job. This mobility was higher to or within states with high industrial dynamism, such as Baja California Sur (19.0%), and particularly in the fields of education, health, and arts and humanities (INEGI-ENOE, 2017[8]).

Alignment between skills and labour market needs

While a large young labour force is a great strength of Mexico's labour market, the country still lacks specialised talent, despite recent improvements. Less than a quarter of the young population (25-34 year-olds) have obtained higher education qualifications, and within this limited share of graduates, evidence shows that their skills are not used effectively. The aim to specialise in high-tech industries with large value added is also hindered by the low and decreasing share of graduates in ICT programmes (2% of graduates and new entrants) (OECD, 2018[5]). This suggests a misalignment between graduates' skills and labour market needs.

According to OECD research, four out of five Mexican employers report difficulties in filling vacancies, particularly 84% of large companies, but also 70% of micro-companies. The mining and extraction, construction, communication, transport, and services sectors have the most difficulties finding workers, while agriculture and fishing, trade and manufacturing have fewer problems (OECD, forthcoming[10]). Employers cited a lack of experience (24%), high salary expectations (20%), a lack of technical skills (14%) and a lack of professional skills (8%) in candidates as challenges to hiring (Manpower Group, 2017[11]).

Overall, 46% of Mexican employers stated that there is a lack of skills in their sector, and most (83%) consider the education and training of applicants unsuited to their sector (Hays, 2018[12]). Employers claimed that some graduates have insufficient discipline-specific knowledge, which is also indicated by the EGEL exams (*Exámenes Generales para el Egreso de Licenciatura*) and recognised by graduates themselves. Employers also raised the issue of the lack of connection between the knowledge and skills developed in higher education programmes and their labour needs, asking for more involvement in the curriculum design and delivery of study programmes. Academic staff recognised that curricula are not changed often enough to adapt to the needs of a rapidly changing labour market.

Representative data on the skills of higher education graduates is not available. The EGEL tests, taken by 1.38 million students between 2005 and 2016 at the end of their bachelor's degree, show that over half of students did not obtain the minimum grade to pass the tests, and only 8% achieved an outstanding result. A 2014 survey by the Research Centre for Development (*Centro de Investigación para el Desarrollo*, CIDAC) found that higher education graduates lacked skills related to written communication in Spanish and oral communication in Spanish and English. Furthermore, employers

reported that graduates had limited ability in synthesising information and logical thinking, and did not show a sense of responsibility or proactivity (CIDAC, 2014[13]).

Aligning higher education with the changing needs of the labour market

Raising awareness of the labour market relevance and outcomes of higher education

Rationale

Higher education contributes to inclusive growth by strengthening human capital formation, R&D, and innovation. One of the main objectives of higher education is to provide its graduates with the skills needed to succeed in the labour market. This is especially important in today's innovation-driven, skills-based, globalised economies, and corresponds well with the student expectation of finding adequate employment upon conclusion of their studies.

A comprehensive and coherent vision for the future of higher education that highlights the importance of its labour market relevance can guide future policy development over the medium and long term, in harmony with national social and economic objectives. A strategy for improved labour market relevance and outcomes of higher education helps raise awareness of the issue and provides guidance to higher education institutions, students, social partners (employers and trade unions) and other stakeholders on what the government wants to do and how. It provides a cohesive framework for policy initiatives and for monitoring and evaluating those initiatives, and ensures effective co-ordination across levels of government, agencies and other stakeholders.

A strategy also ensures consensus building among stakeholders. Effective communication is important so that all relevant parties see the role they should play within the broader policy framework. Without this vision, the strategic direction of medium and long term policies will become the accumulation of short term decisions of different system actors, mainly based on the daily demands of their environment and the interests of institutions, public administration and other groups.

Key issues in Mexico

Mexico lacks a strategic vision for higher education, and there are currently no effective steering mechanisms for the higher education system in terms of quality and the diversity of programmes and levels on offer. There is no strategic approach to enhance the labour market relevance of higher education; with students, higher education institutions and employers largely unaware of the importance of this topic.

Mexico has no common legal framework that comprehensively regulates the higher education system. The Higher Education Co-ordination Act 1978 (*Ley de Coordinación de la Educación Superior*) provides basic guidelines for co-ordination between the federal and state governments in higher education, but responsibilities regarding higher education institutions and procedures for co-ordinating their activities are not outlined with any precision. The intersecretarial National Productivity Committee (*Comité Nacional de Productividad*, CNP) recently developed a skills framework for Mexico (*Sistema de Formación de Habilidades*), informed by the OECD's Skills Strategy of Mexico in 2017. The CNP's skills framework covers all levels of education and the skill needs of the strategic industries. However, the sectoral programmes of the federal ministries of

education, employment and economy are designed independently, which risks fragmentation.

Box 1.1. Policy recommendations: Raising awareness of the importance of the labour market relevance and outcomes of higher education

1. Develop a national strategy on the labour market relevance and outcomes of higher education

- Develop a national strategy to enhance the labour market relevance and outcomes of higher education that is anchored in a new legislative act for higher education, as recommended by the OECD's broader review for higher education (OECD, 2019[14]). The strategy should aim to:
  - Raise awareness of the importance of enhancing the labour market relevance and outcomes of Mexico's higher education system.
  - Provide a framework for a suite of policy initiatives to ensure a cohesive and systemic approach is taken to enhance the labour market relevance and outcomes of higher education.
  - Ensure effective co-ordination across levels of government, agencies and other organisations in delivering policy initiatives.
  - Ensure effective collaboration between government, higher education institutions, students and social partners in developing and implementing policy initiatives.
  - Provide a mechanism to monitor and evaluate the effectiveness of policy initiatives.
- Ensure the strategy is supported by funding and undertaken in collaboration with federal and state ministries and stakeholders (including higher education institutions, students, and social partners).

There are several initiatives to enhance the labour market relevance of higher education undertaken by the SEP (e.g. the Strengthening Education Quality Programme, *Programa de Fortalecimiento de la Calidad Educativa*, PCFE), the National Science and Technology Council (*Consejo Nacional de Ciencia y Tecnología*, CONACyT) (e.g. postgraduate programmes with industry), and the Secretariat of Economy (e.g. industrial clusters and the incubator programme). During 2013-2015, Parliament established the Special Commission on Strengthening Higher Education and Training to Promote Development and Competitiveness (*Comisión Especial de Fortalecimiento a la Educación Superior y la Capacitación para Impulsar el Desarrollo y la Competitividad,* CEFESCDC). Higher education institutions also have their own initiatives. However, all of these initiatives are disjointed and lack a cohesive framework. In addition, there are no effective mechanisms in place to monitor and evaluate the effectiveness of policies and practices in higher education to enhance labour market relevance and outcomes.

Strengthening the quality of higher education

Rationale

A high-quality higher education system is vital in ensuring that qualified graduates are capable of contributing effectively to economic development and to society at large. High-quality systems can help students develop strong knowledge and skills relevant to the labour market and go on to achieve good employment outcomes.

There is no established definition or measure of quality in higher education, however, the factors considered when discussing and assessing quality in higher education encompass the student experience and learning outcomes, the acquisition of discipline-specific and transversal skills through higher education, labour market outcomes, pathways into and within the system, equity, and the governance and management of the higher education system (Hazelkorn, Coates and McCormick, 2018[15]).

Strengthening the quality of lower levels of education is central to ensuring that students are equipped with the necessary skills to succeed in higher education. The preparedness of secondary school graduates for higher education is a key factor in determining their study success and first-year attrition (Lowe and Cook, 2003[16]).

Quality assurance mechanisms are used to assess the factors linked to quality and provide students, parents, academic staff, institutional leadership, and employers with the confidence that higher education institutions are of sufficient quality and, in the context of this project, that the knowledge and skills developed in higher education are relevant for current and future labour markets. Mass participation, increasingly flexible types of provision, and the emergence of new higher education institutions – particularly private – put additional pressure on the mechanisms in place to ensure the quality of higher education (OECD, 2008[17]).

There are three main approaches to quality assurance in higher education: audit (review), assessment (evaluation) and accreditation (OECD, 2008[17]). These external quality assurance processes involve experts and peers who evaluate the quality of institutions and programmes to ensure they meet specified standards. They may also provide recommendations for continuous improvement. These processes can be conducted by institutional associations, government departments or independent agencies.

The overall aim of external quality assurance processes is that higher education institutions put internal quality assurance mechanisms in place and engage in internal quality evaluations. Adherence to these internal quality assurance standards can help higher education institutions develop a strong quality culture, and thereby help build trust and confidence in higher education.

Key issues in Mexico

The quality and relevance of higher education is a key objective in the Sectoral Education Programme 2013-2018 (*Programa Sectorial de Educación* 2013-2018) and is also supported by several targeted funding programmes, such as the Strengthening Education Quality Programme (*Programa de Fortalecimiento de la Calidad Educativa*, PFCE). While some higher education institutions are considered to be of high quality, there are large differences within subsystems and institutions, and the quality of private higher education institutions is of particular concern. This has been exacerbated by the large increase in institutions, programmes and students over recent years. At the same time,

there is not a strong culture of internal quality assurance across the higher education system, although there have been improvements in this area.

There are no adequate mechanisms in place to assure the quality of higher education. The quality assurance system is complex, fragmented and lacks transparency. It has multiple layers that were introduced at different times, and the system as a whole now lacks coherence. This is exacerbated by the existence of multiple quality assurance agencies that address different levels of higher education, have overlapping functions, apply different criteria and use different mechanisms. To address this situation, the SEP reactivated the Commission for the Co-ordination of the Higher Education Evaluation Agencies (*Comisión Coordinadora de Organismos de Evaluación de la Educación Superior,* COCOEES) in mid-2017, but it is too early to assess its effectiveness.

Institutional accreditation is not used to control entry to, or continue operations in, the Mexican higher education system. Public higher education institutions are not required to undergo any form of institutional accreditation. Private higher education institutions, which enrol around one-third of students, have no barriers to enter the higher education system. On a voluntary basis, 84 of the 2 693 private institutions have sought institutional accreditation through the Federation of Mexican Private Higher Education Institutions (*Federación de Instituciones Mexicanas Particulares de Educación Superior*, FIMPES), the main association for private higher education institutions. This is intended to be a mark of quality to signal that higher education institutions meet certain educational standards.

Programme evaluation and accreditation is also voluntary for all institutions, meaning that they can deliver programmes that have not gone through any form of external quality assurance. Programme accreditation is undertaken by three separate organisations: undergraduate programme evaluation is conducted by the Inter-institutional Committees for Higher Education Assessment (*Comités Interinstitucionales para la Evaluación de la Educación Superior*, CIEES); programme accreditation is conducted by the Council for the Accreditation of Higher Education (*Consejo para la Acreditación de la Educación Superio*r, COPAES) agencies; and CONACyT accredits postgraduate programmes.

Similar to institutional accreditation, the quality assurance of programmes is variable and not widespread. Under half (43.1%) of undergraduates are enrolled in the 17.3% of programmes that have either been evaluated by CIEES as level one programmes or accredited by COPAES agencies. Most of these "quality" programmes are offered by public institutions. Furthermore, only 21.5% (2 297 out of 10 645) of postgraduate programmes have been accredited by CONACyT, almost two-thirds of them in federal or state public universities.

Programmes delivered by public higher education institutions are implicitly recognised as part of the national higher education system. Private institutions that would like to have their programmes recognised as part of the national education system can seek the Recognition of Official Validation of Studies (*Reconocimiento de Validez Oficial de Estudios*, RVOE). Only students from programmes with a RVOE, or those from public higher education institutions, are granted a professional licence (*cédula profesional*), which is required to operate in over 30 regulated professions.

The RVOE is issued by the ministries of education at the federal and state levels and assesses that programmes fulfil basic requirements concerning academic staff, campus facilities and curriculum. A RVOE is awarded indefinitely, although it can be removed in

case of non-compliance. Requisites have increased in this renewed agreement, but it still does not guarantee minimum quality standards.

The Mexican National Qualifications Framework could help assess, develop and enhance quality, but it is largely unknown among higher education stakeholders and not used to align programmes or in accreditation. The framework was released in 2014, covers all levels of education and is currently reviewed by the SEP.

The rapid growth of higher education may pose a risk to the quality of provision. Therefore, the further expansion of higher education should be undertaken through a sequence of steps, with a focus on raising quality before or at the same time as the expansion of supply. The OECD's 2018 review of higher education addresses the issue of quality more generally (OECD, 2019[14]). Addressing the quality of higher education in Mexico is a vital first step towards improving the labour market relevance and outcomes of the system, and will help ensure that students develop strong skills that will equip them for the future.

Box 1.2. Policy recommendations: Strengthening the quality of higher education

2. Strengthen the quality assurance system to help ensure that students develop labour market relevant knowledge and skills

- In line with the OECD's broader review of higher education (OECD, 2019[14]), take steps to improve the quality of higher education through strengthened institutional and programme accreditation.
- Ensure that programme accreditation takes account of the National Qualification Framework.

Integrating labour market relevance into quality assurance mechanisms

Rationale

Quality assurance mechanisms, such as establishment laws, institutional accreditation, programme feasibility studies and programme accreditation, can be effective in ensuring that higher education institutions consider labour market relevance in their programme offer and engage with social partners. Engagement with social partners at both institutional and programme levels is a common practice across many OECD countries to enhance the labour market relevance and outcomes of higher education. Policy makers can use accreditation procedures by including labour market relevant criteria or minimum standards for institutions to help ensure the quality and relevance of skills developed.

Accreditation criteria can also guarantee that institutions have processes in place to ensure the involvement of social partners in decisions about which programmes to offer or in the design and delivery of study programmes. They may also focus on outputs such as minimum levels of professional or transversal skills, or on labour market outcomes, such as employment and earnings, to encourage higher education institutions to focus on graduate outcomes. To increase labour market responsiveness, the accreditation process needs to be sufficiently flexible to allow the use of different approaches to help students develop labour market relevant skills.

Integrating criteria to ensure that higher education institutions engage with social partners in accreditation processes helps improve the quality of the higher education system. This sends a strong signal to students and employers that accredited institutions and programmes help students develop labour market relevant skills, which should position them well for success in the labour market.

Key issues in Mexico

The legislative framework of the three technological subsystems requires a series of practices that can enhance labour market relevance and outcomes, such as including engagement with employers in governance or curriculum updates, and feasibility studies that include labour market data and employers' views to justify the creation of a new programme. Institutions need to report on all of these practices to their co-ordinating agency within the SEP.

Public autonomous institutions are established under federal or state law. For most of these institutions, there are no requirements to involve social partners in decision making at the institutional governance, faculty or programme level, or in programme design and delivery.

While the institutional accreditation of private universities carried out by FIMPES does not include any aspect of labour market relevance as a criteria; COPAES and CIEES consider it in their undergraduate programme evaluation and accreditation. However, stakeholders reported that the application of this criteria is flawed as there are not sufficiently detailed guidelines for the accreditation/evaluation process, and there is a lack of transparency on how the criteria is applied. The application of criteria does not seem to be consistent among agencies, and reporting requirements do not seem to be strict. The voluntary nature of the accreditation further reduces the impact of this criteria.

Box 1.3. Policy recommendations: Integrating labour market relevance into quality assurance mechanisms

3. Ensure that quality assurance mechanisms include criteria on labour market relevance and engagement with social partners

- Include labour market relevance and engagement with social partners as criteria in programme accreditation processes.
- Encourage private higher education institutions to include this criteria in the voluntary institutional accreditation undertaken by FIMPES.

CONACyT establishes the criteria to recognise postgraduate programmes as part of the National Programme of Quality Postgraduate Studies (*Programa Nacional de Posgrados de Calidad*, PNPC) in three categories: research, professional or industrial programmes. Research programmes have very few criteria related to labour market relevance outcomes, there are more for professional programmes, and programmes with industry must, by definition, be designed and delivered in close collaboration with companies.

Helping higher education institutions engage more effectively with employers

Rationale

Effective partnerships between higher education institutions and employers are beneficial for all parties. Students have a quicker transition to the labour market and achieve better outcomes, while employers get the skilled labour force they need. Academic staff keep up with current workforce practices and skills needs and build strategic relationships with employers, which are relevant for teaching and research activities. Temporary staff mobility from higher education to industry and vice versa is an effective practice for engagement (Wilson, 2012[18]).

Higher education engagement with employers may take a number of forms to ensure that the content of programmes is labour market relevant and that students develop the skills employers seek. The involvement of employers in the governing and advisory bodies of higher education institutions is widely practiced in some higher education systems. Employers benefit from the opportunity to work directly with academic staff in the design and development of the curriculum, and can contribute directly to learning and teaching or make specialised industry equipment available. They can also play an important role through the provision of work-based learning in their own facilities. Employers provide labour market intelligence and can support programme accreditation.

Engagement between higher education institutions and employers can be time-consuming and frustrating for both parties if not well planned and organised. For example, it can be difficult for employers to identify academic staff and programmes with which they could effectively engage. It can also be difficult for academic staff to establish contacts and networks with social partners. Centralised structures that connect students, academic staff and higher education institutions with employers can help overcome these barriers.

Key issues in Mexico

Mexican higher education institutions are not sufficiently flexible and well-connected to adapt their education and research activities to the current and emerging needs of the Mexican economy (Badillo-Vega et al., 2015[19]). At the same time, the characteristics of the economy and labour market (large informal sector, large share of SMEs, low innovation, etc.) make engagement with employers difficult.

Employer representation in the governing bodies of higher education institutions (e.g. employers as members of an executive council) is not widespread, except for the technological subsystems, where it is compulsory. Although the establishment laws of public higher education institutions require the participation of social partners in advisory bodies, social partners are not required to be involved in the design and delivery of study programmes.

There is no tradition of interaction between academic staff and employers in Mexico, and there are few avenues for institutions to engage with employers, particularly SMEs. The regulation of public higher education institutions allows tenured full-time academic staff, after six years of service, to take a sabbatical for up to one year. They can undertake postgraduate studies, research or training, develop a business project or work in a company. However, 71% of academic staff across all subsystems are casual staff (*profesor de asignatura*) and cannot benefit from this arrangement.

Some higher education institutions have established engagement offices to help facilitate engagement with local businesses. Nonetheless, stakeholders reported that engagement

offices are understaffed, underfunded and staff often do not have experience or training in engagement activities. There is not a specific funding programme for these offices, but funding programmes such as the Programme to Support Higher Education (*Programa de Apoyo al Desarrollo de la Educación Superior*, PADES) can be used to establish engagement offices or fund related activities. In addition, CONACyT provided some funding through the GeT-In programme to train staff in engagement offices over 2013-2016, but the programme had limited coverage.

Box 1.4. Policy recommendations: Helping higher education institutions engage more effectively with social partners

4. Encourage greater co-operation between higher education institutions and social partners in programme planning, design and delivery

- Support the establishment of institution-based advisory committees that foster co-operation between public higher education institutions and social partners and provide advice and support in the planning, design and delivery of programmes. The advisory committees could function at the institutional level (to help ensure the delivery of programmes that meet labour market needs) and the operational level (to help in the design and delivery of programmes to ensure the curriculum is relevant to the labour market).

5. Strengthen the role of engagement offices to foster greater collaboration between higher education institutions and social partners

- Evaluate the effectiveness of existing engagement offices to determine how well these offices are functioning, to identify best practices, and to ascertain whether these offices could be extended more broadly across the higher education system. Share lessons learnt across all subsystems.
- Introduce targeted funding to pilot the establishment of engagement offices in a broader range of public higher education institutions across subsystems, and support the training of staff working in engagement offices.
- Encourage higher education institutions to better connect their engagement offices with other institutional units (e.g. technology transfer offices, internship offices, incubators) and co-ordinate various engagement activities, including participation in science and technology parks, as well as industrial clusters.
- Support the creation of a network of engagement offices and collaboration opportunities for staff working in these offices.

Some science and technology parks, as well as industrial clusters, partner with higher education institutions or include them as members, which enables research collaboration. These initiatives can also be very effective in facilitating collaboration in education activities. Proximity facilitates shared facilities and staff mobility between higher education institutions and industry. Currently, the involvement of higher education institutions in science and technology parks, as well as industrial clusters, is limited.

Ensuring a diverse offer of programmes

Rationale

The effective development and use of skills is central to economic and social development, particularly in a context of rapidly changing labour market needs. Higher education plays an important role in this through the development of advanced skills and new knowledge, which are both at the core of innovation.

Employers require a broad range of knowledge and skills. An adequate supply and mix of good technical, professional and discipline-specific knowledge developed in higher education is important for economic growth. An oversupply of skills for which there is insufficient demand in the labour market could result in skills mismatch and skills atrophy, which is likely to negatively impact technical and professional skills (Handel, 2012[20]), as well as inactivity or migration.

Ideally, higher education systems ensure a diverse offer of programmes with a broad range of fields and levels of study that provide a good match with current labour market needs and shape future labour markets by enabling or encouraging certain kinds of economic activity.

Key issues in Mexico

Currently, over a third of bachelor's graduates (35%) in Mexico are from law and business administration programmes (OECD, 2018[5]), 55% of whom were overqualified for their jobs (44% average across all fields of study) (INEGI-ENOE, 2017[8]). Continuously high enrolment in these programmes reflects to some extent student choice, although students have limited labour market information available to make informed choices about which programmes to choose. This high enrolment is exacerbated by institutional responses to funding.

The federal government provides a block grant to public higher education institutions that is simply based on staff and student numbers, historical trends and negotiations with individual institutions. In the absence of mechanisms that provide differentiated levels of funding for different fields and levels of study, higher education institutions in Mexico tend to deliver programmes that are likely to attract high enrolments and that are less costly in terms of staff and infrastructure. As a result, close to half (46.6%) of higher education programmes are offered in social sciences, administration and law, and 71.9% are offered at the bachelor level (ISCED 6 level) (ANUIES, 2018[21]).

Representatives of large Mexican companies advised the OECD review team that they would like to recruit more graduates of short-cycle higher education programmes (*técnico superior universitario* and *profesional asociado*). These programmes are mainly offered within the technological subsystems in technical fields of studies, and increasingly in business administration. Although the share of first-time graduates from short-cycle tertiary education programmes has increased from 6.7% in 2005 to 8.1% in 2016 (OECD, 2018[5]), prospective students in Mexico, and their families, generally consider these programmes less prestigious than bachelor's programmes. Student demand is low and many higher education institutions are not interested in offering these programmes.

Labour market outcomes of short-cycle tertiary education programmes are poorer than for bachelor's programmes. Young graduates from a short-cycle programme can expect a wage premium of 19% compared to upper secondary degree holders, whereas the wage premium for a bachelor's degree is 80% (OECD, 2017[7]). They are also more

overqualified, as bachelor's graduates often take jobs that only require short-cycle programme qualifications or lower. This has a cascading effect, with short-cycle programme graduates taking jobs for which only upper secondary education is required (INEGI-ENOE, 2017[8]).

The current innovation capacity is very limited. There are only 0.7 R&D personnel per 1 000 employees in Mexico, compared to 7.7 in OECD countries, 25% of whom work in business (61% OECD average) (OECD, 2017[22]). Mexico needs to train master's and doctorate students to increase R&D activities and drive innovation in the private sector, particularly in its strategic industries (e.g. energy, automobile and aerospace). However, there is limited capacity within the labour market to absorb the current number of graduates at this level, so efforts will also be required from the labour market side.

Box 1.5. Policy recommendations: Ensuring a diverse offer of programmes

6. Encourage the offer of a more diverse range of programmes in different fields of study and at different levels

- Raise awareness among students and higher education institutions of the importance of short-cycle tertiary education programmes (ISCED 5) and make these programmes more attractive through initiatives that demonstrate how graduates from such programmes can succeed in the labour market.
- Introduce a new allocative mechanism for block grants for education using funding formulas and weightings to steer the delivery of programmes that are better aligned with the labour market.
- Provide grants and scholarships to students to encourage them to enrol in programmes that are aligned with labour market needs.

7. Support the delivery of interdisciplinary programmes

- Remove barriers to the accreditation of interdisciplinary programmes and professional licenses for graduates of these programmes.

In 2016-17, around 6% of students were enrolled in master's programmes and 1% in doctoral programmes (SEP, 2017[6]). Postgraduate enrolment is concentrated in business administration and law (37.8%), with only 8.1% in engineering programmes and 4.5% in natural sciences, mathematics and statistics (OECD, 2018[5]). The majority of postgraduate programmes are delivered by private higher education institutions, with limited provision in public institutions. The high fees for the programmes in private higher education institutions could discourage qualified candidates from pursuing postgraduate studies. CONACyT offers scholarships for students in postgraduate programmes of recognised quality (PNPC), but these are limited in number (around 22 000), and around two-thirds are in science, technology, engineering and mathematics (STEM) fields.

Emerging labour market needs also require interdisciplinary programmes, but these are very difficult to accredit under current arrangements. Despite recent efforts towards flexibility and interdisciplinarity, accreditation agencies are discipline specific. Therefore, institutions must seek accreditation for these programmes from multiple agencies, which increases the regulatory burden and delivery costs. In addition, the higher education system and the labour market rely heavily on occupations and related professional

licenses, and train students for specific jobs. Professional licenses are essential for some occupations, such as medical professions, doctors and engineers. However, there are currently no professional licenses to recognise the mix of two or more disciplines.

Helping students succeed in higher education and the labour market

Fostering innovative learning and teaching practices in higher education

Rationale

High-quality learning and teaching helps students improve the way they learn and retain key knowledge and skills developed in higher education, which facilitates success in the labour market. Innovative approaches to learning and teaching, which require students to apply knowledge to unknown contexts and develop high-quality skills (e.g. via group activities, oral presentations, and problem-solving scenarios), can enhance discipline-specific knowledge and skills, support the development of transversal skills, and demonstrate how to apply them in a work environment.

Entrepreneurship education in particular uses innovative approaches to learning and teaching. If integrated into the curriculum, it can reach all students and facilitate the development of a wide range of transversal skills alongside business creation knowledge and skills.

Academic staff are typically experts in their field, but they may only have received rudimentary instruction in how to effectively support student learning and connect academic knowledge with practice. As a result, institutions offer their academic staff professional development and training to improve the quality of learning and teaching (OECD, 2012[23]). Moreover, several incentive structures for the hire, retention and promotion of academic staff now recognise and reward the quality of teaching, in addition to the quality of research.

The skills of academic staff also influence the quality of teaching. Academic staff without postgraduate qualifications have lower levels of expertise in their discipline area, which can affect the quality and depth of teaching provided (Altbach, 2011[24]).

An increasing number of higher education institutions are hiring successful and experienced business people (e.g. professors of practice) as tenured staff. They are expected to interact with academic staff at a highly applied level and to enrich teaching and research activities with practice-based knowledge and research questions.

Undertaking part of a higher education programme in another country can also help students develop important knowledge (e.g. of other societies, languages, cultures and business methods) and transversal skills (e.g. cross-cultural sensitivities) (OECD, 2013[25]), which support good labour market outcomes. However, barriers to this often include financing, concern about delaying the completion of their studies, insufficient language skills, home ties and lack of interest (Beerkens et al., 2016[26]).

Key issues in Mexico

The rapid expansion of the Mexican higher education system has increased the number of students per course, which may be a barrier to the application of innovative teaching methods. Many academics have only had exposure to traditional teaching practices and are either reluctant to try or unaware of different teaching approaches. As a result, higher education institutions rely heavily on lecture-based teaching. There is limited use of

experiential learning, project-based learning or other innovative practices in the classroom that can help students develop discipline-specific knowledge and high-quality skills, including transversal skills. Entrepreneurship education is not widespread in higher education and, when offered, is not an integral part of the curriculum.

Competency-based education has been introduced as a new model of learning and teaching in the technological subsystems, but academic staff have indicated that they have not received sufficient support to implement this model and it is not widely or effectively practiced (Lozano Rosales, Castillo Santos and Cerecedo Mercado, 2012[27]).

There are very few initiatives to develop transversal skills through higher education. The importance of transversal skills for academic achievement is not widely recognised across the subsystems and its development is not an integral part of study programmes. Students are largely unaware of the importance of transversal skills or of how to develop transversal skills through higher education. As in many countries, academic staff see their primary teaching role as helping students develop discipline-specific knowledge and skills, but not transversal skills. Academic staff also reported that they do not have information about what type of skills are relevant for the labour market or an understanding of how they could support students in developing these skills. In meetings with the OECD review team, employers highly valued transversal skills, but stated that higher education is not developing these skills.

Good learning and teaching practices are not recognised and rewarded in higher education. There are no incentives and little support for academic staff to get labour market information, improve their teaching performance or integrate labour market relevance into their courses. While some large private higher education institutions offer training and professional development in teaching, this practice is not widespread across the subsystems. In public institutions, the Programme for the Professional Development of Academic Staff in Higher Education (*Programa para el Desarrollo Profesional Docente, para el Tipo Superior*, PRODEP) supports projects to improve the quality of teaching, but it is focused on increasing attainment levels in academic staff.

At an individual level, academic staff in public and private higher education institutions who are members of the National System of Researchers (*Sistema Nacional de Investigadores*, SNI) are recognised for their performance in three areas: the quality of their research, the commercialisation of research results, and their contribution to education. The contribution to education is measured by the overall amount of teaching hours but not the quality of teaching, which calls for more quality indicators for teaching.

The use of casual academic staff whose primary job is in a discipline-related occupation can enhance project-based, problem-based, and experiential learning by bringing real-world experience to higher education. However, casual staff often work in areas largely unrelated to the courses taught. Moreover, they are not fully integrated into faculties or programmes and rarely benefit from training and professional development, even though some casual staff teach up to 40 hours a week.

The role of professor of practice does not exist in Mexican higher education institutions, despite the potential advantages that experienced industry professionals could bring to innovative learning and teaching and the labour market relevance of higher education.

The qualification levels of academic staff in Mexico are relatively low compared to other countries, although this varies between subsystems and institutions. Progress has been made to increase the qualification levels of academic staff (Guzmán-Acuña and Martínez-Arcos, 2015[28]), with over 20 000 academic staff members receiving a doctoral degree

from 2010 to 2017. However, doctoral degree holders still represent only 12.6% of all academic staff, almost half (47.8%) hold a bachelor's degree, 38.6% a master's or specialisation degree, and 1.1% a short-cycle programme. By contrast, more than 90% of tenured academic staff hold a doctoral degree in Germany, Austria, Poland, Portugal, Finland and Switzerland, and between 60% and 80% in Croatia, Ireland, the Netherlands, the United Kingdom and Norway (European Commission/EACEA/Eurydice, 2017[29]).

In 2016, international students accounted for less than 0.5% of all students in Mexico, and less than 1% of Mexican students studied abroad (OECD, 2018[5]). This limited incoming and outgoing mobility reduces students' exposure to other cultures, hindering the development of important skills that employers seek, particularly in international trade and global value chains. There are limited opportunities for international mobility, and those that exist focus on STEM fields, meaning that students in other fields have fewer opportunities to study abroad. Stakeholders reported to the OECD review team that a wider take up of these scholarships is hindered by a lack of awareness among students and insufficient funding to cover all costs associated with studying abroad. The costs in particular can limit mobility to students who can afford a period studying abroad.

Internationalisation of the curriculum is uncommon, which further limits opportunities to develop related transversal skills (e.g. language and intercultural communication) for students who cannot afford to study abroad. The majority of programmes are not internationally oriented, and only very few institutions offer programmes taught in English.

The federal government does not have an international education strategy for higher education, or a dedicated agency that promotes or facilitates international education, unlike many other OECD countries. There are a number of bilateral and multilateral government agreements that facilitate institutional level partnerships and participation in international programmes, such as the Erasmus+ programme. However, the internationalisation activities of higher education institutions are largely based on institutional level agreements with partner institutions abroad. Furthermore, internationalisation in higher education is disconnected from other internationalisation initiatives that aim to strengthen the country's position in global value chains.

Box 1.6. Policy recommendations: Fostering innovative learning and teaching practices in higher education

8. Develop a strong culture of excellence in learning and teaching.

- Support higher education associations and institutions in providing teacher training and ongoing professional development to all academic staff on innovative learning and teaching, as well as transversal skills development, including skills for entrepreneurship.
- Support the development and delivery of an online course on pedagogy and innovative teaching methods for all academic staff to complement training offered by higher education institutions and their associations in preparation for certification of teaching skills.
- Develop common indicators to monitor and assess good quality learning and teaching practices, and include these indicators in the SNI in conjunction with relevant agencies and higher education associations.

- Establish a national teaching excellence award programme to raise awareness of the importance of good teaching that helps students develop labour market relevant skills.
- Support higher education associations and institutions in undertaking research on effective learning and teaching practices, including the evaluation of current practices in Mexico.
- Collect and disseminate good learning and teaching practices nationally and internationally to build a body of knowledge that academic staff can draw on and apply in their practice.
- Establish a national Centre for Excellence in Learning and Teaching to be responsible for these actions, with outreach across all subsystems and states.

9. Strengthen the qualifications of academic staff

- Support increased qualifications among academic staff.

10. Encourage the adoption of professors of practice

- Encourage higher education institutions, particularly those in the technological subsystems, to integrate experienced industry professionals into their teaching staff by awarding the title of "professors of practice".

11. Promote the internationalisation of the curriculum and support student and staff mobility

- Develop a strategy to improve and promote internationalisation in higher education.
- Support academic staff to increase the internationalisation of curriculum. This could also be part of the activities of the proposed Centre for Excellence in Learning and Teaching.
- Support increased inward and outward mobility of student and staff through targeted funding and scholarships.

Integrating work-based learning into the curriculum

Rationale

Work-based learning can help students achieve better labour market outcomes and complement learning that takes place primarily in the classroom or laboratory, which is typically more applied. Work-based learning can take many forms, such as field experience, mandatory professional practice, co-operative education placements, internships, dual education programmes, applied research, project learning and service learning. Through these practices, students can develop work-relevant technical and professional skills, as well as transversal skills.

Work-based learning provides opportunities for employers to assess the capacities of students as potential future employees, which can reduce recruitment costs. However, employers need to allocate resources to select, train, and supervise students during their work experience, which limits participation in work-based learning, particularly for smaller firms.

It is important to embed work-based learning in programmes so that all students have equitable access, not just students from family backgrounds where personal relationships and networks provide them with greater opportunities to gain work experience while studying (Cahill, 2016[30]). Good guidance on work-based learning, including preparing and supporting students, academic staff and employers, can also help increase the quality of internships and other forms of work-based learning. This guidance and support is often provided by centralised units in higher education institutions (e.g. career offices).

Key issues in Mexico

The lack of professional experience is one of the most cited reasons for Mexican employers rejecting young higher education graduates. Work-based learning is offered in Mexican higher education in various forms during and at the end of study programmes, but the extent and relevance varies across the subsystems. Work-based learning also varies by field of study: it is common in engineering and health programmes, but less so in humanities and social sciences. The National Association of Universities and Higher Education Institutions (*Asociación Nacional de Universidades e Instituciones de Enseñanza Superior*, ANUIES) estimates that internships are compulsory in 55% of higher education institutions (ANUIES, 2017[31]).

The organisation of high-quality internships is likely to be challenging and resource intensive for many higher education institutions given the overall economic context in the country and major regional differences. Some higher education institutions provide support to help students secure internships, but it is often the responsibility of the students themselves to find an internship. This can disadvantage students whose families do not have a social network with ties to the business community. Students reportedly have difficulties finding internships, and their quality raises concerns. However, there has not been extensive evaluation or research done on the issue in Mexico.

Some higher education institutions, particularly large ones, have career offices (*oficinas de prácticas*) that co-ordinate student participation in internships and other forms of work-based learning, such as social service. These offices are often understaffed and not well connected enough to provide comprehensive preparation and career guidance for students to facilitate transition to the labour market.

To address this problem, ANUIES sought federal funding to establish the Higher Education-Industry Foundation (*Fundación Educación Superior-Empresa*, FESE), which was created in 2008. The SEP provided funding to FESE to operate as a central platform to connect students with employers for internships. FESE developed guidelines to facilitate the organisation of internships and increase their relevance for students. It also introduced a standard contract and insurance policy for internships, thus overcoming a gap in the Mexican labour legislation. Stakeholders advised the OECD review team that FESE was very effective, particularly for smaller higher education institutions that lack internal resources. The public funding for FESE ceased in 2014. Currently, there is no central platform to connect students with employers for internships.

Bachelor and short-cycle students must complete a social service to obtain their qualification and professional licence. Social service is a period of 480 hours intended to allow students to give back to society by working in non-governmental organisations, public education institutions, or government. Companies with a corporate social responsibility programme can also host students for their social service.

Students are expected to apply the discipline-specific knowledge and skills they have developed through higher education in their social service. This can help students develop a broad range of transversal skills. However, stakeholders have reported that the social service is not sufficiently connected with study programmes or labour market relevant skills, and that there are no mechanisms in place to ensure that students complete a suitable social service. As a result, many students do not see the benefit of completing a social service. The co-ordination of student participation in social service is usually organised by a dedicated office (*oficinas de prácticas y servicio social*) in higher education institutions, but organisational capacity issues have been identified as a common barrier to effective management.

Students receive a certificate upon completion of the social service. However, the work undertaken is not evaluated in terms of learning outcomes and transversal skills development. There is no formal procedure in place for students to give feedback to their higher education institution about the social service and the organisation they worked in, including its relevance and the types of skills they developed and applied. This is a missed opportunity that could help improve the curriculum and ensure its relevance to the labour market. The technological subsystems are an exception as they assess the social service, but the potential disconnection from study programmes remains a problem.

Legislation concerning the social service is unclear, fragmented and contradictory. A wide range of legal documents regulate social service, from the Mexican Constitution to individual higher education institutions. This piecemeal approach and lack of clear and coherent guidance creates confusion and tensions in higher education institutions, and in their relationship with state and federal governments.

Dual education programmes, where students are employed in a firm full-time while also enrolled in an undergraduate programme, have recently been introduced in some Mexican higher education institutions. This initiative, started by German companies working in the automobile industry, has expanded to large companies in other sectors (e.g. aerospace, electronics). The SEP developed a dual education model for the technological subsystems that is currently under review. However, there is still little awareness of dual education programmes or their benefits among higher education institutions, students and companies. The scarcity of resources, and the lack of long-term planning dominant in Mexican companies, hinders the commitment of resources to supervise and support students throughout the programme.

CONACyT provides financial support for students enrolled in the 38 postgraduate programmes with industry (*programa de posgrados con industria*) developed to help meet the innovation and R&D needs of companies. Students spend their time in both the company and their higher education institution and undertake research around concrete industrial problems. A joint application from both the student and the company is required. Despite the alignment of these higher education programmes with labour market needs, demand for these programmes has been low. From 2013-2017, 1 481 students were enrolled, 409 of whom already worked in the company when they enrolled in the programme.

Box 1.7. Policy recommendations: Integrating work-based learning into the curriculum

12. Ensure efficient support for the co-ordination of work-based learning

- Reactivate the role of FESE as a central platform to attract more employers and co-ordinate student internships across all subsystems and states more effectively and efficiently.
- Support higher education institutions to more effectively co-ordinate work-based learning through their career and engagement offices.
- Support higher education associations and institutions to improve communication with professional associations on work-based learning.

13. Strengthen the role of the social service in developing labour market relevant skills

- Harmonise the current conflicting regulations of the social service and develop, in collaboration with social partners, common guidelines for all disciplines that make the link between discipline-specific skills that students bring with them and the transversal skills that students will gain during social service. This can be done by enacting the provisions of the Education Act of 1993, which were aimed at regulating the conditions of the social service.
- Raise awareness among students, employers and higher education institutions of the benefits of social service for transversal skills development and preparing students in their transition from education to the labour market.
- Support more effective co-ordination of student participation in social service within higher education institutions.

14. Promote the benefits of dual education programmes and postgraduate programmes with industry

- Evaluate the effectiveness of existing dual education programmes and postgraduate programmes with industry in Mexico, and, based on the evaluation, support the development of additional programmes more broadly across the higher education system.

Strengthening entrepreneurship support in higher education

Rationale

Successful entrepreneurs can create businesses, jobs and drive the economy. A well-developed knowledge or technology-based start-up environment helps build greater participation in global value chains and increase innovation (OECD, 2017[2]).

Higher education institutions have an important role to play in supporting entrepreneurship. Entrepreneurial activities can help students and graduates develop the transversal skills they need to succeed in the workplace, as well as offer viable career options and pathways into the labour market. This is particularly important in countries where the labour market has a low absorption capacity.

Governments can also help create favourable regional or local ecosystems for entrepreneurship through policy levers that support business creation and growth. Recent initiatives in OECD countries include specific support for companies created within higher education institutions, particularly those based on cutting-edge knowledge and high-technology.

Key issues in Mexico

High-technology entrepreneurship would help move the Mexican economy up in global value chains, and could also help to address social needs. However, Mexico currently has an underdeveloped knowledge-based start-up environment (OECD, 2017[2]).

Some graduates have difficulty finding jobs that suit their level of qualification. Overqualified graduates in the labour market may not make full use of the knowledge and skills they have acquired in higher education, which can lead to skills atrophy. Starting a business can be a viable career option and help graduates succeed in the labour market.

Higher education can play an important role in supporting high-technology entrepreneurship and developing the knowledge and skills graduates need to become successful entrepreneurs (OECD, 2018[32]). Higher education in Mexico is currently focused on education for specific professions, and although support for entrepreneurship is increasing, it is not yet widespread practice. Nevertheless, there are some good examples of entrepreneurship support in higher education institutions across many subsystems.

Box 1.8. Policy recommendations: Strengthening entrepreneurship support in higher education

15. Support entrepreneurship in higher education

- Support the development of programmes that integrate entrepreneurship into the curricula to provide all interested students with the opportunity to develop the knowledge and skills they need to start and successfully run a business.
- Support the development of business start-up support in higher education institutions.

16. Improve the connection of higher education institutions with other actors in the entrepreneurship ecosystem

- Support higher education associations and institutions to better connect their entrepreneurship support and their start-ups with INADEM, other public and private funding programmes, science and technology parks, other business support organisations and other companies.

Higher education institutions are not currently well integrated into the emerging start-up ecosystem in Mexico. Incubators within higher education institutions are often not connected internally to other institutional offices that link with companies (technology transfer offices, career offices, engagement offices, etc.). This is inefficient and hinders potential synergies among offices (e.g. common industry contacts, places for internships, funding).

The National Institute for Entrepreneurship (INADEM) plays an important role in building entrepreneurship, and start-up companies created in higher education institutions

can also benefit from their services. To support entrepreneurship through higher education, INADEM funds incubator and accelerator programmes to which higher education institutions can apply. The work of INADEM could be better connected with higher education institutions.

Ensuring better pathways into and across the higher education system

Rationale

Countries need to maximise the talents of all citizens. However, there may be barriers in place preventing capable individuals from entering higher education. From early in their schooling, before they have had a chance to consider an academic trajectory, school students may be channelled into a vocational strand that does not provide a pathway to higher education. Others may not succeed in secondary education, making it difficult to pursue further education. Older adults who have not completed upper secondary education may have gained valuable knowledge and practical experience that would position them well for higher education. Locking these people out of higher education means that individuals are not getting the opportunity to participate in higher education and develop the advanced knowledge and skills that will help them contribute to the labour market and society at large.

Many countries offer post-secondary non-tertiary education (ISCED 4) programmes, which can provide education and training to those who do not meet entry requirements or who do not wish to enter higher education. These programmes can lead directly to jobs or provide a pathway to higher education.

After commencing a study programme, students may discover that it does not suit them or their needs. Flexible pathways between programmes and higher education institutions help ensure that students enrol in suitable programmes and gain qualifications applicable to the labour market. Students may also wish to continue studying and build on their qualifications, either at a higher level in the same institution or through a different institution. The attainment of higher level qualifications can greatly benefit individuals in the labour market and can contribute to the economy more broadly.

National qualifications frameworks can facilitate pathways into and within higher education. They function as a translation device to help make national qualifications more transparent and easily understood, which helps people move between different education sectors and institutions, as well as into the labour market. They can also be used to help individuals gain recognition for prior learning and experience. In this way, they promote the mobility of students and workers and facilitate lifelong learning.

Key issues in Mexico

There are limited pathways to higher education in Mexico. The country has three strands of upper secondary education: general, combined and vocational. However, only the first two allow access to higher education, which excludes access for graduates from vocational upper secondary education.

There is limited recognition of prior learning outside higher education and limited recognition of qualifications gained abroad. The Secretarial Agreement 286 regulates the recognition of these forms of learning, and although the process is slow, recent reforms have resulted in quicker processes. Selected public higher education institutions are authorised to assess prior learning and overseas qualifications and may impose additional

conditions for recognition, such as examinations to assess the knowledge and skills acquired.

The government recently introduced the National Emergent Academic Programme for Higher Education Studies Completion (PUENTES), which offers the possibility to Mexican higher education students from the United States to continue their studies in Mexico by facilitating the recognition of their studies and entry into Mexican higher education institutions.

There are no pathways for students to move between short-cycle programmes (ISCED 5) and bachelor's programmes (ISCED 6). A regulated path from a short-cycle to a bachelor's programme in the same area only exist if both are offered in the same institution. There is no pathway for students in bachelor's programmes at risk of dropping out to move to a short-cycle programme in the same field.

Similarly, there are no pathways between the two master's programmes (ISCED 7), the master's specialisation programme (*especialización*) and the master's (*maestría*), or between the specialisation programme and the doctoral programme (ISCED 8).

Box 1.9. Policy recommendations: Ensuring better pathways into and across the higher education system

17. Facilitate pathways into and between programmes and institutions

- Ensure the National Qualifications Framework is used more effectively to facilitate pathways into and within higher education, including through the recognition of prior learning.
- Establish a comprehensive credit recognition scheme for Mexico that is aligned with the National Qualifications Framework.

18. Ensure efficient processes for recognition of prior learning and foreign qualifications

- Evaluate recent reforms of recognition processes to identify how they can be further improved.

19. Enable pathways between levels of study

- Recognise the completion of short-cycle programmes (ISCED 5) as a potential entry path for bachelor's programmes (ISCED 6) in different institutions. A pilot programme could be implemented in the technological subsystems.
- Recognise the completion of the master's specialisation programme (especialización) as a potential entry path for the master's programme (maestría).

On an individual basis, students can apply for recognition of their previous studies, but there are no regulations in this respect. This restricts the educational possibilities of students who would like to attain higher levels of education and limits the ability of the higher education system to respond more rapidly to the emerging needs of the economy.

The National Qualifications Framework, released in 2014 and currently under review by the SEP, could be a lever to ensure pathways to higher education and recognition of prior learning. However, it has not been exploited and remains largely unknown.

The absence of a common credit recognition scheme for higher education or individual subsystems also hinders the recognition of prior learning and mobility. Efforts were made in 2009 to create a common credit system for the technological subsystems (espacio superior de education tecnológica) to facilitate student mobility within and between the subsystems. Although this scheme has improved some processes, implementation has been difficult and incomplete due to factors such as differences in the syllabus and work-based learning requirements, meaning that recognition is not applied automatically or systematically.

Fostering lifelong learning

Rationale

Higher education has an important role to play in lifelong learning by providing flexible learning environments for adults throughout their working lives. This includes support for the participation of non-traditional students, such as older adults and full-time workers.

New flexible modes of programme delivery (e.g. part-time, at different times of the day and week, block sessions, distance, online and mixed mode) facilitate the participation of people who would like or need to gain qualifications, re-train and improve their skills throughout their working lives to meet changing labour market needs.

To support lifelong learning, higher education institutions can offer either programmes that lead to degree qualifications or short, non-award training courses to the general public for professional development or general interest. The latter are often delivered through centres for continuing education in higher education institutions on a fee-paying basis.

Key issues in Mexico

Lifelong learning is not well developed in Mexico. Current demand to higher education institutions is insufficient, and institutions could offer more options for lifelong learning.

Over 45 million people in the Mexican workforce (83% of the total) have upper secondary or lower levels of education. The higher education system does not offer post-secondary non-tertiary education (ISCED 4), which limits the options for many to gain higher levels of education. There is an urgent need to provide more opportunities for these adults to gain skills through educational qualifications and to re-train throughout their working lives to keep up with the rapidly changing needs of the economy and the labour market.

The offer of part-time or flexible programmes (i.e. those offered in the evenings, weekends or in intensive blocks) is very low and there is little support for students who try to combine work and study. However, Mexico has taken positive steps regarding distance and online education, which can also facilitate lifelong learning. In 2012, the SEP established the Open University of Distance and Online Education (*Universidad Abierta y a Distancia de Mexico,* UnADM) to increase the offer of distance and online programmes. Currently, 15% of students study through distance and online education (25% in private higher education institutions). However, the quality of these programmes raises concerns and there are no established criteria for their evaluation and accreditation.

Over 110 higher education institutions across all subsystems act as authorised certifiers for The National Council for Standardisation and Certification of Labour Competencies (CONOCER), an agency of the SEP that oversees the National Skills System. For a fee,

participants can have their existing skills evaluated or can undertake a training course, followed by an evaluation, to help them develop specific knowledge and skills. In 2017, 41.1% of certifications were awarded to higher education graduates, and around 70% for a wide range of ICT skills.

From a demand side, it is uncommon for graduates, who graduate on average at the age of 24 (OECD, 2018[5]), to continue higher education during later stages of their professional career. In addition, there is not a culture of training within Mexican companies, partly as a result of the large share of companies operating in the informal economy and a perception among employers that training will provide more opportunities for trained employees to find alternative work and leave the company (CIDAC, 2014[13]). Although large companies provide more training than smaller ones, they only employ 11% of the workforce (INEGI-ENAPROCE, 2015[33]) and prefer to provide training internally or through private training providers (World Economic Forum, 2018[34]), which limits the role of higher education institutions.

Box 1.10. Policy recommendations: Fostering lifelong learning

20. Support lifelong learning through more flexible higher education

- Encourage and support higher education institutions to deliver more part-time and flexible study programmes, including high-quality distance and online programmes, to provide students with the opportunity to combine work and studies.
- Support the development of robust evaluation and assessment criteria for online programmes and their accreditation.
- Encourage the delivery of continuing education, which offers short courses for a broad range of people, and increased collaboration between higher education institutions and CONOCER to certify knowledge and skills.

Working together effectively to enhance labour market relevance and outcomes

Improving and better co-ordinating information on higher education and the labour market

Rationale

Evidence-based policy development and implementation is needed to effectively allocate resources across the higher education system and address critical skills gaps. The evaluation of programmes is crucial. Published information is essential for a system to be responsive to stakeholders. The provision of complex and diverse data from multiple sources requires a comprehensive whole-of-government approach and the involvement of the entire higher education system.

Information should be timely, reliable, easily accessible and user-friendly for different stakeholders. Higher education institutions can collect information about their own programmes and graduates and use this alongside external information to guide the offer and content of study programmes and help students in their choice of programme. Good information on higher education institutions and programmes is also essential for career guidance counsellors to be effective. Employers can also use this information to identify

potential areas of collaboration with higher education institutions, while governments need this information to effectively steer the higher education system and monitor its performance.

Key Issues

Information on the labour market relevance and outcomes of higher education is limited in Mexico. The SEP, some state secretariats of education, the Secretariat of Employment, the Secretariat of Economy and CONACyT all produce relevant information, but this is not co-ordinated and different methodologies are used to collect and analyse the data and information. This limits the possibility of aggregating and comparing data across subsystems, regions, and over time. There is no foresight work with forecasting of labour market needs that could help stakeholders plan ahead. Furthermore, there are substantial gaps at the state and national level in terms of graduate labour market outcomes and their experience in higher education. Some higher education institutions conduct their own graduate surveys, but this practice is not widespread, the quality of the data is low and results are not comparable.

Relevant information is currently presented across over a dozen websites and publications that belong to different secretariats and agencies, with many not easily accessible to stakeholders or user-friendly. As a result, data sources are not effectively used jointly and systematically for all stakeholder decision making.

Higher education institutions are not using this information to guide the programmes they offer or develop curriculum. Students do not fully utilise the available information when choosing which programme to study, and families still play a major role in this decision. In addition, employers lack the information needed to identify how to play a more active role in their collaboration with higher education institutions.

Better data could help to steer the system more effectively. The government is not using all information available when making decisions about the allocation of resources across the higher education system, or in designing measures to address gaps. In addition to the block grants, funding is largely provided to public institutions through targeted funding programmes which have very broad objectives (e.g. calls for proposals by the SEP to increase education quality). Performance-based funding or funding formulas are not used to allocate funding in the Mexican higher education system. If a funding allocation model using these mechanisms were to be implemented, as recommended by the OECD's broader review of higher education (OECD, 2019[14]), Mexico will need to ensure it has the necessary data.

Box 1.11. Policy recommendations: Improving information on higher education and the labour market

21. Standardise and co-ordinate the collection and dissemination of information

- Establish a working group that brings together all of the agencies that collect information on higher education and the labour market to standardise data collection and analysis for better oversight and co-ordination that help ensure robust, relevant, and easily accessible information.
- Develop a single, easily accessible and user-friendly portal that provides relevant information on higher education and the labour market to all stakeholders.

22. Develop projections of future labour market needs to help inform higher education

- Support the development of labour market projections that higher education stakeholders and the government can use to help inform decisions.

23. Develop information on the labour market outcomes of graduates and the student experience in higher education

- Establish a regular national graduate survey that provides information on graduate outcomes following completion of programmes, including employment, field of employment and further education.
- The graduate survey could be based on the National Survey of Labour Market Outcomes for Upper Secondary Education Graduates (Encuesta Nacional de Inserción Laboral de los Egresados de la Educación Media Superior, ENILEMS) undertaken by the National Institute of Statistics and Geography (INEGI).
- Consider linking the unique professional licence number (número de cédula profesional) with existing labour market data for quantitative data on graduate outcomes. This would require co-ordination with the National Institute of Transparency, Access to Information and Personal Data Protection (Instituto Nacional de Transparencia, Acceso a la Información y Protección de Datos Personales, INAI).
- Establish a regular national survey of employers to get their views on the skills levels of graduates and what types of skills they are looking for.
- Establish a regular national student experience survey to better understand student choices and their experiences in higher education, including learning and teaching practices and other factors that help them develop labour market relevant skills.
- Ensure the collection of information by subsystems and for different groups of students.

24. Develop a robust culture of evaluation to support evidence-based policy development

- Develop evaluation mechanisms that include ex-ante and ex-post evaluation of programmes, as well as mechanisms that capture and analyse information about current and planned higher education practices that seek to strengthen the labour market relevance and outcomes of higher education.

There is not a strong culture of programme evaluation that can inform evidence-based policy development.

Fostering collaboration across secretariats, government agencies and between levels of government

Rationale

Co-operation between secretariats, government agencies and levels of government is important for developing coherent policy initiatives and a whole-of-government approach to enhancing the labour market relevance of higher education. This approach can help prevent different levels of government and agencies from operating in silos and sending

contradictory signals to higher education institutions. Co-ordination with labour market authorities is important to ensure that higher education programmes are aligned with future labour market needs.

Higher education institutions may be steered through both education and research portfolios, which can create conflicts and cross-purposes. Co-ordination with research authorities is therefore important to ensure that the activities of higher education institutions are an integral part of the broad national innovation strategy and policy framework.

Some countries have addressed this challenge by institutionalising arrangements for policy consultation within government and developing intersecretarial bodies or cluster groups that link higher education officials to public authorities with responsibility for complementary lines of policy, typically representatives from the secretariats of labour and economy.

A number of countries have established business-higher education roundtables with representatives from leading companies and higher education institutions to help students transition more effectively from education to the labour market. These roundtables may also have a role in strengthening research collaboration between industry and higher education institutions at regional and national levels.

Key issues in Mexico

The Mexican higher education system, with its 13 subsystems, provides a high level of diversity, but overall lacks co-ordination. Apart from the high-level priorities set out in the Sectoral Education Plan, there is no comprehensive government planning of higher education. This makes it difficult to steer the system and implement policies.

The only mechanism that brings together the 32 state secretariats for education is the National Council of Education Authorities (*Consejo Nacional de Autoridades Educativas*, CONAEDU), which has a higher education chapter but is not active. There is no mechanism to co-ordinate the planning of higher education between the federal and state governments. The State Commissions for Higher Education Planning (*Comisión Estatal para la Planeación de la Educación Superior*, COEPES) were created to do this, but their effectiveness was varied. Public funding for COEPES was discontinued, and commissions currently only operate in some states.

CONACyT has a prominent role in postgraduate education and research, but its connections with the SEP have weakened over time. This has affected the alignment between undergraduate and postgraduate programmes and limits the connections between education and research in higher education.

Box 1.12. Policy recommendations: Fostering collaboration across secretariats, government agencies and between levels of government

25. Strengthen the role of the National Productivity Committee (CNP) in enhancing the labour market relevance and outcomes of higher education

- Strengthen the CNP as a platform to better co-ordinate the work of the SEP with CONACyT, as well as the Secretariats of Economy, Employment and Finance at the national and state levels.

- Strengthen the role of the CNP subcommittee of human capital and establish sectoral roundtables between higher education and business representatives. The human capital subcommittee could contribute to the development of the national strategy to enhance the labour market relevance and outcomes of higher education.
- Include university associations as members of the CNP to strengthen engagement between higher education and employers.

26. Establish a national body to co-ordinate higher education initiatives between the federal and state governments

- Establish a national body to co-ordinate higher education across levels of government and provide a mechanism for policy alignment across levels of government to enhance the responsiveness of higher education to regional and local needs. The design and development of the new body should build on the experience of COEPES.

There is little collaboration between federal secretariats and agencies on higher education. The National Productivity Committee (CNP) is currently a mechanism to co-ordinate across government. The subcommittee on human capital focuses on how education can better contribute to employment and productivity. In 2018, the CNP developed a skills framework for Mexico (*Sistema de Formación de Habilidades*), which builds on the recommendations of the OECD's Skills Strategy of Mexico in 2017.

The CNP's Subcommittee on Human Capital (*Subcomité de Capacitación y Certificación de* Competencias *Laborales*) could play an important role in the design of a strategy on the labour market relevance of higher education. It currently brings together secretariats (education, economy, finance and employment), CONACyT, business associations and trade unions. However, only four higher education institutions participate and there is no representation from university associations. The CNP was designed to have committees at the state level, but few states have active committees.

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Chapter 2. The economy and labour market

This chapter presents some characteristics of the political, geographic and demographic context of Mexico. It examines the key features of the economy, with a focus on the country's strategic industries, and the labour market. The chapter briefly discusses the most important economic and labour market challenges at national and state levels, also in light of future developments. The chapter concludes with implications for knowledge and skills needs and more specifically for the labour market relevance of higher education.

Political context

Mexico is a democratic federal republic with 32 states. Each state is further divided into municipalities. The administrative capital of the country is the recently constituted state of Mexico City (a federal district until 2016).

The Mexican Constitution establishes the separation of powers between the executive branch (the President of the Republic at the federal level, governors at the state level and presidents at the municipality level), the legislative branch (the Congress, constituted of two houses: the Senate and the Chamber of Deputies), and the judiciary branch (the Supreme Court of Justice, the Council of the Federal Judiciary and the Electoral Tribunal at the highest level). There is a multi-party political system in which the president is elected every six years by simple majority popular secret vote, without the right to re-election.

At the federal level, the Secretariat of Public Education (*Secretaría de Educación Pública,* SEP) is responsible for Mexican public education at all levels, and the Sub-Secretariat of Higher Education (*Subsecretaría de Educación Superior,* SES) is in charge of higher education. The states also have responsibilities for primary, secondary and higher education, which are regulated by the state secretariats of public education and their sub-secretariats or directorates of higher education.

Geographic context

Mexico is a large country, with a territory of around two million square kilometres and a coast line of 9 950 kilometres, making it the fourteenth largest country in the world. It shares borders with the United States to the north and Guatemala and Belize to the south. The 32 Mexican states differ greatly in size. Chihuahua and Sonora are the largest states, covering 12.6% and 9.2% of the territory respectively, and Morelos, Tlaxcala and Mexico City are the smallest, with a territory of 0.2%, 0.2% and 0.1% respectively.

Demographic context

Mexico is also large in terms of its population. It has almost 130 million inhabitants (tenth largest population in the world) and its population has grown over fivefold since 1950, when the population was around 25 million. However, its annual population growth rate has been slowing from over 3% in the 1960s to 1980s, to 1.24% in 2017. This rate is expected to continue decreasing in the future with a population forecast of 164 million in 2050 (United Nations, 2017[1]).

It is also demographically diverse with "a mosaic of nations, tribes and languages" (Octavio Paz, 1978). *Mestizos* (people of mixed descent, principally of Indigenous and European ancestry) are the largest population subgroup (around 65%), while Mexicans of predominantly European descent constitute 15% of the population. In addition, there are 68 recognised Indigenous groups located predominantly in the mountainous areas of a few states (e.g. Guerrero, Chiapas, Yucatan and Oaxaca). The Indigenous groups account for around 12 million people who speak over 80 languages and several dialects (CDI, 2017[2]).

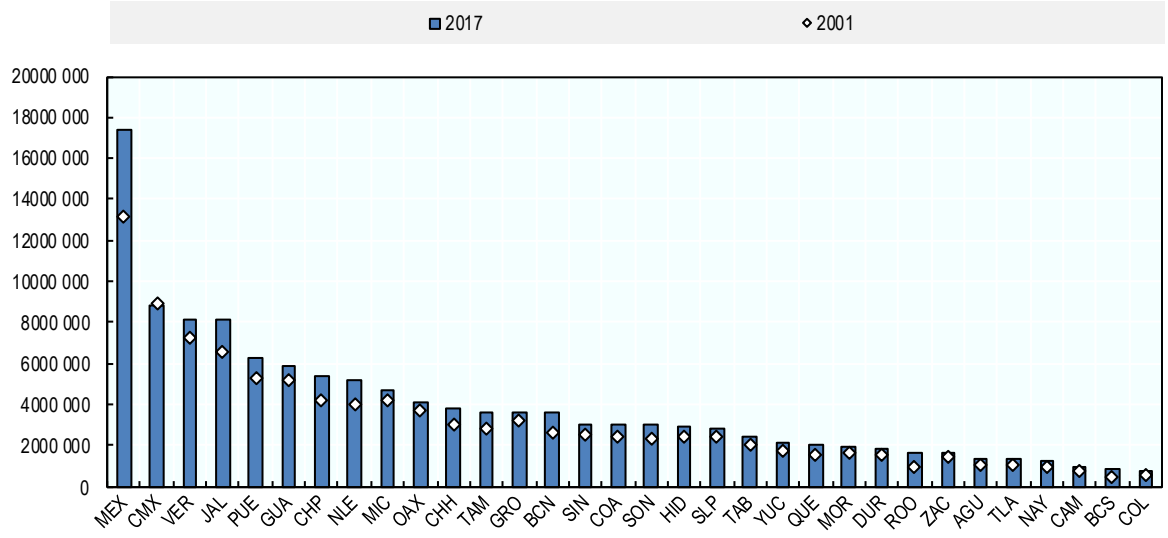
Mexico has a predominantly young population, but is currently experiencing a significant demographic transition. Around 27% of the Mexican population is younger than 15-years-old, and only 7% is over the age of 65. The median age is 27.5 years, but this is

expected to increase up to 41 years by 2050 due to a sharp decline in birth rates (1.7 children per female) and increasing life expectancy (75.1 years) (INEGI, 2017[3]).

The average population density in Mexico is 61 people per square kilometre (INEGI, 2017[3]), but this substantially varies between states and between urban and rural areas. Eight of the 32 states host over 50% of the national population (Figure 2.1). While Mexico City hosts almost 6 000 people per square kilometre, six other states have a population density below 20 people per square kilometre. Around 80% of the Mexican population lives in densely populated urban areas, and over 11% reside in slums (United Nations Millennium Development Goals Indicators, 2017[4]).

By far the largest urban area is Mexico City, with around 8.9 million people living within the city and 23.2 million people in the district. Other metropolitan areas, such as Puebla, Monterrey and Guadalajara, are growing rapidly, with 2.5, 1.2, and 1.5 million people living in these cities respectively. Metropolitan areas in Mexico are the destination of a large share of the population moving from rural areas, which are often remote (in mountainous areas), highly fragmented (around 100 000 rural localities have fewer than 100 inhabitants), and host the majority of Indigenous and impoverished[1] people (CONEVAL, 2017[5]).

Figure 2.1. Population of Mexico by state, 2001 and 2017



Source: OECD (2017) Regional Demography Database.

StatLink http://dx.doi.org/10.1787/888933880299

Mexico is a country of emigrants. In 2016, 10% of Mexicans resided abroad, 97% of them in the United States (SRE, 2017[6]). However, less than 1% of the current population

[1] The definition of poverty used by the National Council for the Evaluation of Social Development Policy (CONEVAL) is a multi-factor measure including disposable income per day, nutrition, access to healthcare, education and others.

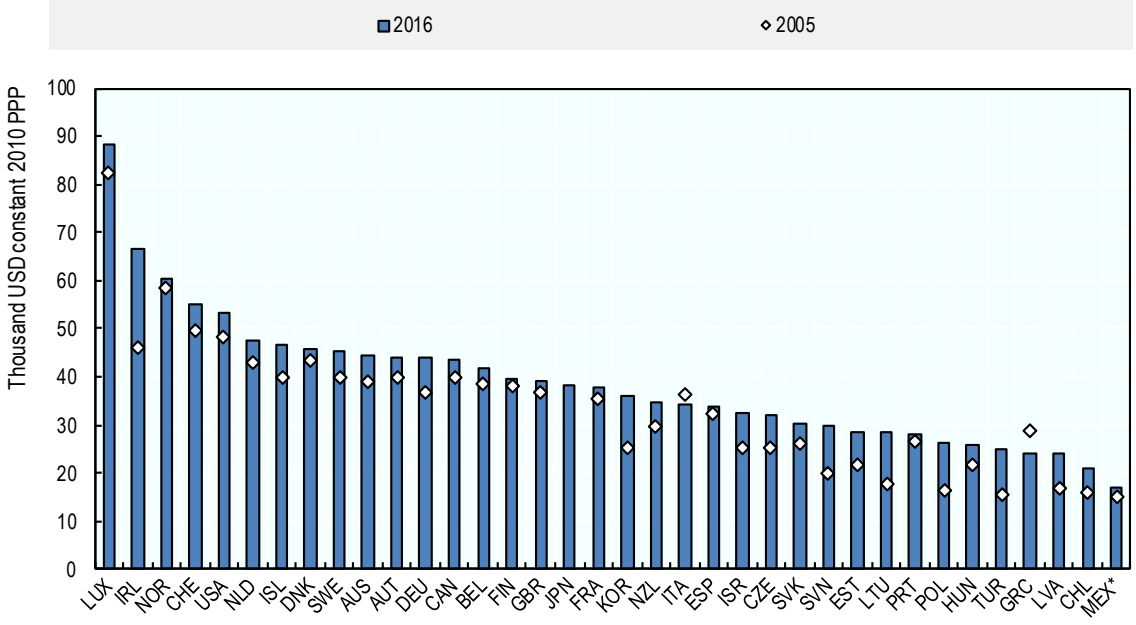
in Mexico was born abroad (INEGI, 2017[3]). The number of Mexicans returning from the United States has exceeded the number emigrating to the United States since 2009, however, despite this trend the migratory balance is expected to remain negative in the next decade (OECD, 2017[7]).

Economic context

National economy

Mexico is an important player in the world economy. Its gross domestic product (GDP) is the seventh largest among OECD countries (OECD, 2018[8]), and the world's 11th largest economy in terms of purchasing power parity (PPP) (OECD, 2017[9]). Currently growing at a rate of 2.2%, Mexican GDP is estimated to become the third largest among OECD countries by 2060, following the United States and Japan. However, Mexico has the lowest standards of living, and the country's GDP per capita is at the bottom when ranked with other OECD countries (Figure 2.2), despite its increase in the last decade (OECD, 2017[10]).

Figure 2.2. Gross domestic product per capita, 2005 and 2016



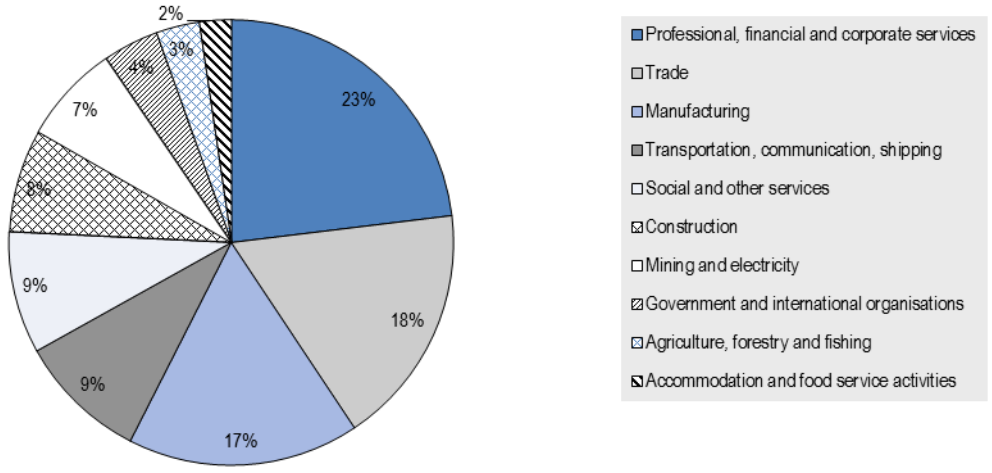
Source: OECD (2018), OECD Quarterly National Accounts Database.

StatLink http://dx.doi.org/10.1787/888933880318

Mexico's economic growth has not translated into social inclusion. Mexico has the largest income disparities among OECD countries (Gini coefficient of 0.46), and there has not been any improvement over the last 10 years (OECD, 2018[11]). In 2016, while the top 1% of earners received 14% of the total income, the bottom 20% received less than 5%. High inequalities have translated into persistent high poverty rates, and although extreme poverty has declined over the last decade, a large share of the population (43.6%) lived in poverty, of which 7.6% (around 9.4 million people) in extreme poverty (CONEVAL,

2017[5]).Almost 60% of the GDP contribution is made by professional, financial and corporate services (23%), trade (18%) and manufacturing (17%). (Figure 2.3). The lowest contributors to GDP are agriculture, and accommodation and food, (3% and 2% respectively).

Figure 2.3. Contribution of economic sectors to gross domestic product, 2017



Source: OECD calculations based on data provided by the Mexican Federal Secretariat of Labour and Social Welfare.

StatLink http://dx.doi.org/10.1787/888933880337

Research, development and innovation

Compared to other OECD countries, Mexico's economy lags behind in terms of innovation. Inputs to innovation are below the OECD average. Government research and development (R&D) investment is 0.52% of GDP (compared to 2.36% OECD average), but has almost doubled in the last 15 years. Businesses only contribute 20% to total R&D expenditure, compared to an average of over 60% in OECD countries and there are only 0.7 R&D personnel per 1 000 employees (compared to 7.7 OECD average), 25% of whom work in business (compared to 61% OECD average) (OECD, 2017[12]). Low public and private R&D investment, and the limited science and technology skills base, result in the lowest ratio of business R&D to GDP across OECD countries (0.16%).

Innovative practices within established businesses are not yet well developed. Only 1% of Mexican employees have developed or launched new goods or services, or set up a new business unit, establishment or subsidiary within an existing business (GEM, 2017[13]). The latest National Surveys on Research and Technological Development (*Encuesta sobre Investigación y Desarrollo Tecnológico*, ESIDET) showed that 6.4% of companies undertook an innovation project, 2.5% introduced a new product into the market or implemented a new process and almost 70% of revenues of innovative companies came from unchanged products (INEGI-ESIDET, 2014[14]).

The differences between large companies and small and medium enterprises (SMEs) are considerable, and SMEs lag behind in digitalisation and use of technologies. In particular, less than 10% of Mexican SMEs export their products and services (OECD and World

Bank, 2017[15]), sell them via e-commerce or use cloud computing services. As SMEs receive only half the government support for R&D that large companies receive, this gap is likely to increase (OECD, 2017[12])

Innovation outputs in Mexico are also low, for example, in 2016 there were fewer than 300 international patents filed by Mexico and around 15 000 scientific publications published, of which only 3.8% are top-cited. Both the number of patents and the percentage of top-citations are the lowest across the OECD (OECD, 2017[12]).

The increase in the government's R&D budget, and the reintroduction of a scheme to support business R&D, are examples of steps recently taken to improve innovation (see Chapter 6). Nonetheless, progress has been slow, and some indicators have fallen in the last 10 years, such as the percentage of business R&D, the top-cited papers and the labour utilisation rate. More needs to be done to drive innovation more efficiently (OECD, 2017[9]).

Mexico aims to further integrate into global value chains (GVCs). This will require a reduction of informality and an increase in productivity (Dougherty and Reynaud, 2017[16]). So far, the country has benefitted largely from its geographical location and its position as a prime supplier of intermediate goods and assembler for the US manufacturing sector.

Using backward and forward participation to describe GVC participation of a country, Mexico's backward participation, i.e. the share of foreign value added in Mexico's gross exports, is greater than the country's forward participation, measured as the share of domestic value in gross exports (Dougherty and Reynaud, 2017[16]). Backward integration is concentrated in medium-high to high technology industries and forward participation in mining. Overall, Mexico's specialisation in technologically advanced industries is still low (bottom 25% of OECD countries) (OECD, 2017[17]).

Participation of Mexican SMEs in GVCs is very limited and often confined to the domestic supply chains of large companies. For example, in manufacturing, the most export oriented sector, 88% of the exporters are large firms (Dougherty and Reynaud, 2017[16]). There are substantive gaps in the management skills and work routines of firms with less than 50 employees and of large companies with over 250 employees in areas that are considered to be related to export activity, namely in terms of managers' experience, Internet presence (website), on-the-job training of workers, financial audits and international quality certifications (OECD, 2017[9]).

Strategic industries

The Mexican National Productivity Committee (*Comité Nacional de la Productividad,* CNP) has identified eight strategic industries for targeted policy interventions to enhance productivity. Three of the sectors – retail, tourism and food – are traditional industries in the Mexican economy and employ a large share of workers. However, they have low productivity, partly due to the large share of informality, the dominance of micro-enterprises and the lack of R&D. The government strategy for these industries is to increase productivity and competitiveness through R&D, technological innovation and complex business services.

The other five strategic industries – automotive, agro-industrial, aerospace supply, electric-electronics and energy – have high-productivity and growth potential. While these industries employ a much lower share of the population, their R&D intensity, productivity, and potential contribution to gross domestic product (GDP) are higher. The

previous administration supported the development and consolidation of these industries, through specific sectoral plans with associated budgets and targeted funding programmes of the National Council of Science and Technology (*Consejo Nacional de Ciencia y Tecnología*, CONACyT), with the expectation of increased R&D funding and practices and greater upward integration in international value chains.

The Industry Programme for the Automotive Sector (PEIA) 2012-2020 seeks to position Mexico among the leading three countries in the design and production of automobiles and automotive parts. The automotive industry in Mexico includes around 20 of the largest international car companies and over 600 suppliers that set up operations in central and northern Mexican states, employing almost 900 000 workers. The main competitive advantages of operating in Mexico are low production costs (12% lower than the United States), highly qualified workers, multiple international trade agreements and easy access to the main international markets (SE, 2012[18]).

Mexico's aerospace industry has also attracted foreign investment through competitive salaries, low production and transportation costs (16% lower than the United States) and a relatively well-qualified workforce. This industry has grown at an average annual rate of 15% from 2006 to 2016. It is located in 17 states (mostly northern and some central states) and is expected to create a large share of high-quality jobs. The Pro-Aéreo 2012-2020 government plan for the aerospace industry aims to position the country among the top 10 suppliers of aerospace products worldwide (FEMIA; SE, 2012[19]).

The electrical and electronics industry has also experienced unprecedented growth since 2010. The 10 largest manufacturers worldwide operate in Mexico, employ over 500 000 people and benefit from manufacturing costs 15% lower than the United States. The focus is on the production of televisions, mobile phones, electro-medical equipment and computers. This industry is three times more intensive in R&D than the average industry in Mexico, and is expected to increase R&D expenditure significantly in the near future. The government's industry plan is to make Mexico a top exporter of electronic goods worldwide.

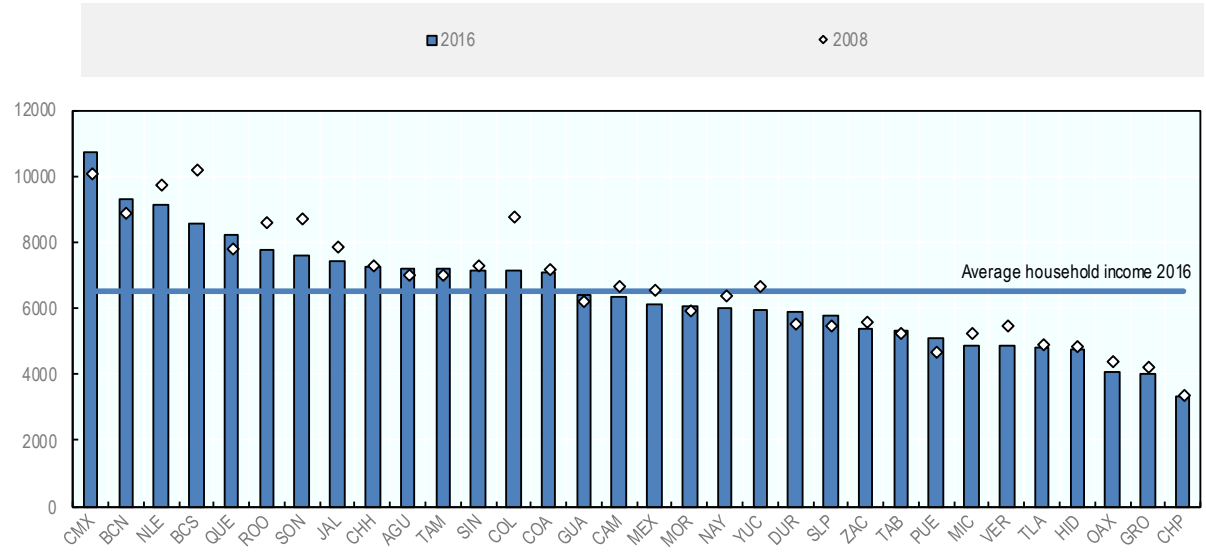
Due to large national onshore and offshore reserves, oil is the country's key energy resource. Since 2005, production has sharply declined, coinciding with the fall in oil price, which resulted in a reduction of government oil revenues from 45% in 2008 to 10% in 2016. To raise productivity, private energy investment and state revenues, the previous government granted private foreign companies the right to explore and develop oil and gas resources, exclusively operated by the state-owned oil company *Petróleos Mexicanos* (PEMEX) until 2015 (Mexican Federal Government, 2015[20]).

Regional economies

The 32 Mexican states represent a highly diversified economic structure. In 2016, the income per capita in Mexico City (USD 5 973) was 3.6 times higher than in Chiapas (USD 1 652) (OECD, 2016[21]). Although inequalities are high across all states, with a Gini Index varying between 0.4 and 0.5, they are particularly high in Mexico City (Gini Index 0.91). Living in one of the worst-faring states can mean being four times as likely to be at risk of poverty than people living in the best-faring states (OECD, 2017[22]). Regional disparities have increased between a highly productive modern economy in the north and in the centre, and a lower-productivity traditional economy in the south (OECD, 2017[9]).

Figure 2.4. Disposable household income across Mexican states, 2008 and 2016

USD per household, constant prices, constant PPP, base year 2010



Source: OECD (2015), OECD Regional Statistics (database).

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The contribution of the 32 Mexican states to the overall economy varies largely. Reasons for this include factors that are not or not directly affected by public policy, such as geography and proximity to markets, and others where public policy can have a direct impact, such as education attainment, infrastructure or ease in doing businesses.

In 2016, only six states contributed collectively to around 50% of the national GDP: Mexico City (16.9%), Mexico State (8.9%), Nuevo León (7.3%), Jalisco (7.1%), Veracruz (4.7%), and Guanajuato (4.2%). These states are also the largest contributors to the GDP of the services sector. The states with the highest contribution to the GDP of agriculture are in the fertile lands of the Pacific Coast (Jalisco 11.3%, Michoacán 9.4% and Sinaloa 7.7%). The highest contribution to the GDP of the industrial sector is Nuevo León (8.5%) due to the wide range of industries located near the border with the United States, and the state of Mexico (8.1%), where most of the textile, pharmaceutical, automotive and metalworking industries are located (OECD, 2017[23]).

With the opening of the economy to global markets, northern states have benefitted from their geographic proximity to the United States. Mexico does not have a comprehensive regional policy. An important initiative to balance the growth of different regions, the Mexican government passed in 2016 a law establishing "Special Economic Zones". The objective was to promote sustainable economic growth and reduce poverty through the provision of basic services and expansion opportunities for the states and municipalities that lag behind the most in terms of social development (Mexican Federal Congress, 2016[24]).

The Special Economic Zones seek to close regional gaps by creating new industrial development areas that attract investment, generate quality jobs, participate in value chains, increase productivity and competitiveness, create demand for local services, and facilitate better distribution of income among the population. These zones are considered

priority areas of national development. The first zones have recently been established in municipalities of the states of Michoacán, Guerrero, Oaxaca and Chiapas. (OECD, 2017[9]).

Likely scenarios for the future economy

Since 2012, a wide range of reforms has been implemented with the aim of addressing informality, improving growth, well-being and income distribution. The implementation of these reforms has seen success in tax policy, financial sector liberalisation, deregulation of telecommunications, competition policy and regulatory reform, energy market openness, and the reform of the election system. However, there has been less success in reforms of the labour market and tackling informality, education quality, anti-corruption and transparency, judicial processes and fiscal federalism. There has been less progress in reforms in the areas of unemployment insurance, pensions and social benefits, health system, urban planning and agricultural transformation (OECD, 2017[9]).

Full implementation of the structural reforms planned in 2012 was expected to add 1% to GDP growth after five years (OECD, 2017[9]) However, with varying degrees of progress, mixed results of reforms of key sectors (e.g. financial, telecommunications, energy, education and health) until now and a new incoming administration, uncertainty remains around the continuation of the ongoing reforms. Widespread corruption, crime and an unreliable judicial processes, together with tax evasion and avoidance, appear to be the main barriers to the successful implementation of reforms (OECD, 2017[9]).

During 2017 and 2018, the long negotiations of the NAFTA agreement added more uncertainty to the economy, however, the recently signed USMCA trade agreement has boosted confidence in the future of the Mexican economy. In addition, in 2018 Mexico signed the Asia-Pacific trade agreement with 10 other countries, and renegotiated the conditions of its trade agreement with the European Union. Therefore, international trade is expected to remain important for the Mexican economy.

Despite positive international trade projections, Mexico's GDP in 2018 and 2019 is expected to grow by 2.2% and 2.5% respectively, well below the expected OECD average of 3.7% for both years (OECD, 2018[25]). The economy is expected to remain resilient owing to a sound macroeconomic policy framework. However, due to low social spending, inequalities are expected to remain high (OECD, 2017[9]). Certain states, industries and categories of workers will continue benefitting more from open borders and the current economic structure than others, increasing current income gaps.

The automobile, aerospace and electronics industries are expected to grow until 2020, both in Mexico and worldwide. The mining and energy sectors are also expected to increase in the long term (Indra Business Consulting, 2017[26]). The future of the oil industry is uncertain. Recently discovered oil reserves exceed expectations and could lower energy prices but boost exports. This would benefit Mexican industry as a whole with stronger economic activity and increase public finances through higher revenues from licensing and profit sharing.

The re-allocation of resources from low-productivity to high-productivity industries would boost Mexico's economic prospects (Levy, 2018[27]), also as low levels of productivity are still a main barrier to drawing more value from global engagement. To move up in global value chains, product and market diversification also need to increase. Mexico needs to further improve its capabilities in knowledge and skills-intensive activities, such as new product development, manufacturing of core components and

brand development (OECD, 2017[28]); higher education plays a fundamental role in this through the development of skills and the production and translation of knowledge for innovation.

National and regional labour markets

The Mexican labour market is characterised by low and stable labour force participation (63.6%), along with low employment and unemployment rates (taking into consideration 58% employment in the informal sector), compared to the OECD average. The labour market outcomes of youth, women and other disadvantaged groups are poorer than in most OECD countries (Table 2.1). The 2012 Labour Act resulted in some improvements in the labour market, but the indicators of the Mexican labour market remain below most OECD countries and many other Latin American countries (Inter-American Development Bank, 2018[29]).

Table 2.1. Key labour market outcome indicators in Mexico and OECD countries, 2017

Indicator	Mexico	OECD	Trend (2006-2017) in Mexico
Labour force participation rate (15-64 year-olds)	63.4%	72.1%	Increase
Employment rate (15-64 year-olds)	61.1%	67.8%	Stable
Unemployment rate (15-64 year-olds)	3.6%	5.9%	Slight decrease
Youth unemployment (15-24-year-olds)	6.7%	10.9%	Slight decrease
Youth not in education, employment or training (20-24-year-olds) (2016)	24.9%	16.2%	Slight decrease
Labour force participation rate of women (15-64 year-olds)	46.7%	64%	Increase
Gender wage gap (2016)	16.5%	13.9%	Stable
Employment of disadvantaged groups (below prime-age men)	40%	25%	Slight decrease

Source: OECD (2017) Employment and Labour Force Statistics Database.

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Employment and labour force participation

The labour force participation rate in Mexico (63.4%) is the second lowest across the OECD (72.1% average), and the employment rate (61.1%) is also below the OECD average. However, the unemployment rate (3.6%) has been relatively low for nearly two decades, and is below the OECD average of 5.9%. The absence of a national system of unemployment insurance in Mexico means that most unemployed people cannot afford a lengthy search for a job suited to their level of education and skills, and often take the first option available (OECD, 2017[9]).

Mexico has a large informal sector by OECD standards. Around 58% of the Mexican workforce (15-64 year-olds) works without social security or pension coverage; a share that has slightly decreased in the last 10 years (INEGI-ENOE, 2017[30]). Informal employment is a major issue as it increases inequality and social exclusion while reducing productivity and economic growth (OECD/CAF/UN/ECLAC, 2017[31]). A worker in the informal sector tends to be less productive, has less job security, has no access to social benefits and does not receive training opportunities on the job. The informal labour market also affects low-skilled workers and industries such as retail and tourism. In addition, informality results in lower fiscal revenues and more vulnerable social institutions. Young people in Mexico are particularly affected by informal employment, and around 60% of those working in informal jobs have been working in an informal job

for at least a year. Chapter 4 discusses the implications of informal employment for young workers who hold a higher education qualification.

The 2012 Labour Act reforms aimed to tackle informal employment by introducing short-term training contracts and six-month probation periods, and facilitating the hiring of seasonal, temporary and part-time workers. However, the strictness of employment protection legislation regarding regular and temporary contracts remains above OECD standards (OECD, 2017[32]). The 2014 tax reforms reduced personnel costs, social security costs and tax obligations for companies in their first ten years of operation. The federal government introduced the "Go Formal" initiative in 2014 to raise awareness of the benefits of formality and strengthen monitoring through formal government inspections of companies. Informality has decreased from 60% to 58% since the reforms, but much more needs to be done (OECD, 2017[32]).

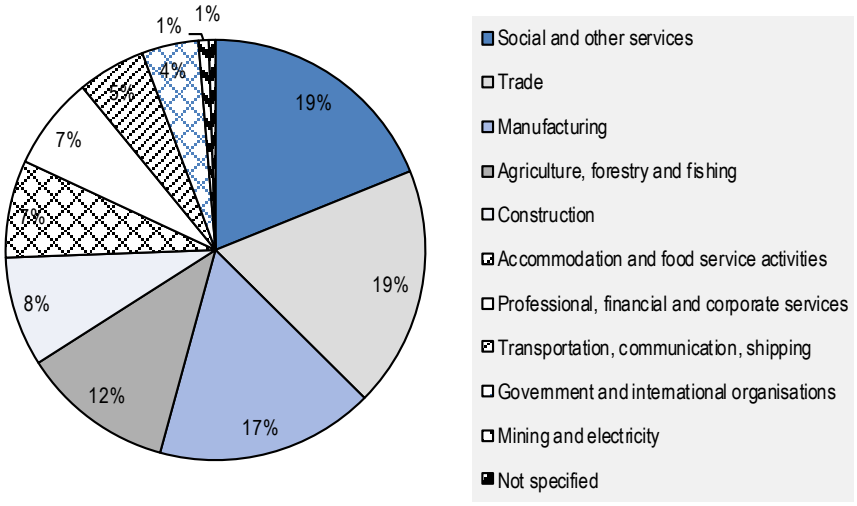
Almost half of Mexican workers (48%) are employees, 41% are self-employed, 5% are employers and 6% undertake unpaid work (INEGI-ENOE, 2017[30]). Over two-thirds of employees (68%) are working in SMEs, particularly in the services sector, compared to the OECD average of 60%. Almost two thirds (61.2%) of Mexican workers are employed in services, 25.9% in manufacturing and 12.9% in agriculture (OECD, 2018[33]).

The three sectors that employ the largest number of workers in Mexico are trade (19%), social and other services (19%) and manufacturing (17%) (Figure 2.5). These sectors employ over half of workers, and together with agriculture, forestry and fishing (12%) and construction (8%), account for almost three quarters of formal employment. Manufacturing and trade are large contributors to GDP (17% and 18% respectively), whereas other high-employment sectors, such as agriculture or social and other services, have low GDP contributions. Sectors with relatively low shares of employment, such as mining and professional, financial and corporate services, have high GDP contributions (7% and 23% respectively).

Employment levels and the informality of the labour market differ significantly between states. In 2017, the unemployment rate ranged between 7.3% in Tabasco to 1.4% in Guerrero and other southern states. Labour informality varies greatly, from very high levels in the central and southern states of Oaxaca (82%), Chiapas (78%), and Guerrero (78%), to considerably lower rates in the northern states of Nuevo León (34%), Chihuahua (37%), and Coahuila (37%) (INEGI-ENOE, 2017[30]).

Employment trends from 2011 to 2016 also present large disparities by state, from a decrease of 5.5% in Chiapas to an increase of 8.3% in Chihuahua. Overall, the employment rate decreased in 9 southern and central states, while it increased in the remaining 21 states. Only 5 states (Mexico, Jalisco, Chihuahua, Guanajuato and Puebla) accounted for over 40% of net job creation during this period (OECD, 2018[34]).

Figure 2.5. Employment in Mexico by sector, 2017



Source: Mexican Labour Force Survey, 1st semester 2017, (INEGI-ENOE, 2017[30]).

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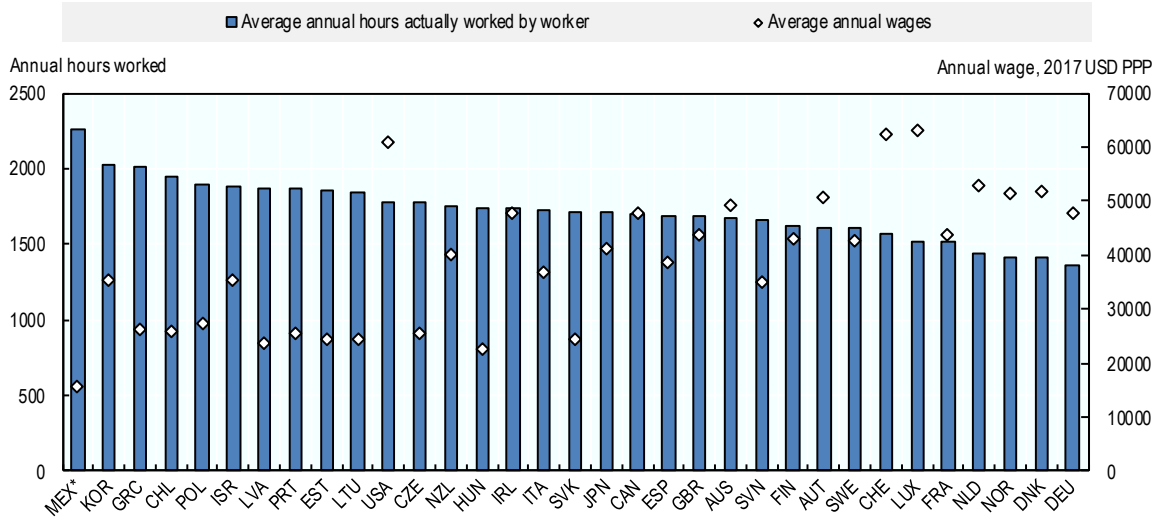
Earnings

Regardless of employment arrangements, Mexican workers tend to work long hours (2 137 hours, compared to the OECD average of 1 752 hours annually), but receive low pay. Mexico has the lowest annual average wage (USD 15 056 in PPP) among OECD countries. It is nearly four times lower than the US average wage (see Figure 2.6), and has remained nearly constant over the last 20 years.

The gross minimum wage in Mexico is also very low, representing only 37.5% of the median wage, which is well below the OECD average of 50% (OECD, 2017[32]). Furthermore, the wage levels are unequally distributed: while 18% of employees receive more than two times the median wage, 19% receive below half of the median wage (OECD, 2018[35]).

In addition, workers in the worse-faring states are seven times more likely to work longer hours for lower pay than people living in the best-faring states (OECD, 2017[22]). The average wage differs widely by state. While workers in the northern states and in Mexico City receive a monthly wage of between MXN 7 500 and 8 500 (Mexican pesos), the wage levels remain below MXN 4 500 in the southern states of Chiapas and Oaxaca. There are also large wage discrepancies in rural versus urban areas, where the average wage is three to four times lower for workers in rural areas (INEGI-ENOE, 2017[30]).

Figure 2.6. Annual hours worked and annual wage, 2017



Source: OECD (2017), OECD Statistics, http://stats.oecd.org/Index.aspx?DataSetCode=AV_AN_WAGE and http://stats.oecd.org/Index.aspx?DataSetCode=ANHRS.

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Employment and labour market participation of different demographic groups

Employment and labour market participation vary considerably between men and women, as well as between different age groups. Although the labour force participation of 20-64 year-old Mexican women has increased over the last seven years from 41% to 46.7%, it remains below the OECD average (64%) and below the participation rate of Mexican men (81.8%). The employment rate of women in this age group (50.6%) is also well below that of men (89%) (OECD, 2017[9]), and women earn 16% less than men on average. The gender wage gap is much larger for the self-employed (44%) and for those with higher education qualifications (33%) (OECD, 2018[33]).

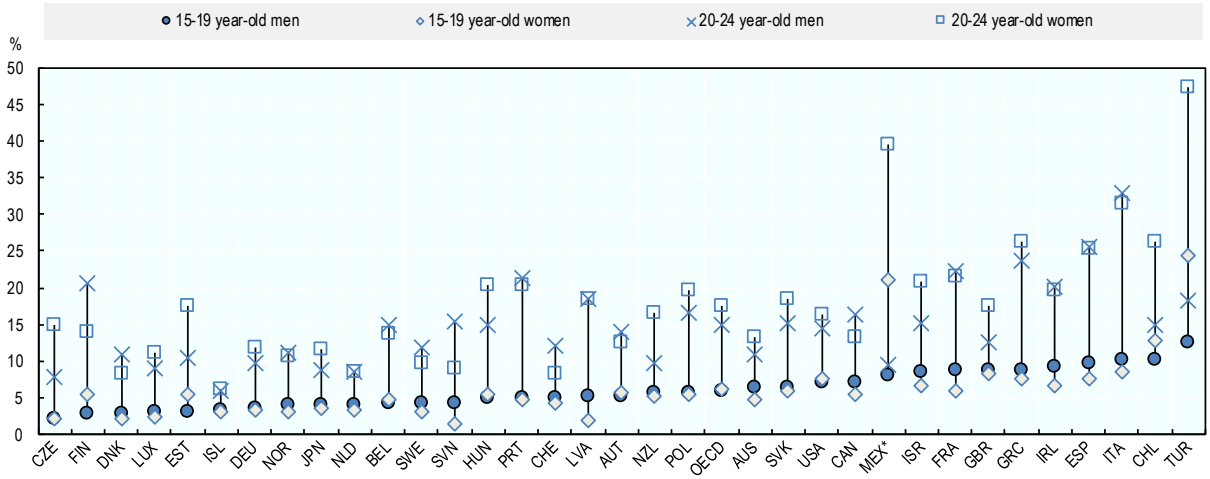
Mexican youth and older workers are the most disadvantaged age groups in the labour market. Only 43.8% of 15-24 year-olds and 56% of 55-64 year-olds participate in the labour force, compared to 74% of prime-age workers. The employment rate for young (41.9%) and older (55.1%) workers is also below prime-age workers (71.9%). The decreasing employment rate for young workers (48.9% in 2000) and the increasing rate for the older workers (51.7% in 2000) reflect the increasing educational attainment of the younger cohort and gradual labour force aging (OECD, 2018[33]).

Mothers with children, youth who are not in full-time education, employment or training (NEET), workers aged 55-64, immigrants, and persons with disabilities are particularly disadvantaged in the Mexican labour market. The employment rate for these groups is more than 40% lower than the employment rate for prime-age men in Mexico, compared to the OECD average of 29% (OECD, 2017[12]).

Mexican youth have one of the highest rates of NEET among OECD countries. In 2017, 13.9% of 15-19 years-olds and 23.8% of 20-24 years-olds were not in employment, education or training. For both age groups, non-participation rates have decreased from 18.3% in 2010 for the younger cohort, and from 27.1% for the older age group. Non-

participation in education, employment or training is particularly high among young women in Mexico, the second highest after Turkey across OECD countries (Figure 2.7).

Figure 2.7. Youth not in education, employment or training (NEET) by gender and age, 2016



Note: 2015 values for CHL, IRL, LUX for 15-19; 2014 values for JPN.
Source: OECD (2018), OECD education database: transition from school to work, http://stats.oecd.org/index.aspx?queryid=79318, accessed on January 2018, and https://data.oecd.org/youthinac/youth-not-in-employment-education-or-training-neet.htm.

StatLink http://dx.doi.org/10.1787/888933880432

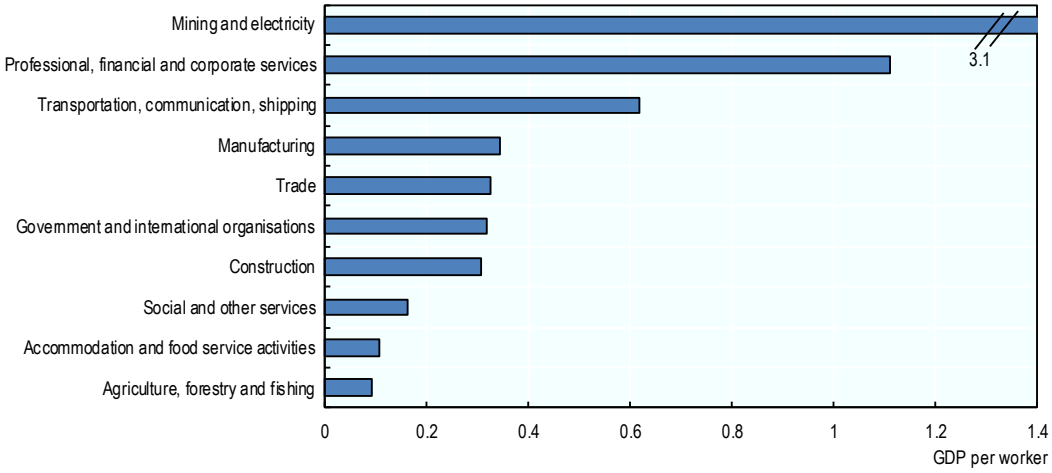
Labour market productivity

Mexico has the lowest GDP per hour worked (USD 18.5) among OECD countries (average USD 46.7), despite steady growth since 2010. Labour productivity differs across sectors (Figure 2.8). Some of the industries that employ more people in Mexico, such as agriculture (12%) and social and other services (19%), have some of the lowest productivity per worker (0.09 and 0.16 respectively). By contrast, some of the smallest industries in terms of number of workers, such as transportation, communication and shipping (5%), and mining and electricity (1%), have the highest levels of productivity (0.61 and 3.1 respectively). Employees in information industries are twice as productive as the total non-agricultural business sector. The difference between the productivity of these two sectors is the third largest across OECD countries (OECD, 2017[36]).

Mexico has the largest productivity gap in the OECD by firm size. While the productivity of large firms is in line with the OECD average (USD 70 000), the productivity of small companies (USD 7 000) is ten times lower than that of large companies. The low levels of productivity in the majority of small companies pose a risk to the economy (OECD, 2017[37]).

There are large differences in productivity between states (López Córdova J.E and J. Rebolledo, 2016[38]). Southern states have the lowest productivity and the northern states are three times (Mexico City four times) more productive than southern states. The exception is the state of Campeche, where productivity is over 10 times higher than in the other southern states due to its large oil sector (OECD, 2016[39]).

Figure 2.8. Average productivity per worker by sector, 2017



Source: OECD calculations based on data provided by the Mexican Secretariat of Labour and Social Welfare.

StatLink http://dx.doi.org/10.1787/888933880451

Mexico performs poorly in the OECD Job Quality Framework, which assesses labour market performance in terms of more and better jobs. Compared to other OECD countries and emerging economies, formal jobs in Mexico are characterised by a poor quality of work environment, low average earnings and high inequalities (OECD, 2017[32]).

Mexico has one of the highest self-employment rates in the OECD. Almost one-third (31.4%) of the workforce either employs others, works for themselves, are members of producers' co-operatives, or are unpaid workers in family businesses (OECD, 2018[40]). The entrepreneurial ambitions of Mexicans are relatively high; around half of the workforce (50.1%) believes that they possess the skills and knowledge to start a business, and 36.4% are able to identify business opportunities in the area where they live. However, 28.4% indicate that the fear of failure prevents them from setting up a business (GEM, 2017[13]). Business creation is more common among males than females, and among 35-44 year-olds compared to other age groups. One-quarter of entrepreneurs start a business out of necessity, particularly females, and they have low expectations regarding job creation (GEM, 2017[13]).

Across the OECD, Mexico has the third largest barriers to entrepreneurship after Turkey and Israel, but these are lower than non-OECD countries such as Brazil, China or India and have decreased since 2003. These barriers include the administrative burden for creating new firms, the regulatory protection of incumbents (legal barriers, antitrust exemptions, barriers in network sectors), and the complexity of regulatory procedures (licences, permits, simplicity of procedures) (OECD, 2015[41]). Other research also suggests that some of the framework conditions for entrepreneurship in Mexico are insufficient: entrepreneurial education at all levels, government policies (taxes and bureaucracy in government policies), internal market burdens or entry regulations, entrepreneurial finance, and R&D transfer (GEM, 2017[13]).

Mexico has made some progress in supporting growth-oriented entrepreneurship. As part of efforts to foster high-growth SMEs, business incubators and accelerators were established with 40 public-private venture capital funds (OECD, 2017[22]). Although

Mexico City has a growing entrepreneurial ecosystem, there is still a need for high-impact entrepreneurs who will bring disruptive changes to their industries (Endeavor Mexico, 2017[42]).

Future labour markets

The actual demand for jobs and skills and future projections is difficult to measure, and there can be considerable variation between countries, including among jobs for highly educated people (Nedelkoska and Quintini, 2018[43]). There are very few projections on the future of the Mexican labour market, but the recently signed trade agreement, USMCA is expected to open new opportunities for employment in sectors with a focus on international trade. However, to better integrate into global value chains, Mexico needs to decrease informality and increase productivity. This can be done by increasing the share of workers employed in strategic industries with potential growth opportunities (automotive, agro-industrial, aerospace and electric-electronics), and increase R&D investment in these sectors to increase specialisation in activities with more value-added. The strategies designed for these sectors are likely to increase employment and investment in the medium term.

The energy sector is the only industry that has a comprehensive strategic plan for human resources development (*Programa Estratégico de Formación de Recursos Humanos en Materia Energética,* PEFRHME). The plan puts emphasis on a more active role of higher education in work-based learning (e.g. internships, on-the-job training), certifications, and increased collaboration in education with the United States (O'Connor and Viscidi, 2015[44]).

The Secretariat of Economy estimated in 2017 that the automotive industry could create 5.9% more jobs by 2020, particularly in the northern and north-eastern states. Furthermore, the large traction of the automotive industry is expected to propel an increase of 2.5% more jobs in both the metalworking and the tools industries. The aerospace supply industry is expected to create 4.6% more jobs in the northern states, mostly for the highly qualified (Indra Business Consulting, 2017[26]). The oil sector is also estimated to create new jobs, with approximately 135 000 higher education graduates needed in the short term (SENER, 2015[45]).

New technologies, such as robotics and artificial intelligence, are changing people's jobs and, as in many countries, could have a large impact on the Mexican labour market. Around 14% of jobs in OECD countries are highly automatable, and another 32% could face substantial change in how they are carried out (Nedelkoska and Quintini, 2018[43]). Automation mostly affects the manufacturing industry and agriculture, and some service sector jobs (OECD, 2018[46]). Nonetheless, automation will not mean that all jobs that are technically automatable will disappear. This will depend on various factors, such as technology penetration and adoption, the cost of human labour relative to the new technologies, and social preferences for automating certain tasks (OECD, 2018[46]). Automation could also create new jobs as well as change the nature of some existing jobs, and therefore increase levels of employment. However, the highest risk is in routine jobs with low skill requirements. Jobs requiring higher skills levels, ranging from professionals to social workers who require professional training and/or higher education, have the lowest risk. Automation could affect young people more than others, as entry-level positions have a higher risk of automation than jobs held by older workers (Nedelkoska and Quintini, 2018[43]).

Implications for knowledge and skills needs

One of the greatest barriers to boosting and sustaining economic development in Mexico is the current structure of the economy, which is hindering the effective utilisation of the skills available (OECD, 2017[32]). The Mexican labour market is not attractive as it is based on long working hours, low salaries and poor employment conditions, particularly for young people and women, which neither attracts nor retains the best talent (OECD, 2017[32]). The majority of the workforce is employed in traditional sectors (e.g. food, tourism and retail) and in SMEs, and more than half are employed informally with little to no opportunities for training. These workers, who generally present low productivity and innovation, might not be using their skills in their jobs. Informal employment can be an alternative for students who drop out of education, and thus be a deterrent to further skills development in the formal education system (OECD, 2017[47]).

In order to increase the economic and social benefits from participating in global markets, Mexico aims to improve productivity and R&D in the economy, raise high-quality employment and technology specialisation in strategic industries (e.g. automobile, aerospace and electronics), and integrate upwards into global value chains (OECD, 2017[17]). To date, Mexican operations in the global market have relied on the comparative advantage of lower costs, but the country will only move upwards in global value chains if this advantage is complemented with the availability of highly-skilled human capital. For eight of the ten main sectors in Mexico, talent availability is the main factor determining job location decisions (World Economic Forum, 2018[48]).

New technologies are reshaping the content and tasks of many occupations and changing the demand for skills. Automation is also making routine skills redundant and cognitive skills increasingly important. This means that skills such as deductive reasoning (the ability to apply general rules to specific problems), fluency of ideas (the ability to come up with a number of ideas about a topic) or information ordering (the ability to arrange things or actions in a certain order or pattern according to a specific rule) will be increasingly needed in future (OECD, 2017[49]). Mexican students will need to gain social and emotional skills, creativity, high-level cognitive capabilities and other skills which are relatively hard to automate (McKinsey Global Institute, 2017[50]). Tasks for which it is difficult to establish routines cannot be easily automated, particularly tasks performed in complex situations, tasks related to creative intelligence, such as coming up with new ideas, and tasks related to social intelligence and empathy (Frey and Osborne, 2017[51]).

Raising productivity in the traditional industries will require workforce training, including the development of transversal skills. Increasing specialisation and innovation in medium and high-tech manufacturing industries will require a greater involvement of researchers and specialised professionals, such as higher education graduates from different disciplines, who are more likely to be the source of disruptive innovations. In addition, to build a solid high-tech entrepreneurship ecosystem, Mexico needs to provide students with entrepreneurial skills so that they can create and grow their own start-ups and eventually employ others.

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Chapter 3. The structure and governance of higher education in Mexico

This chapter contextualises Mexican higher education within the country's broader education system and provides an overview of the structure of higher education, a profile of higher education students, the pathways and processes to enter higher education, and the investment made by governments in higher education. This chapter also explores how the Mexican government and its subordinate agencies use regulation, funding, information and organisation within the higher education system. The chapter concludes with a discussion of the implications that the structure and governance of education have for labour market relevance.

Structure of the higher education system

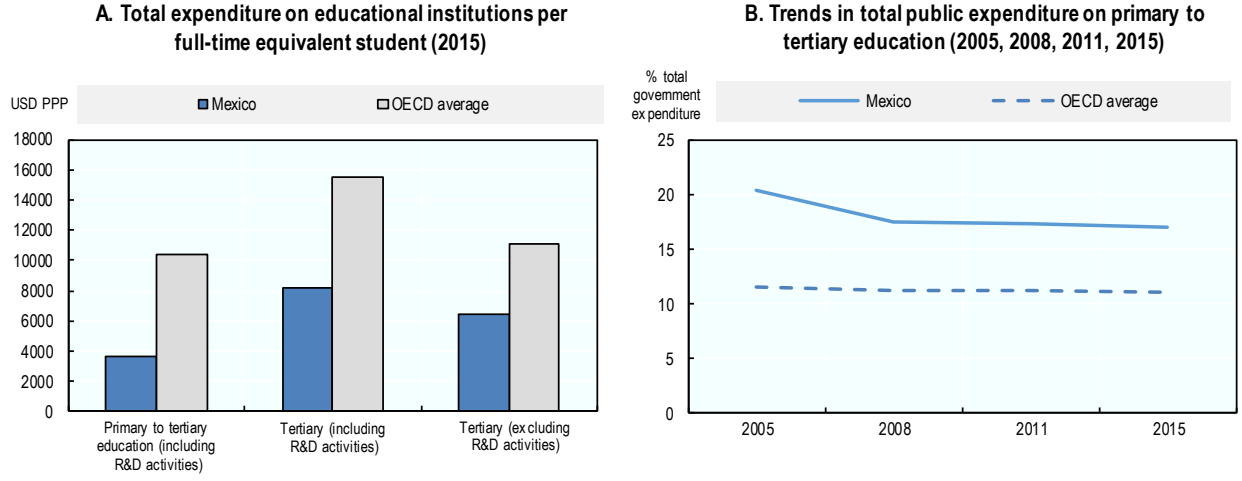
Overview of the education system

The Mexican education system, from primary education to higher education, has grown exponentially since 1950, from 1 to 37 million students. Mexico spends 5.3% of gross domestic product (GDP) on education institutions, slightly above the average expenditure of 5.2% across all OECD countries (OECD, 2018[1]). Expenditure on education institutions has increased from 5.0% in 2005; the proportion of funding from the private non-educational sector has remained stable at around 1.0% (OECD, 2018[1]).

The Mexican government prioritises education, which represents 17% of public expenditure, six percentage points above the OECD average (11%) (OECD, 2018[1]). However, due to a large increase in the student population, in 2015 the annual expenditure per student was the lowest among OECD countries, and 2.9 times lower than the OECD average (USD 3 611 vs. USD 10 520). More funding is allocated to primary and secondary education, which receive three-quarters of the budget (OECD average 72%), and 80% of education funding is public (OECD average 84%) (OECD, 2018[1]).

The Mexican education system includes: early childhood education (0-2 year-olds); pre-primary education (International Standard Classification of Education, or ISCED 0, 3-5 year-olds), which is the first level of compulsory education; primary education (ISCED 1, 6-11 year-olds); lower secondary education (ISCED 2, 12-14 year-olds); and upper secondary education (ISCED 3, 15-17 year-olds). Education is compulsory from pre-primary to upper secondary level. Primary and lower secondary education levels have almost universal enrolment, but the enrolment rate in upper secondary drops to around 57%, the lowest among OECD countries (OECD, 2018[1]).

Figure 3.1. Public expenditure on education, Mexico and OECD average



Source: OECD (2017), Education at a Glance 2017, OECD Publishing, Paris.

StatLink http://dx.doi.org/10.1787/888933880470

Primary education is offered in three strands: general, indigenous and community courses; lower secondary education is also provided in the form of general, distance, technical, community courses and job training. Students in upper secondary education can

choose from general, combined and vocational strands. In 2016-17, enrolment rates for these strands were 62.4%, 36.3% and 1.3% respectively (SEP, 2017[2]).

Despite compulsory education from ISCED 1 to ISCED 3, only the general and combined strands of upper secondary education allow access to higher education (ISCED 5-8). Graduates from vocational upper secondary education cannot enter higher education. However, the Mexican higher education system does not offer post-secondary non-tertiary education programmes (ISCED 4), which leaves these students with no avenue for post-secondary education.

Graduates from the general and combined strands of upper secondary education can enter either a two-year post-secondary vocational programme at ISCED 5 level (*técnico superior universitario* or *profesional asociado*) or a four- or five-year bachelor's programme at ISCED 6 level (*licenciatura*). The bachelor's degree gives access to ISCED 7 level programmes, either a one-year specialisation (*especialización*) or a two-year master's programme (*maestría*). Completing the latter allows graduates to pursue further academic studies at the ISCED 8 doctoral level (*doctorado*) (and Table 3.1).

Table 3.1. Education system in Mexico: Key figures, 2016-2017

Level	Teachers	Schools	Enrolment	Enrolment by gender		Enrolment by school		Enrolment by type of education		
			Total	Women	Men	Public	Private	General	Indigenous	Community courses
Pre-school	234 635	88 939	4 931 986	49.6%	50.4%	85.7%	14.3%	88.1%	8.6%	3.3%
Primary	573 284	97 553	14 137 862	49.1%	50.9%	90.7%	9.3%	93.5%	5.7%	0.8%
								General	Distance	Technical
Secondary	409 272	39 265	6 710 845	49.4%	50.6%	91.2%	8.8%	50.4%	21.4%	27.1%
								General	Combined	Vocational
Upper secondary	417 745	20 718	5 128 518	50.4%	49.6%	81.2%	18.8%	62.4%	36.3%	1.3%
	Academic staff	Campuses						ISCED 5	ISCED 6	ISCED 7-8
Higher education	388 310	5 311	4 430 248	49.5%	50.5%	66.4%	33.6%	4.6%	88.9%	6.5%

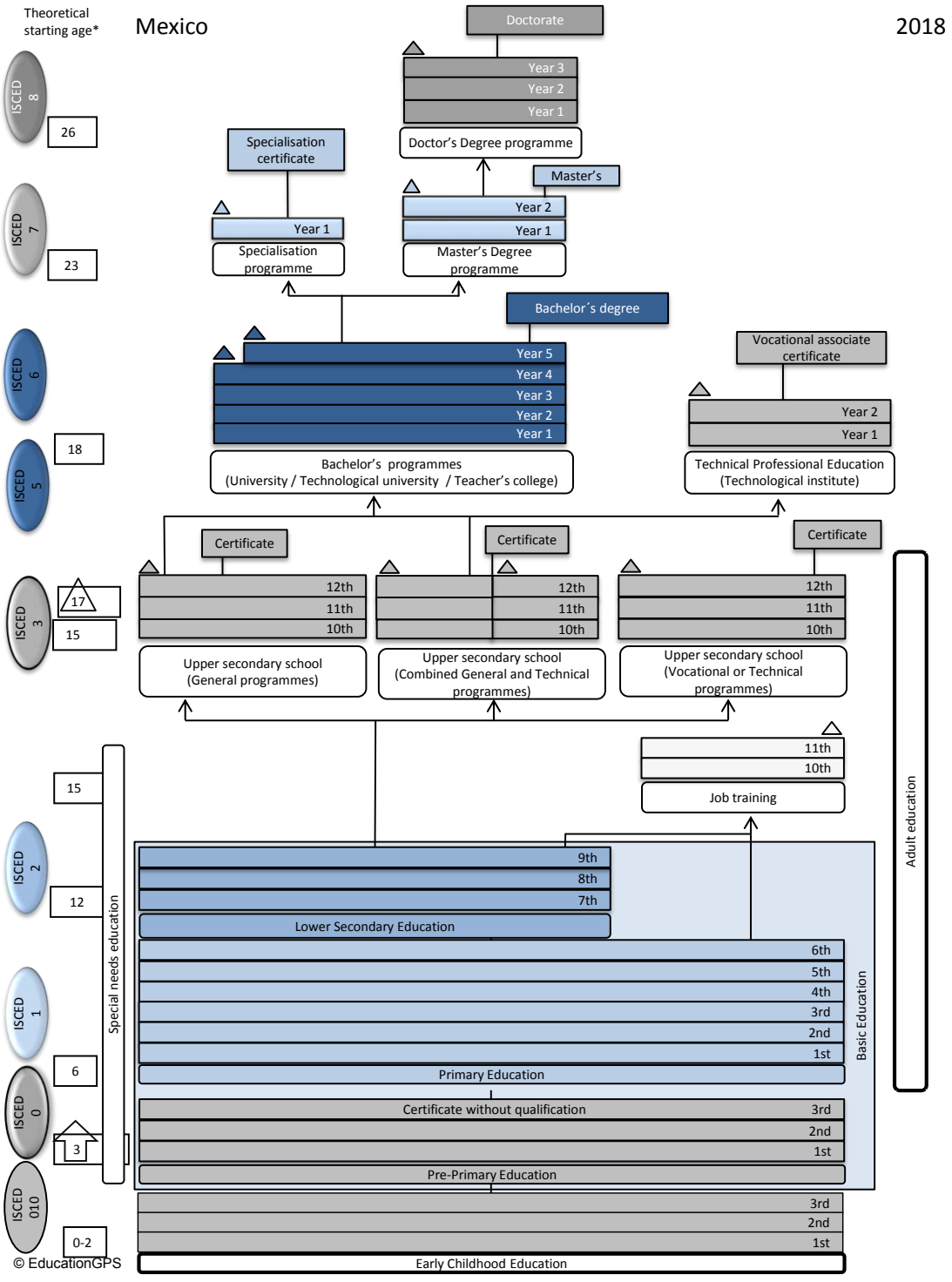
Source: (SEP, 2017[2]).

StatLink http://dx.doi.org/10.1787/888933880489

The Mexican higher education system is complex and heterogeneous. It is comprised of 13 subsystems, which vary by government dependence and accountability, source of funding, size, enrolment, specialisation in fields of study and levels of programmes (Table 3.2), as well as location and mission focus.

In 2016-17, 3 762 higher education institutions offered 37 953 programmes across more than 5 000 campuses with close to 390 000 academic staff (SEP, 2017[2]). These figures do not include programmes offered by private higher education institutions not licensed by the government. Therefore, the total number of programmes on offer in Mexico is higher but unknown.

Figure 3.2. Education System in Mexico



Source: (OECD, 2018[3]). Structure of the higher education system

Government dependence

All but two of the subsystems consist of public higher education institutions, with varying degrees of government dependence. The remaining two subsystems are private and completely independent from the government.

The primary distinction between institutions in the public subsystems is their level of autonomy. While federal and state universities depend on the government for public funding, they have the autonomy to make most of their decisions. The remaining seven subsystems are comprised of institutions that act as decentralised government agencies under the direct control of the Secretariat of Public Education (*Secretaria de Educación Pública,* SEP). The federal government has representation in the board of directors, sets the regulatory framework that guides these institutions and can decide some aspects of their operation, such as the programmes offered and the curriculum. A series of units and agencies within SEP co-ordinate these higher education subsystems:

- The General Co-ordination of Technological and Polytechnic Universities (*Coordinación General de Universidades Tecnológica y Politécnicas,* CGUTyP) co-ordinates polytechnic and technological universities.
- The National Technological Institute of Mexico (*Tecnológico Nacional de México,* TecNM) co-ordinates centralised and decentralised institutes of technology.
- The General Directorate of Higher Education for Education Professionals (*Dirección General de Educación Superior para Profesionales de la Educación,* DGESPE) co-ordinates public teacher education colleges.
- The General Directorate of University Higher Education (*Dirección General de Educación Superior Universitaria,* DGESU) co-ordinates state public universities.
- The General Co-ordination of Intercultural and Bilingual Education (*Coordinación General de Educación Intercultural y Bilingüe,* CGEIB) co-ordinates intercultural universities.

An additional three higher education institutions are also decentralised agencies of SEP, but operate outside the subsystems:

- The National Pedagogical University (*Universidad Pedagógica Nacional,* UPN)
- The National Polytechnic Institute (*Instituto Politécnico Nacional,* IPN)
- The Open and Distance Learning University of Mexico (*Universidad Abierta y a Distancia,* UnADM).

These are large institutions, and UPN and IPN have multiple campuses across Mexico.

The public research centre subsystem consists of 37 centres that also offer higher education. The National Council for Science and Technology *(Consejo Nacional de Ciencia y Tecnología,* CONACyT*),* which reports directly to the President of Mexico, manages 28 centres. The remaining centres are managed by IPN, the National University of Mexico (*Universidad Nacional Autónoma de México,* UNAM) and some state governments.

The "other public higher education institutions" subsystem consists of a range of institutions that cannot be classified elsewhere. It includes some direct provision institutions and institutes managed by other secretariats and government agencies, such as the secretariats of justice, energy, agriculture, defence or health.

Source of public funding

The 11 public subsystems all receive public funding at varying levels. The federal public universities, federal institutes of technology, public teacher education colleges and public research centres receive all of their public funding from the federal government. The other seven public subsystems receive funding from both the federal and state governments in different proportions. Higher education institutions in all subsystems can generate additional revenue from households or other private sources (e.g. industry, social partners).

Size and enrolment

The higher education system in Mexico has grown rapidly in recent decades. In 1970-1971, there were around 270 000 students enrolled in 385 campuses across Mexico. By 2016-2017, this had grown to approximately 4.4 million students, of which 3.8 million were studying in face-to-face programmes and 0.6 million in distance or online programmes (SEP, 2017[2]).

One-third of students (33.2%) are enrolled in private universities, the largest subsystem. The majority (72%) of higher education institutions are private, and this number has dramatically increased from less than 33% in 2004. Despite the increase in the number of institutions, private universities are now smaller, meaning that overall they enrol around 10% less students than in 2004.

Public state universities and public federal universities are the second and third largest subsystems and enrol 26% and 13.2% of students respectively. These two subsystems are comprised of 48 of the oldest and largest universities.

Some of the smaller direct provision subsystems, such as technological universities, decentralised institutes of technology and intercultural universities, have been growing around 13% annually since 2000. In 2002, the most recent subsystem, polytechnic universities, was established. Since then, the subsystem has grown 42.5% annually, however, the 61 institutions currently only enrol 2.1% of students.

Level of programmes provided

Higher education institutions in Mexico deliver programmes from ISCED 5 (short-cycle tertiary education) to ISCED 8 (doctorate programmes) (Table 3.2). Some subsystems commence their programme offers at bachelor's level (ISCED 6), and technological universities are not able to offer programmes at the doctoral level (ISCED 8).

However, subsystems tend to focus on different levels of programme. In technological universities, for example, over 90% of students at are enrolled in short-cycle tertiary education programmes, but few institutions outside this subsystem offer these programmes. Public research centres specialise in postgraduate programmes, with half of their student population enrolled in master's programmes and more than 35% in doctoral programmes. (Table 3.2).

Field of study specialisation

While some subsystems offer programmes in a large range of fields of study, others deliver programmes in a limited range of fields of study, or even just one specific field. Public federal and state universities are the most comprehensive subsystems and offer a wider range of programmes in all fields of study.

Institutes of technology, technological and polytechnic universities deliver predominantly technological (ISCED 6) and technical (ISCED 5) programmes, although they are currently expanding to offer business programmes. Intercultural universities offer particular fields relevant to regional development. Other subsystems specialise in one field of study, such as teacher education colleges (i.e. *Normales* and *Centros de Actualización del Magisterio*).

Functions

Subsystems focus to a different extent on one or more of the three key functions of higher education: education, research and engagement with the wider world. While private higher education institutions are more likely to focus solely on education, all public higher education subsystems fulfil the three functions to some extent. Some public subsystems, such as state public universities with solidarity support, have a greater focus on education. Others, such as public federal universities and research centres, are more research focused.

Some types of higher education institution have a special focus on engagement activities at the regional level, either with the community (intercultural universities) or with social partners (institutes of technology, technological universities and polytechnic universities). This engagement can take place in education-related activities, such as curriculum co-design and co-delivery with social partners, or research activities, such as collaboration in research and development (R&D) or technology transfer.

Orientation

While there are major differences between the types of institutions, they are predominantly professionally oriented, and the vast majority of students are enrolled in bachelor programmes designed to prepare them for the labour market. However, other than the technological subsystems, Mexican higher education institutions do not generally have strong links to the labour market.

SEP established technological universities and polytechnic universities in 1991 and 2001 respectively to better adapt higher education programmes to meet the demands of the labour market. Most institutions within these subsystems were established in small municipalities in order to provide regional industries with highly qualified graduates.

Intercultural universities are established in remote areas that had little to no previous higher education provision. These universities are generally located in states with a large Indigenous population, i.e. Chiapas, Guerrero, Michoacán, Hidalgo, Quintana Roo, San Luis Potosí, and Tabasco. Although they are open to all students, intercultural universities focus on regional development and the particular needs of Indigenous populations.

Public federal and state universities, and the most prestigious private universities located in large metropolitan areas, have a more internationally oriented curriculum and provide more opportunities for staff and student mobility (see Chapter 5) than the institutes of technology, technological or polytechnic universities, which are aimed at addressing national and state labour market needs.

Table 3.2. Main characteristics of the Mexican higher education system by subsystem

					Enrolment					Institutions		Campuses		Programmes	
Higher education subsystem	Type of institution	ISCED level	Field of study	Source of public funding	Number of students	% total	Under-graduate	Post-graduate	Annual growth[1]	Total	% total	Total	% total	Total	% total
State public universities	Public	5 to 8	Comprehensive	Federal (SEP-DGESU) and state (different proportions)	1 152 317	26.0%	95.3%	4.7%	3.4%	34	0.9%	929	15.2%	5 480	14.4%
Federal public universities	Public	5 to 8	Comprehensive	Federal (SHCP)	584 692	13.2%	91.4%	8.6%	3.9%	9	2.5%	229	3.7%	1 491	3.9%
Federal institutes of technology	Public (direct provision)	5 to 8	Technological fields	Federal (SEP-Tecnológico Nacional de México)	340 800	7.7%	98.8%	1.2%	3.1%	128	3.4%	135	2.2%	1 658	4.4%
Decentralised institutes of technology	Public (direct provision)	5 to 8	Technological fields	Federal and state (50% each)	241 035	5.4%	99.6%	0.4%	12.5%	134	3.6%	141	2.3%	1 263	3.3%
Technological universities	Public (direct provision)	5 to 7	Technical fields	Federal and state (50%)	241 688	5.5%	100.0%	0.0%	12.6%	113	3.0%	131	2.1%	1 685	4.4%
Polytechnic universities	Public (direct provision)	6 to 8	Technical fields	Federal and state (50% each)	92 785	2.1%	98.8%	1.2%	42.5%	61	1.6%	61	1.0%	378	1.0%
Teacher education colleges (public)	Public (direct provision)	5 to 8	Education	Federal (SEP-DGESPE)	83 573	1.9%	96.3%	3.7%	-2.5%	276	7.3%	306	5.0%	864	2.3%
State public universities with solidarity support	Public (direct provision)	6 to 8	Fields relevant to region	Federal and state (different proportions)	68 089	1.5%	98.2%	1.8%	8.3%	22	0.6%	100	1.6%	514	1.4%
Intercultural universities	Public (direct provision)	5 to 8	Fields relevant to region	Federal and state (50% each)	14 784	0.3%	99.5%	0.5%	14%	11	0.3%	31	0.5%	129	0.3%
Public research centres	Public (direct provision)	6 to 8	One specific field of study	Federal (SEP and CONACyT)	6 996	0.2%	2.2%	97.8%	4%	37	1.0%	65	1.1%	217	0.6%
Other public higher education institutions	Public and some direct provision	5 to 8	Varied	Federal and state	116 813	2.6%	85.3%	14.7%	2.3%	160	4.3%	305	5.0%	1 325	3.5%
Private universities	Private	5 to 8	Varied	None	1 472 197	33.2%	86.8%	13.2%	4.5%	2,517	66.9%	3,496	57.0%	22 537	59.4%
Teacher education colleges (private)	Private	6 to 8	Education	None	14 479	0.3%	95.1%	4.9%	-	176	4.7%	200	3.3%	412	1.1%

Note[1] Average annual growth since 2000 (2001 for intercultural universities and 2002 for polytechnic universities).
Source: OECD compilation based on Education system of the United States of Mexico. Key Figures 2016-2017 (SEP, 2017[2]).
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Location

Higher education in Mexico has been decentralised in two ways: from Mexico City to other states and from large metropolitan areas to smaller municipalities. In the 1950s, almost 70% of students were enrolled in Mexico City; this share fell to 18% in 2017 (SEP, 2017[2]), with students more evenly distributed among the 32 states.

At the same time, a greater recognition of the importance of higher education for regional development has led federal and state governments to establish a number of higher education institutions in smaller municipalities. Despite this development in smaller municipalities since the 1990s, 79% of Mexican higher education students are presently enrolled in institutions located in metropolitan areas.

Between 2000 and 2015, the higher education attainment rate of the labour force increased across all states on average by 49% (OECD, 2017[4]). The three states in which the higher education attainment rate almost doubled during this period are Oaxaca (from 9% to 17.1%), Hidalgo (from 10.1% to 19.5%) and Yucatan (from 11.8% to 23%).

Autonomy and accountability of higher education institutions

The higher education institutions in public subsystems have varying degrees of autonomy and different accountability requirements. Private higher education institutions are entirely independent and managed by private boards.

Autonomous higher education institutions

The Constitution of Mexico guarantees full autonomy to all public federal and all but one state university (Article 3, section VII). These institutions are created and governed by their individual acts (issued by the federal legislative branch for federal public universities and by the state congresses for state public universities). The Mexican Constitution recognises their freedom to govern themselves, recruit staff (including the rector), promote academic staff, establish admission processes for students, develop and deliver academic programmes, and manage their assets. They use a collegial model of institutional governance with several management boards (Box 3.1).

The government does not directly intervene in autonomous universities, but it uses various policy levers to promote the alignment of institutional policy with national development priorities (see Chapter 6). For example, autonomous public universities must meet certain requirements for transparency and accountability, as outlined in the Transparency and Public Governmental Information Access Act (*Ley de Transparencia y Acceso a la Información Pública Gubernamental*) of 2002. These require autonomous universities to collect and provide certain information to the federal and state governments on an annual basis. This information is made publicly available (Articles 70 and 75) and includes information about study programmes, administrative procedures, scholarships, vacancies, academic staff salaries and assessment results. The provision of this information is a pre-requisite for targeted funding from the federal government.

Other subsystems, such as state public universities with solidarity support, intercultural universities and some public research centres, have partial autonomy. They can freely make some decisions, but need government approval for others. The level of autonomy and the areas in which autonomy applies are different for each subsystem.

Box 3.1. Management boards within autonomous universities

Mexican autonomous universities have three boards with different members and functions.

The **university board** (*consejo universitario*) consists of directors of schools and representatives of academic staff and students; the rector heads the board and the university's secretary general is usually the board's secretary. Responsibilities include: setting institutional regulations and policies; approving the institution's development plan, programmes and curricula, annual expenditure and revenue budgets; creating new academic units, areas or departments; and reading and approving the rector's annual report. While the board of certain institutions is empowered to designate the rector after a consultation with the institution's community, in others, the university board is empowered to appoint members of the governing board.

The **governing board** (*junta de gobierno*) consists of nine or more internal and external members with the power to appoint and remove the rector (and, if applicable, other university officials), review the rector's work programme and annual report, and issue recommendations for the adequate performance of the institution. In some institutions, it is a tool to solve discrepancies between the rector and the university board or other collegiate entity.

The **patronage board** (*patronato*) is made up of six or more internal and external members empowered to manage the institution's heritage, raise additional funding and, at times, establish tuition fees.

The internal members that constitute these boards are representatives of academic staff, students, administration and management. The external members are representatives of the community and social partners.

Higher education institutions as government agencies

The federal government and all state governments have also established higher education institutions that operate as government agencies and have limited autonomy. These "direct provision" institutions are predominantly public teacher education colleges and Normal schools, institutes of technology, technological and polytechnic universities and research centres. Most have been established for regional development purposes and are meant to either improve access for a specific population group or in a particular geographic area, or deliver programmes that meet labour market demands.

Institutions within these subsystems are regulated by a guiding framework set by the government, although their management boards can decide some aspects such as appointments, promotions and academic tenure (Box 3.2). Their curriculum is designed and approved by federal or state authorities, but representatives from the regional and local industry and the community are often involved and have a say in curricula design.

Box 3.2. Governance in direct provision higher education institutions

The decentralised institutes of technology, technological universities, polytechnic universities and intercultural universities are direct provision institutions, which operate as government agencies. They are managed by a board of directors, which includes federal and state government representatives. The boards also have representatives of the business community and broader stakeholders from the region and municipality.

The boards establish internal institutional regulations and policies and approve, among others: an institutional development plan, programmes and curricula, the annual revenue and expenditure budget, the annual rector's report, and the organisational structure of the institution. Some of the boards for state-based institutions are also able to propose candidates for the rector's position to the state governor, who makes the final decision.

SEP appoints the directors of the federal institutes of technology (who enjoy broad managerial freedom) and the state institutes of technology (in collaboration with the state governments and social partners, represented in the boards of directors).

In some institutions, consultation boards complement the governing structure.

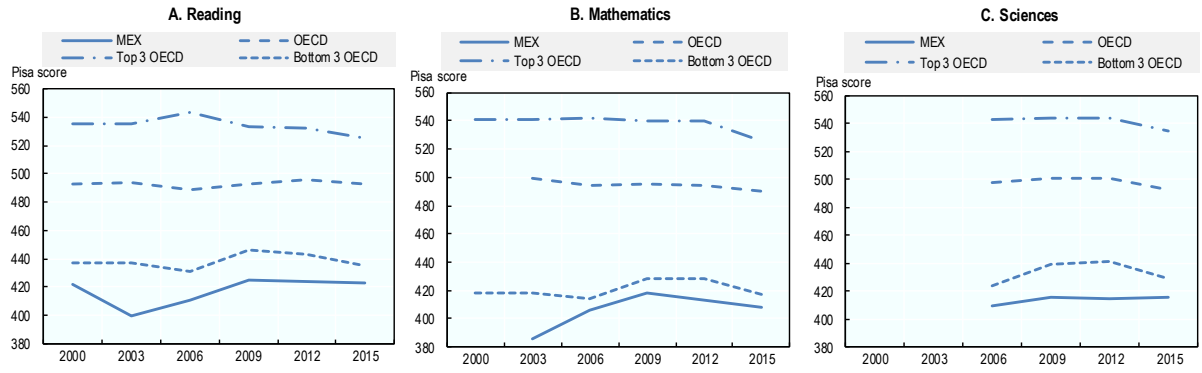
Access to the higher education system

Upper secondary education

The skills levels of secondary school graduates entering higher education are generally low and represent a concern for higher education institutions. Mexican secondary education students score at the bottom of OECD countries participating in the Programme for International Student Assessment (PISA) tests of numeracy, literacy, and science (Figure 3.3), and results have improved only marginally since 2000. Less than 1% of Mexican 15-year-olds are top performers in mathematics or science, compared to 13% of students across OECD countries. Over half (56.6%) of Mexican students do not achieve the baseline level 2 of proficiency in the numeracy exam (22.9% OECD average), which is the level assumed to be necessary to fully function in modern economies (OECD, 2015[5]). Mexican students also have the second lowest performance in collaborative problem solving (OECD, 2017[6]).

Results of final year upper secondary education students tested for language and mathematics skills in the National Plan for the Evaluation of Learning (*Plan Nacional para la Evaluación de los Aprendizajes*, PLANEA) test administered by the National Institute for the Evaluation of Education (INEE) also show poor skills levels. The most recent PRONAE test in 2017 shows that one-third of students do not have basic language and communication skills, and two-thirds do not have basic mathematics skills. Only 9% and 3% of students performed at the highest level in the language and mathematics tests respectively (INEE, 2017[7]).

Figure 3.3. Proficiency among 15-year-old students in reading, mathematics and sciences, 2000, 2003, 2006, 2009, 2012 and 2015



Source: OECD (2000-2015) Programme for International Student Assessment (PISA) (OECD, 2015[5]).

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Consistent with other countries participating in PISA, socio-economic background and gender are determining factors in performance at school in Mexico. While girls generally show better results in reading, collaborative problem solving and language, boys tend to outperform girls in mathematics and science. In Mexico, high performing students are more likely to come from an economically advantaged background with highly educated parents and have attended autonomous public upper secondary education schools. Geographic area can also be an indicator of performance; for example, only 18% of students in Mexico City scored at the lowest level in the 2017 PRONAE language test, compared to two-thirds of students in the Chiapas (See Annex 3.A for a summary of Mexican students' results in key evaluation tests).

Despite the fact that upper secondary education has been compulsory since 2013, Mexico has the highest share of non-completion rates in upper secondary education across the OECD. In 2016, only 59% of 15-19 year-olds were enrolled in education (85% OECD average), which is significantly lower than in other Latin American countries, such as Argentina (76%) and Chile (76%) (OECD, 2018[1]).

Students who drop out of upper secondary education are more likely to come from urban areas and have a low socio-economic background. Students from rural areas are more likely to complete upper secondary education (56.7% of boys and 60.4% of girls). Additionally, 80% of upper secondary education graduates come from an advantaged background (i.e. those in the wealthiest quintile), compared to only 18% of graduates from the poorest quintile (ECLAC, 2017[8]).

Admission and transition within the higher education system

Higher education entry

The enrolment in upper secondary education in Mexico is around 57%, and almost three in four (74%) students who graduate from upper secondary education enter higher education *(tasa de absorción)*. Education mobility among young adults in Mexico has remain almost constant over recent decades. Again, socio-economic status in Mexico is a determining factor, with only 15.3% of the poorest quintile, compared to 55.8% of the

richest, participating in higher education in Mexico. This is lower than Latin American countries such as Chile, Argentina, Peru, Bolivia and Venezuela. Location is another important factor, and Mexican higher education enrols below half of the students for rural than from urban areas (CEDLAS and World Bank, 2017[9]).

As noted above, only graduates from the general and combined strands in upper secondary education are eligible to enter higher education. Students who have completed a general programme are more likely to enter higher education than those from a combined programme; students from large state-based public schools or private schools are also more likely to enter higher education. Public schools in cities tend to deliver general and combined programmes, while those in small towns deliver predominantly combined and vocational programmes. Most private upper secondary schools are based in cities and deliver general programmes to students from a higher socio-economic background (Barragan-Torres, 2017[10]).

Several higher education institutions have formal agreements with upper secondary schools, and some have their own upper secondary schools in order to prepare prospective students. Graduates from these programmes are almost automatically accepted onto bachelor's programmes in their respective higher education institutions (*pase automático*). This practice has been criticised as favouring students from more advantaged backgrounds and hindering equitable access. This practice also applies to graduates from bachelor's programmes who apply to a postgraduate programme in the same institution. The automatic enrolment pass was declared unconstitutional by the Supreme Court of Justice in 2006, but is still practised.

The federal and state governments have established new institutions in remote and scarcely populated regions with disadvantaged populations in an attempt to improve access to higher education for youth in these areas. The intercultural universities support equitable access to higher education by selecting students based on Indigenous, language and gender representation.

In addition, some higher education institutions have recently increased the delivery of online and distance education programmes to widen access to new types of students. In 2017, over 25% of students in private universities and 9% of students in public universities were enrolled in online or distance programmes. These programmes are more common at the postgraduate level. This trend has also been supported by federal government initiatives, such as the creation of the Open and Distance Learning University (UnADM) in 2012.

Tuition fees in some Mexican higher education institutions can be high, which can deter disadvantaged students who wish to access higher education. Tuition fees are set by higher education institutions and vary widely across the system. An undergraduate four or five-year programme can cost from MXN 125 000 to 930 000 (Mexican peso) (USD 6 700 to 50 000) in a private university, and around MXN 30 000 (USD 1 650) in a public higher education institution (IMCO, 2016[11]). The fees are the same for national and international students.

The lack of student financial support also affects access and completion of higher education. Finances are cited as one of the main reasons (46.1%) why students consider dropping out of higher education (SEP, 2017[12]). There is no federal public student loan scheme (although a few states provide students loans) and the existing government scholarships and grants only benefit around 20% of students (OECD, 2017[13]) (see

Chapter 6). Private universities should provide scholarships to at least 5% of their students in licensed programmes (Mexican Federal Government, 2017[14]).

Admissions processes

In addition to the upper secondary qualification, all higher education institutions have the freedom to establish additional admissions criteria and processes for their programmes. As a result, there is a very wide range of entry criteria, requirements and evaluation instruments applied to Mexican and international students.

Some institutions apply an open system without additional requirements. The most prestigious institutions and programmes are more selective and apply additional selection criteria. Academic records and interviews are the most typical admissions criteria for all levels, and a bachelor's qualification, along with a research concept or proposal, is common for master's and doctoral programmes (Table 3.3).

Table 3.3. Most common admissions criteria for higher education

Access level	Common requirement	Usual criteria for admission	Potential admission tests
Short-cycle programme (ISCED 5) and bachelor's programme (ISCED 6)	Secondary education qualification (ISCED 3)	Academic record Interview	CENEVAL test (EXANI-II) College Board test (PAA) Institutional test
Master's programme (ISCED 7)	Bachelor's degree qualification (ISCED 6)	Academic record Interview Research concept/ proposal	CENEVAL test (EXANI-III) HEI own test
Doctoral programme (ISCED 8)	Master's degree qualification (ISCED 7) (for some master's programmes, the bachelor's degree needs to be in a specific area)	Interview Curriculum Vitae Research proposal Recommendation letters Full-time commitment (required or preferred)	CENEVAL test (EXANI-III)

Source: OECD compilation based on information provided by SEP.

Some higher education institutions also apply either their own or existing standardised admission tests. The most common standardised tests to evaluate discipline knowledge are the National Evaluation Centre (CENEVAL) tests (Box 3.3) and the College Board tests. Admission to certain programmes also requires specific tests, e.g. English language tests such as the EXUBI (*examen de ubicación del idioma*); mathematics tests such as the EDM (*exámen diagnóstico de matemáticas*); or language tests such as the EHLL (*exámen de habilidades lingüísticas y lógicas*). Some institutions also administer intelligence and psychometrics tests, such as the Terman-Merril test.

For students who do not reach the minimum admissions criteria, some public and private higher education institutions offer preparatory courses to help them to prepare for the admission tests. These are offered either as an extra preparatory semester or year, as an additional course during the first semester of their programme, or as a summer course before students enter higher education.

Box 3.3. *Centro Nacional de Evaluación* (CENEVAL) admissions exams

EXANI-II: CENEVAL exam to access bachelor's programmes

EXANI-II tests the skills and knowledge of particular academic fields of students who apply for a bachelor's programme. It includes two tests:

- EXANI-II Admissions test: A three-hour test with 110 questions that assesses students' aptitudes and skills in analytical thinking, mathematical thinking, reading comprehension and language structure.
- EXANI-II Diagnostic test: A one and a half-hour test with 88 questions that measures the discipline specific knowledge that is essential for students to enter the programme for which they have applied.

In 2016, 756 956 applicants took the EXANI-II test. The majority of applicants (81%) were seeking admission to public higher education institutions.

EXANI-III: CENEVAL exam to access postgraduate programmes

EXANI-III assesses the knowledge and skills of students who apply to a postgraduate programme, including their ability to respond to complex and varied situations. It assesses the ability to identify, systematise, classify, integrate and interpret information in situations that require a strategy to make inferences, derive conclusions and solve problems.

The test gives equal importance to all the following areas: mathematical thinking, analytical thinking, language structure, reading skills, project methodology, English reading and English grammar. EXANI-III is a four and a half-hour test with 160 questions.

In 2016, 29 835 applicants took the EXANI-III test. The majority of applicants (87%) were seeking admission to public higher education institutions.

Prospective students applying to master's programmes may also be asked to undertake certain additional tests, but these are not compulsory in all higher education institutions. For example, some institutions use the Postgraduate Admission Test (*Prueba de Admisión a Estudios de Posgrado,* PAEP), which was developed by the Monterrey Institute of Technology (ITESM). This test measures the verbal reasoning, quantitative reasoning and cognitive ability of candidates, as well as drafting skills in English.

Agreement 296 (published in the *Official Gazette* on 30 October 2000) provides a formal mechanism to recognise prior learning (*reconocimiento de saberes adquiridos,* RSA) acquired outside the Mexican education system (i.e. in informal or non-formal settings or in a different type of formal education) as a basis for admission to different levels of education. However, while recognition of prior learning is regulated and administered by the federal government in consultation with selected public higher education institutions, it is not commonly used in Mexico.

Agreement 286 also allows international students or Mexican students who completed higher education studies abroad to apply for the recognition of their qualifications acquired outside Mexico. This process provides access to a professional licence (*cédula profesional*) (see Chapter 6) or further studies in Mexico.

Pathways within the higher education system

Students who wish to move from one type of higher education institution to another, or to a different programme, must apply directly to the institutions, which assess applications on a case-by-case basis. A small number of higher education institutions have agreements in place to recognise each other's qualifications and studies, thereby facilitating pathways for their students. However, the absence of a national credit recognition and transfer system makes moving between institutions and programmes very difficult. The complexity of the system presents a significant barrier to the creation of such a scheme that would facilitate movement between institutions. This can make it difficult for students to change programmes when they realise that their initial choice of programme does not suit their capabilities or interests, or that it has poor labour market outcomes.

Some steps have been taken to develop a national credit accumulation and transfer system. In 2007, ANUIES designed and suggested a System to Assign and Transfer Academic Credits (*Sistema de Asignación y Transferencia de Créditos Académicos*, SATCA), but it has not implemented. In 2009, efforts by the three technological direct provision subsystems resulted in the Common Space for Technological Higher Education strategy (*Espacio Común de la Educación Superior Tecnológica,* ECEST). This strategy has facilitated credit transfer agreements between institutions, but its implementation has been incomplete, and student transfers remain complicated.

In addition, some higher education programmes at different levels, or even at the same level, are not connected. There is no path between short-cycle tertiary education programmes (ISCED 5) and bachelor's programmes (ISCED 6). Similarly, there are no pathways between the specialisation master's programmes (one-year ISCED 7) and master's programmes (two-year ISCED 7). These barriers can prevent students from continuing their studies and gaining higher level qualifications that are likely to position them better for the labour market.

Student population

Participation in higher education has grown from 1% of the population (below 30 000 students) in 1950 to 22% of the 20-24 year-old population in 2017 (4.5 million students in 2017). However, there are still considerable differences by socio-economic background, as almost half of the student population (46%) belongs to the wealthiest quintile, with this share even higher for students in private universities (CEDLAS and World Bank, 2017[9]).

Students enter higher education on average at the age of 20 (OECD, 2018[1]), and almost 90% are enrolled in bachelor's programmes. Enrolments in other higher education levels is below the OECD average: 4.6% of students undertake short-cycle programmes (half the OECD average); 6.4% are enrolled in master's or master's specialisation programmes; and 0.9% are enrolled in doctorate programmes. Enrolments at the postgraduate level have doubled since 2000 (SEP, 2017[2]).

Table 3.4. Enrolment by ISCED level, 2016-2017

ISCED level	Name of qualification	Length of programme	% total enrolment
ISCED 5: Short-cycle programme	Associate technical degree (*técnico superior universitario*) or associate professional (*profesional asociado*)	2 years	4.6%
ISCED 6: Bachelor's programme	University bachelor's degree (*licenciatura universitaria*)	4 to 5 years	86.6%
ISCED 6: Bachelor's programme	Institute of technology bachelor's degree (*licenciatura tecnológica*)	4 to 5 years	
ISCED 6: Bachelor's programme	Teacher education bachelor's degree (*licenciatura educación normal*)	4 to 5 years	2.5%
ISCED 7: Master's programme	Master's specialisation degree (*especialización*)	0.5 to 1 year	1.2%
ISCED 7: Master's programme	Master's degree (*maestría*)	2 years	4.2%
ISCED 8: Doctoral programme	Doctoral degree (*doctorado*)	3 to 5 years	0.9%

Source: Key Figures 2016-2017 (SEP, 2017[2]).

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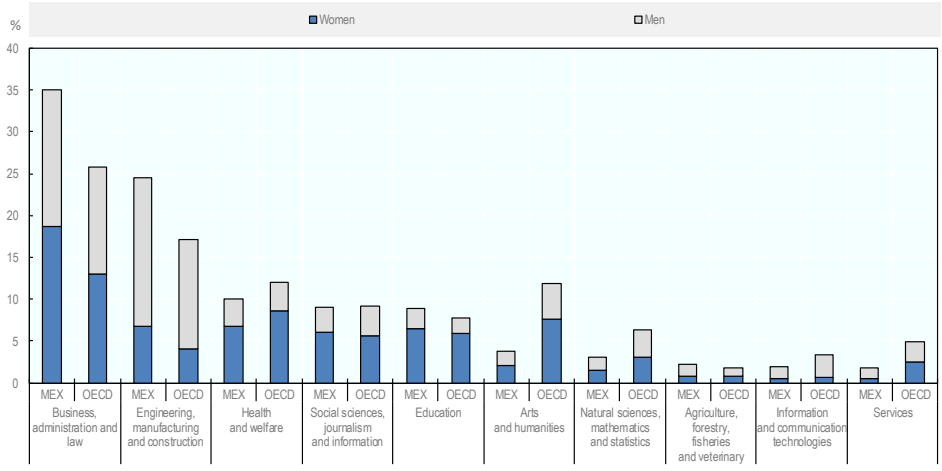
Over 50% of the student population is enrolled in two fields of study: 34% in business administration and law programmes and 23% in engineering, manufacturing and construction. Enrolments in these fields of study are higher in Mexico than in other OECD countries (Figure 3.4). At the same time, the percentage of students in health, welfare, arts and humanities is lower than the OECD average.

Figure 3.4. Distribution of new entrants by field of study, all students and female students, Mexico and OECD average, 2016



Source: OECD (2018) Education at a Glance.

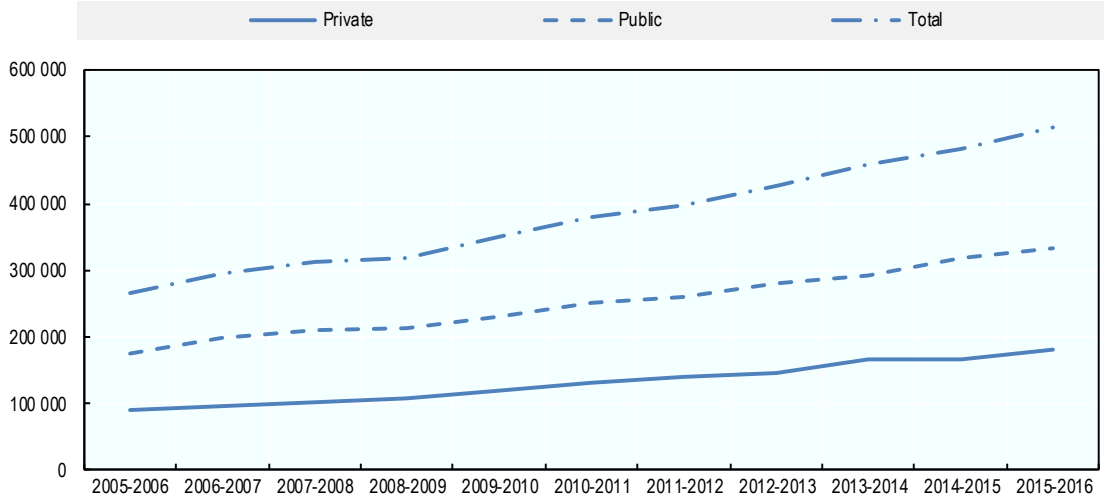
StatLink http://dx.doi.org/10.1787/888933880584

After decades of constant growth, half of students currently enrolled in higher education are female, with 54.6% in postgraduate programmes. Some fields of study attract a much higher proportion of female students: education (73% of new entrants), health and welfare (65%), and social sciences, journalism and information (66%). The percentages of female

new entrants in information and communication technologies (ICT) (28%) and in engineering, manufacturing and construction (27%) are the lowest, but still above the OECD average of 20% and 22% respectively (OECD, 2018[1])

Approximately 67% of students are in public and 33% in private higher education institutions. Private higher education institutions have a larger share of students enrolled in master's programmes, and public institutions host most of the students enrolled in short-cycle programmes. Most students are enrolled in face-to-face programmes, but an increasing number of students (currently 15%) are enrolled in open or distance education, mainly in private institutions (25%).

Figure 3.5. Trend in number of graduates from private and public higher education institutions in Mexico, 2005-2016



Source: SEP (2017) longitudinal data on higher education enrolment.

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Mexico has a very low number of international students, around 12 500, who account for only 0.3% of the total student population (OECD, 2018[1]); most (98%) come from neighbouring countries. Outward mobility is also low, with very few (0.8%) Mexican students studying abroad, predominantly in the United States.

It is estimated that 69.4% of students enrolled in face-to-face undergraduate programmes complete their studies within a five-year period (Mexican Federal Government, 2017[15])[2]. In addition to financial reasons, more than one-third (37.4%) considered discontinuing a programme because of a lack of interest in their studies (SEP, 2017[12]).

The number of graduates is rapidly increasing, particularly those from public higher education institutions (Figure 3.5), with over half a million graduates entering the labour market annually. Mexicans graduate from their first degree on average at the age of 24.5,

[2] The threshold of five years applies to undergraduate students enrolled in a programme of any duration (from 2-year short-cycle tertiary education programmes to 5-year bachelor's programmes). This rate excludes undergraduate students who are enrolled in online or distance programmes (15% of the total enrolment).

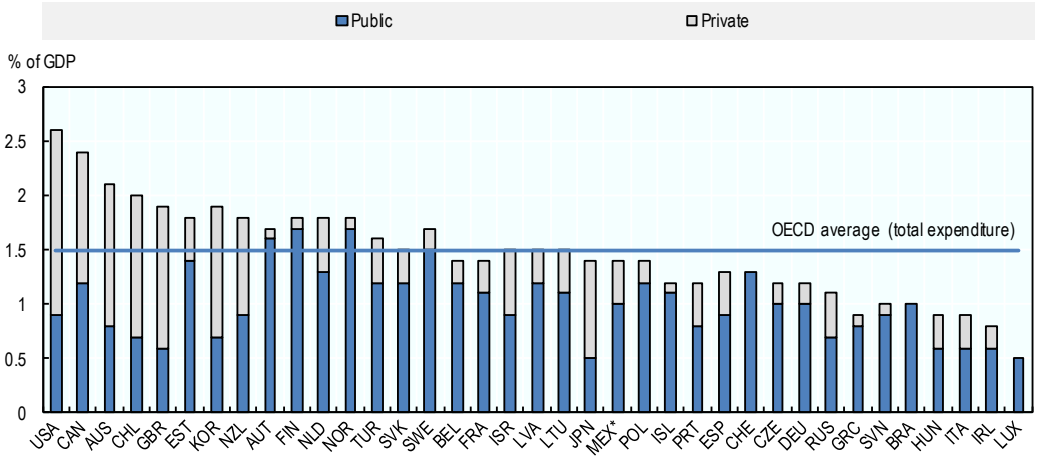
and 93% graduate before the age of 30 (OECD, 2018[1]). The percentage of higher education holders has almost doubled over the last 30 years, however, only 17.4% of the Mexican workforce holds a higher education degree, which is the lowest percentage among OECD countries (average 36.9%) (OECD, 2018[1]).

The country's higher education attainment rate in likely to continue increasing in the future (Crespo and García, 2014[16]); (Sagarra, Mar-Molinero and Rodríguez-Regordosa, 2014[17]), and currently 26% of Mexican youth are expected to get a higher education degree at some point in their lives (OECD, 2017[13]).

Expenditure on higher education

Higher education expenditure in Mexico (1.4% of GDP) remains stable and slightly below the OECD average of 1.5% (Figure 3.6). Mexico prioritises higher education in total public expenditure (3.1% - excluding R&D), which is above the OECD average (2.3%) (OECD, 2018[1]). However, while overall expenditure on higher education has grown 71% since 2000, the number of students has grown even more (109%), meaning that the expenditure in higher education per student has dropped 18% (ANUIES, 2017[18]). Expenditure per student (which includes funding for teaching, research and engagement) is currently at USD 8 170 – the third lowest among OECD countries (above Greece and Chile) and, far below the OECD average (USD 15 656) (OECD, 2018[1]).

Figure 3.6. Public and private expenditure on higher education institutions as a percentage of GDP, 2015



Note: Countries are ranked in descending order for the total of public and private expenditure on higher education institutions as percentage of gross domestic product.
Source: OECD (2018) Education at a Glance.

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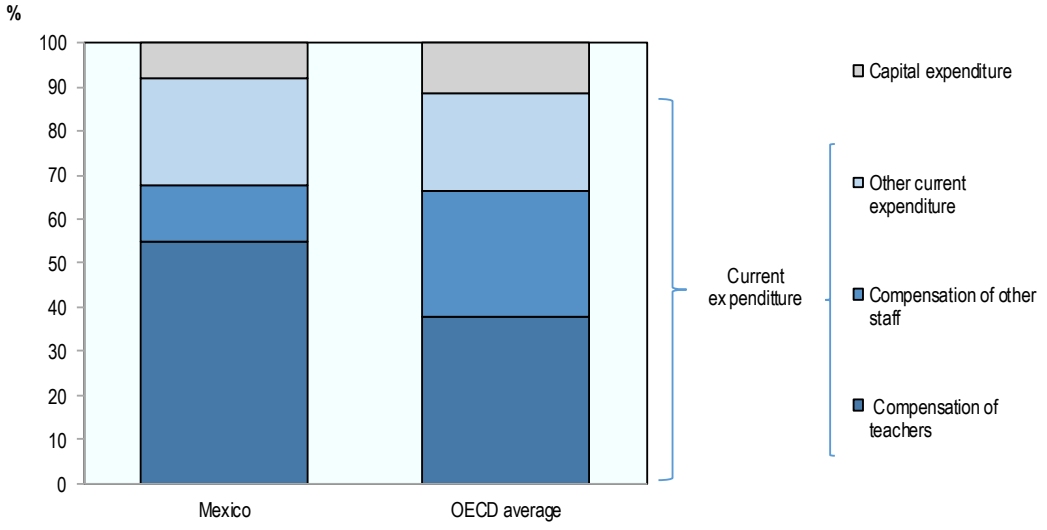
Expenditure per student varies markedly by subsystem. In 2016, direct provision subsystems received the least funding per student: technological and polytechnic universities (MXN 24 000/USD 1 250), decentralised institutes of technology (MXN 29 000/1 530 USD) and federal institutes of technology (MXN 37 000/1 950 USD). The subsystems receiving the largest funding per student were public state universities (MXN 56 000/2 950 USD) and federal state universities (MXN 118 000/6 260 USD) (ANUIES, 2017[18]).

Expenditure on higher education from both public and private sources has increased, with shares similar to the respective OECD averages. In 2014, private sources accounted for 29% of higher education expenditure, with 71% from public sources (slightly above the OECD averages of 30% and 70%, respectively). All private expenditure on higher education in Mexico came exclusively from households, whereas across OECD countries, 10% was provided by other private sources.

In Mexico, 77% of public funding comes from the federal government, and state governments provide the remainder; whereas the central and state/local ratio across OECD countries on average is 85% to 15% (OECD, 2017[13]). However, the contribution of the Federal government highly varies by state, from 44 to 90% (ANUIES, 2017[18]). Federal funding for higher education in Mexico has decreased by 10% over the last decade (OECD, 2017[13]). Some state governments have not been able to fulfil their financial commitments for higher education and the federal government has had to increase its share.

The majority of public expenditure for higher education in Mexico is used for current expenditure (92%), which is slightly above the OECD average (89%). Although the total compensation of staff is at the same level as the OECD average, Mexico spends a large share of its budget on academic staff (55%) and a low share on other staff (13%) (Figure 3.7). Within the OECD, only Austria spends more on academic staff as a share of higher education expenditure.

Figure 3.7. Distribution of current expenditure by resource category, 2014



Source: OECD (2018) Education at a Glance.

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Governance of the higher education system

Steering higher education

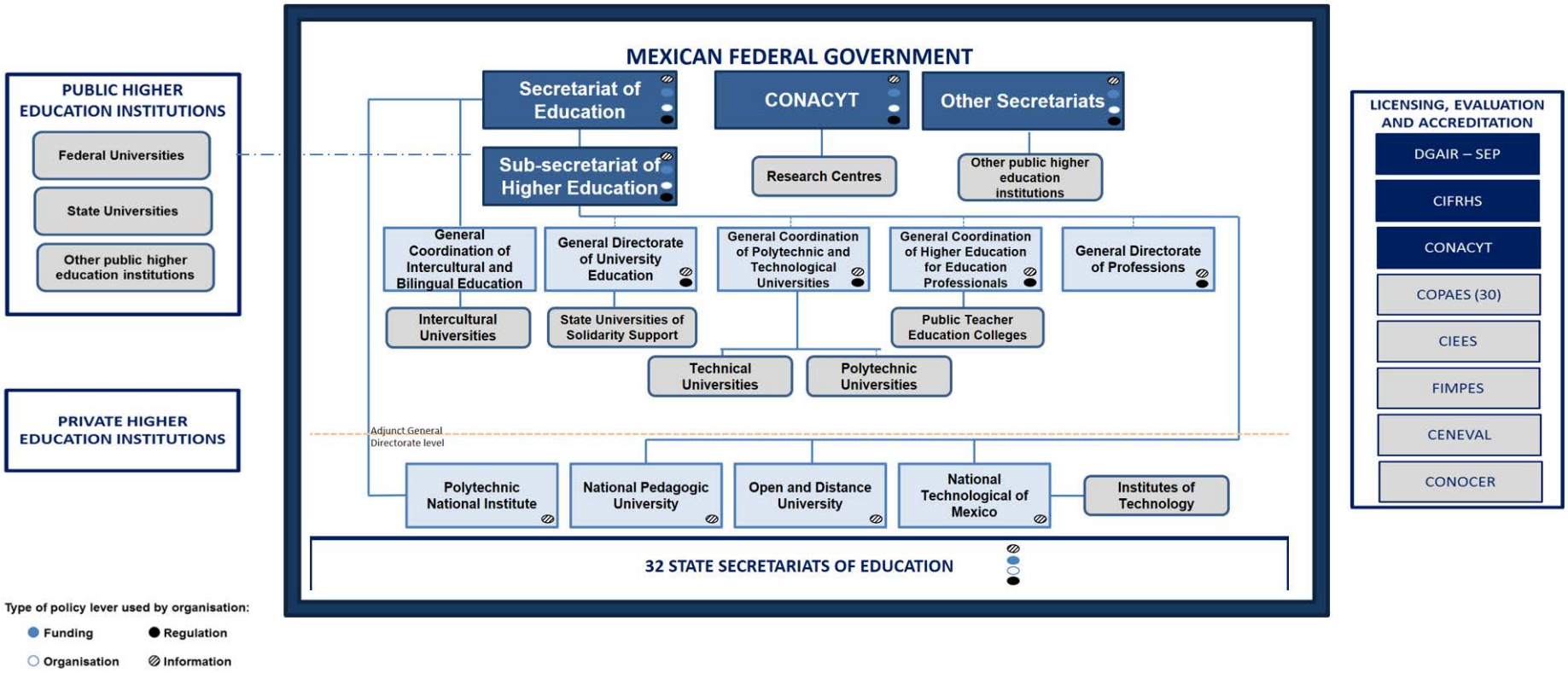
The federal and state governments share responsibility for the governance, regulation and co-ordination of higher education in Mexico (Figure 3.8). SEP designs and implements national policy and plans in collaboration with other federal government institutions. It provides funding directly or indirectly to all types of public higher education institutions; 82% of higher education public funding is federal funding (OECD, 2017[13]). SEP also co-ordinates the two levels of government (federal and state) in overseeing and planning higher education, including consultations with social partners and broader stakeholders. For this purpose, there are offices of SEP in each state that act as intermediaries between the federal and state governments.

SEP is also responsible for issuing individual professional licences (*cédula profesional*) for 27 regulated professions and for non-regulated professions, in consultation with professional bodies. The federal government also licenses programmes to operate within the national higher education system (*Reconocimiento de Validez Oficial de Estudios,* RVOE).

The state secretariats of education are responsible for co-ordinating higher education and implementing policies at the state level. Some of them also award professional licenses. State governments provide, on average, 18% of higher education funding, but this share varies greatly. Until 2000, most states operated State Councils for Higher Education Planning (*Consejos Estatales para la Planeación de la Educación Superior*, COEPES). These councils advised the state secretariats of education on strategic issues, supported policy development, and collected indicators to assess and evaluate proposals for the establishment of new higher education institutions and programmes. Although some state governments discontinued the funding, others have continued to fund and operate the councils.

Since 2004, federal and state governments have worked together on education matters through the National Council of Educational Authorities (*Consejo Nacional de Autoridades Educativas,* CONAEDU). The members of CONAEDU are the federal SEP(chair) and the 32 state secretaries of education. CONAEDU develops and builds consensus around education policy, which contributes to the development and reinforcement of the National Education System, particularly the planning and assessment schemes. The Council operates in chapters corresponding to the different levels of education. The higher education chapter has not been effective and has not held any meetings in the last six years, however, the upper secondary education chapter has been more successful.

Figure 3.8. Diagram of the Mexican higher education system



Source: OECD compilation based on information provided by SEP.

Regulation of the higher education system

The regulatory framework for higher education in Mexico comprises several types of legal document that regulate aspects of the system.

At the highest level, the Mexican Constitution (*Constitución Política de los Estados Unidos Mexicanos*) states that the government supports the national secular education necessary for national development and guarantees free public education. It also recognises educational freedom, stating that any person or organisation can deliver private education at all levels. However, programmes delivered by private higher education institutions require official recognition by the Federal or State Secretariat of Education to be part of the national education system.

The federal Education Act (*Ley General de Educación,* LGE) is the main document that regulates the education system. This act establishes the actors of the national education system and defines federal and state responsibilities regarding education. However, it applies mainly to primary and secondary education, with little reference to higher education. All Mexican states have a state education act that specifies the responsibilities of the state government, but most state legislation does not include sections on higher education.

The Higher Education Co-ordination Act (*Ley para la Coordinación de la Educación Superio*r) was enacted in 1978. It regulates and co-ordinates tasks and funding between federal, state and local governments. The act aims to create greater diversity in the higher education subsystems, thus ensuring better alignment with national, state and local needs, and contributing to local and regional development. Co-ordination, operation and financial assistance agreements between the federation, states and institutions are derived from this act.

Autonomous higher education institutions are established through federal or state general acts (*Leyes Orgánicas*), while direct provision higher education institutions are established through organic statutes (*Estatutos Orgánicos*) or decrees (*Decretos*). These acts or decrees establish the rights, governance structures and assets of the institution. Co-ordination, operation and financial assistance agreements (*Convenios de Coordinación, Operación y Apoyo Financiero*) established between the federal government, the state governments and each of the public state universities (including those of solidarity support), form the basis for organising, funding and operating higher education institutions.

The Internal Regulation of SEP (*Reglamento Interior de la Secretaría de Educación Pública*) details the roles and responsibilities of the secretariat and its decentralised agencies. Additional regulatory instruments include the licence for official validation of studies (RVOE) (secretarial agreement 17/11/17), procedures related to the recognition of official validation of higher education studies (secretarial agreement 279), and the conditions for the recognition of acquired knowledge for ISCED 6 level (secretarial agreement 286).

Other important laws concerning higher education include the Science and Technology Act (*Ley de Ciencia y Tecnología*), which describes the responsibilities of the federal government related to science and technology and names the actors of the national science and technology system. For graduates, the Regulatory Act in Article 5 of the Constitution (*Ley Reglamentaria del Artículo 5º Constitucional*) regulates graduate jobs in all states, including their rights, obligations and regulatory framework. In addition, the

Federal Labour Act (*Ley Federal del Trabajo*) and the Federal Labour Act for State Workers (*Ley Federal de los Trabajadores al Servicio del Estado*) regulate the employment relationships of staff in all public and private higher education institutions.

The Planning Act (*Ley de Planeación*) facilitates the co-ordination of planning activities between the executive branch of government and the states. It regulates the establishment of a National Development Plan (*Plan Nacional de Desarrollo*) and sectoral programmes, such as the Education Sectoral Programme (*Programa Sectorial de Educación*), every six years.

SEP formulates the Education Sectoral Programme in collaboration with other federal and state agencies and higher education institutions. The programme details strategic targets, goals, objectives, policies and guidelines for the period (SEP, 2013[19]) (Box 3.4). It also provides a guiding framework for state governments (including their agencies) and autonomous public and private higher education institutions, with which the Federal Government (and its decentralised agencies) must comply.

Box 3.4. Education Sectoral Programme 2013-2018

The main aim of the Education Sectoral Programme's 2013-2018 edition is to provide quality education, which is understood as "equitable, relevant, flexible, innovative, diversified and with ample coverage." It establishes the following six major goals:

- Objective 1: Ensuring the quality of learning in basic education and ensuring education for the whole population.
- Objective 2: Strengthening the quality and relevance of upper secondary and higher education, as well as on-the-job training, so that students can develop the skills they need to contribute effectively to Mexico's development.
- Objective 3: Ensuring greater coverage, inclusion and educational equity among all groups of the population in order to build a more inclusive society.
- Objective 4: Strengthening the practice of sports activities as a component of integral education.
- Objective 5: Promoting and disseminating art and culture as important learning resources to achieve comprehensive education.
- Objective 6: Promoting scientific and technological education as an essential element for the transformation of Mexico into a knowledge society.

Source: (SEP, 2013[19]).

These laws, regulations, decrees and agreements, along with internal administrative manuals, direct higher education institutions in their daily operations. However, the multiple legislative instruments relating to higher education, some of which lack sufficient detail or clarity, make the regulation of the 13 higher education subsystems complex and difficult to navigate. Although there have been several attempts to reform the regulatory framework in recent years, there has not been sufficient consensus to establish new laws for higher education.

Agencies involved in quality assurance

The quality assurance system in Mexico is complex and fragmented (Figure 3.10). There is no national quality assurance system or agency to license, assess or accredit higher

education institutions, programmes and individuals. Instead, multiple agencies operate with different reference frameworks, criteria, indicators, standards and measurement tools. A federal commission, which was reactivated in mid-2017, co-ordinates all the agencies active in higher education quality assurance (*Comisión Coordinadora de Organismos de Evaluación de la Educación Superior,* COCOEES); however, there are no tangible results yet. The use of the various quality assurance mechanisms through these multiple agencies is optional and voluntary. In addition, they are not applied consistently across the subsystems.

Figure 3.9. Quality assurance of higher education in Mexico

Agency	Type				Institution		Programmes							
							Public		Private					
	License	Assessment	Accreditation	Certification	Public	Private	Undergrad	Postgrad	Undergrad	Postgrad	Researchers	Students	HEI Functions	Accreditation Agencies
SEP-DGAIR	X								X	X				
COPAES			X											X
COPAES-AGENCIES			X				X		X					
CIIES		X					X	X	X	X			X	
CONACYT			X					X		X	X			
CIFRHS (health)		X			X	X	X	X	X	X				
FIMPES			X			X								
CENEVAL		X					X		X			X		
CONOCER				X								X		

Source: OECD compilation based on information provided by SEP.

Accreditation of institutions

Public higher education institutions in Mexico do not require any form of institutional accreditation. The Federation of Mexican Private Higher Education Institutions (*Federación de Instituciones Mexicanas Particulares de Educación Superior,* FIMPES) is a membership organisation for private higher education institutions. Institutions that wish to become a member must undergo an institutional assessment aimed at differentiating them from other private institutions. Since 2003, higher education institutions that are members of FIMPES enjoy simpler administrative procedures with education authorities, such as simpler approval processes for the award of a RVOE on new programmes.

Some private institutions are accredited by foreign agencies, such as the Southern Association of Colleges and Schools (SACS) or the Western Association of Schools and Colleges (WASC) in the United States.

Accreditation of institutional functions

Mexican higher education institutions can also seek accreditation for various functions through two agencies. The Inter-institutional Committees for the Evaluation of Higher Education (*Comités Interinstitucionales para la Evaluación de la Educación Superior,* CIEES) accredits the administration, culture and engagement functions of public and private higher education institutions for five years, renewable for another five (CIEES, 2017[20]). Similarly, using an evaluation focused on infrastructure, the Commission for the Education of Human Resources in the Health Sector (*Comisión Interinstitucional de Formación de Recursos Humanos en Salud*, CIFRHS) determines whether public and private institutions can offer health programmes.

License of programmes

Study programmes in private higher education institutions that are part of the national education system are licensed and officially recognised through the "validation of studies" (*Reconocimiento de Validez Oficial de Estudios*, RVOE). SEP grants the RVOE that allows a programme to be delivered across the 32 states in Mexico (Secretarial Agreement 17/11/17). State governments can grant RVOEs for programmes delivered by institutions located in the respective state, but criteria and procedures vary from one state to another. State public universities (12) and federal universities (2) can also incorporate programmes delivered by private higher education institutions as a way of licencing these programmes. Currently, 21 981 programmes offered by 1 918 private institutions hold a RVOE.

The granting authority is responsible for the supervision and oversight of the educational services that they have authorised and recognised. Programmes with a RVOE can be the subject of one-off inspections by the granting authority to assess whether the agreed conditions for provision are being respected. A negative review can result in the removal of the RVOE, but these inspections rarely occur due to a lack of resources, so only two RVOEs were withdrawn in 2017.

Programmes with RVOE approval must meet basic conditions in relation to staff, infrastructure and programmes. However, these conditions are different in each state and at the federal level. SEP has strengthened the conditions to grant RVOEs through the Secretarial Agreement 17/11/17, however, stakeholders still have concerns about the effectiveness of RVOEs regarding its ability to ensure a minimum level of quality and to carry out periodic monitoring.

An unknown number of higher education programmes are offered outside of the national education system (i.e. without RVOE). Higher education institutions must inform students if the programme does not have a RVOE, and the list of programmes with a RVOE is available on the SEP website. The website does not include programmes undergoing approval for the award of the RVOE.

The RVOE is also linked to the award of a professional licence (*cédula profesional*) as only graduates of programmes in the national education system can obtain a professional licence. The professional licence is an important credential in the labour market and essential for regulated professions. The RVOE is also used as criterion for admission to a higher level of study in a public or private higher education institution. However, over a quarter (37.5%) of all students who completed their bachelor programme courses (*egresados*) did not obtain a professional licence (*titulados*).

Accreditation of programmes

The Higher Education Accreditation Council (*Consejo para la Acreditación de la Educación Superior*, COPAES) was established as a non-profit organisation in 2000 to recognise and oversee accreditation agencies responsible for undergraduate programmes. There are currently 30 accreditation agencies licensed by COPAES, which establishes general guidelines for the accreditation agencies to follow and adapt to specific fields of study. The accreditation agencies are licensed to operate for five years, with the possibility of renewal. Undergraduate programmes provided by public higher education institutions, or those in private higher education institutions with a RVOE, can apply to be accredited by these agencies for five years (COPAES, 2017[21]). COPAES agencies have accredited 3 797 programmes in 393 institutions.

CIEES was established in 1991 as a non-profit organisation to provide external peer evaluations of undergraduate programmes in public higher education institutions, and programmes with a RVOE in private higher education institutions. Between 200 and 400 programmes are evaluated every year by the seven discipline specific committees and rated according to their quality - level one (recognised for five or three years) or level two (CIEES, 2017[20]). SEP categorises level one programmes as "quality programmes" and uses this as criteria for some targeted funding programmes, i.e. the proportion of students enrolled in "quality programmes" in an institution.

Since 2012, the number of students enrolled in programmes accredited by COPAES, or assessed as level one programmes by CIEES, has grown from 2.5 to 3.5 million. However, due to the large increase in higher education enrolments over recent years, the percentage of students in quality programmes has decreased from 63% in 2012 to 46% in 2017 (SEP, 2018[22]). Most accredited programmes are in large public universities.

The National Council for Science and Technology (*Consejo Nacional de Ciencia y Tecnología*, CONACyT), in collaboration with SEP, recognises postgraduate programmes at all higher education institutions through the National Programme of Quality Postgraduate Studies (*Programa Nacional de Posgrados de Calidad*, PNPC). The council uses peer reviews that assess the quality and relevance of programmes, including their results and impacts, and classifies the recognised programmes into four levels: recently created, in development, consolidated and international competence (CONACyT, 2017[23]). Currently, 2 295 programmes are recognised in the PNPC and the most common fields of study are engineering (21.8%), medicine and health sciences (19.2%) and social sciences (18.5%) (CONACyT, 2018[24]).

The Inter-institutional Commission for the Education of Human Resources in the Health Sector (*Comisión Interinstitucional de Formación de Recursos Humanos en Salud*, CIFRHS) is an advisory and technical organisation under the Secretariat of Health, established in 1983. CIFRHS sets the requirements for institutions providing education and training in health fields of study. It assesses the education and training needs for the health sectors, promotes initiatives to ensure the distribution of human resources in different health professions, and promotes initiatives that link teaching, practice and research. The Commission also formally evaluates health programmes at all levels, and their providers. Representatives from the public, private and social sectors are represented in several committees of this commission (CIFRHS, 2017[25]).

Accreditation of academic staff research performance

All tenured academic staff in Mexican higher education institutions have contracts that include teaching, research and engagement responsibilities. CONACyT also accredits the research performance of individual academic staff in all institutions through the National System of Researchers (*Sistema Nacional de Investigadores,* SNI). Created in 1984, this system uses peer reviews to rank researchers in three levels depending on their research performance, technology transferred to external organisations and teaching hours. The quality of teaching is not measured. The SNI classification level affects researchers' earnings.

Assessment and certification of student skills

The National Centre for Higher Education Assessment (Centro Nacional de Evaluación para la Educación Superior, CENEVAL) assesses the knowledge, skills and competences of students. The centre was created in 1994 as a non-profit association to design and administer standardised tests to students. It analyses and disseminates the results of the tests. CENEVAL's General Assembly, led by a general director, includes representatives of higher education institutions, professional associations, social organisations and SEP representatives (CENEVAL, 2017[26]).

Specific skills of the overall population can be certified by the National Council of Standardisation and Certification of Labour Competencies (*Consejo Nacional de Normalización y Certificación de Competencias Laborales,* CONOCER). In 2017, CONOCER awarded 526 000 certificates, the majority in ICT skills. An increasing number of higher education students are seeking labour-oriented certificates to complement their academic degrees, and over a third of these certificates in 2017 were awarded to higher education students or graduates.

Funding the higher education system

Both the federal and state governments fund higher education. They allocate a block grant (ordinary funding) to all public higher education institutions to support regular institutional operations. The block grant funding is approximately 90% of the total funding and is allocated based on previously approved input costs, including a basic amount and cost adjustments for compensation of staff and operating expenses. However, the final amount of the block grant is subject to an annual negotiation between individual higher education institutions and the government.

The share of block grant funding from the federal and state governments is established in a three-party agreement between the federal government, the state government and the public higher education institution. However, the share of the federal government funding greatly varies by state, subsystem and institution, ranging from 45% to 88%, which generates tensions across the system.

The block grant funding for state institutes of technology, technological universities, polytechnic universities and intercultural universities is equally shared between the federal and state governments. However, in some cases state governments have not complied with their funding commitments and have paid institutions late, partially, or have not paid their contribution. This has generated tensions between both levels of government and the institutions.

SEP also provides targeted funding (extraordinary funding) for specific purposes based on explicit criteria. Institutions seeking targeted funding must submit a proposal that is

assessed by SEP or an expert panel (see Chapter 6). CONACyT also allocates competitive funding to institutions through a set of funding programmes to support research and postgraduate programmes recognised as high quality in the PNPC.

The federal government has provided additional targeted funding through the Programme of Expansion of Educational Supply to support infrastructure, equipment, current expenses and new academic positions. However, this programme has not granted any funding in 2018.

In addition, all higher education institutions are funded, to a different extent, by private sources. These are almost entirely from households (e.g. tuition fees), but a small share comes from other private sources (e.g. payments from firms and non-profit organisations for diverse services, such as training or work-based learning).

Information on the higher education system

The Mexican government uses data to monitor the higher education system and develop policy. It disseminates the information it collects to stakeholders. SEP collects annual data on the number of higher education institutions, campuses, and licensed programmes (i.e. those with a RVOE), and enrolments in licensed programmes. This data is provided by higher education institutions in a standardised form and is publicly available on the government website. It is also published annually (together with data on other education levels) in the "Education of the United Mexican States: Main figures" report (SEP, 2017[2]).

SEP also collects information and enrolment data from higher education institutions on programmes that have been accredited and evaluated by COPAES, CIEES and CONACyT. The list of undergraduate programmes and enrolment data is compiled with COPAES and CIEES and published monthly on the Secretariat's website. The list of PNPC postgraduate programmes is published on CONACyT's website. In addition, CENEVAL publishes a list of programmes that have achieved outstanding results in CENEVAL tests.

SEP also publishes a list of higher education graduates who have obtained a professional licence. Graduates are identified with a unique number and anyone can search a person by name and obtain their professional licence details.

In addition to government information, the largest Mexican university association, the National Association of Universities (*Asociación Nacional de Universidades de Educación Superior,* ANUIES), provides comprehensive information on the national higher education system through its online National Directory of Higher Education Institutions. The directory provides basic information about campuses, schools, research centres, programmes, tenured academic staff and main administrative staff.

Focused on higher education outcomes, the Secretariat of Employment provides information on the labour market outcomes of higher education graduates. The annual *Labour Observatory* publication (*Observatorio Laboral)* presents information on graduates' employment status, sector, salaries, and positions based on the Mexican Labour Force survey data.

No agencies collect or publish information on graduate outcomes via surveys or information on the student experience or employer views of graduate skills.

Organisation of the higher education system

Every six years, the federal government is required to consult the public to develop a National Development Plan. This plan provides the basis for the Federal Government's Sectoral Education Programme. To develop this plan, SEP is also required to consult stakeholders across government (e.g. the Secretariat of Health and the Science and Technology Forum), as well as outside government.

Box 3.5. Main stakeholders consulted by the Mexican Government in higher education matters

SEP consults several stakeholders, through personal meetings and seminars, to design policy levers and keep informed of the practices and needs of higher education institutions and employers. The main stakeholders consulted are:

- **The National Association of Universities (*Asociación Nacional de Universidades de Educación Superior,* ANUIES)** represents 191 public and private higher education institutions, including the largest institutions, and over 60% of total student enrolment. ANUIES aims to improve education, research and engagement, and actively participates in the development of public policies, programmes and plans, often acting as the intermediary between higher education institutions and the government. ANUIES runs a series of specialised networks, workshops and scholarship schemes in co-operation with, or on behalf of SEP. To be a member of ANUIES, institutions need to fulfil a set of quality requirements. ANUIES members that meet even higher quality requirements constitute a subgroup of ANUIES called the Mexican Consortium of Universities (*Consorcio de Universidades Mexicanas,* CUMex).
- **The Federation of Mexican Private Higher Education Institutions (*Federación de Instituciones Mexicanas Particulares de Educación Superior,* FIMPES)** was established 1982 and is made up of 108 private higher education institutions that comprise 18% of students enrolled in higher education and around 50% of those enrolled in private higher education. FIMPES aims to improve communication and collaboration among members and with other higher education institutions. In order to join and remain in FIMPES, institutions need a quality accreditation from an independent commission of academic staff.
- **The Business Co-ordinating Council (*Consejo Coordinador Empresarial,* CCE)** presents the views of several business associations from different sectors to the government and other organisations. The council aims to design policies that raise the competitiveness of companies, and the country in general, in the hopes of contributing to economic growth. CCEs outreach to the higher education system happens through its Education Commission.

The main non-governmental organisations consulted in the development of the higher education elements of the Sectoral Education Programme are the two largest umbrella organisations of higher education institutions (ANUIES and FIMPES), rectors of selected higher education institutions, national academies, chambers of commerce and the Business Co-ordinating Council (Box 3.5). The federal government's Sub-Secretariat for Higher Education develops its annual plan based on the Sectoral Education Programme.

Since 2015, the federal government has also developed a planning exercise for higher education in collaboration with the 32 state governments and individual institutions. The Comprehensive Planning of Higher Education (*Planeación Integral de la Educación Superior,* PIDES) has a strong collaborative approach based on several rounds of workshops and meetings with higher education institutions across the country.

Implications for labour market relevance

The structure and governance of the Mexican education system directly and indirectly influence its ability to develop graduates' skills and enhance the system's relevance for the labour market.

The number of students who can potentially access higher education in Mexico is likely to increase following the introduction of compulsory upper secondary education in 2013. The forecasted entry of more students, and the poor skills levels as measured by the OECD PISA programme and the national PRONAE survey, will put additional pressure on the higher education system as these students may need considerable support to succeed academically.

Access to higher education remains unequal due to diverse entry requirements and varied tuition fees across institutions. Students from low socio-economic backgrounds are more likely to study in lower-quality upper secondary schools and thus develop weaker skills. This leaves them with the only option of enrolling in less prestigious higher education institutions, which in many cases are private. Those who make the economic effort to enrol are more likely to drop out for academic or financial reasons, and those who graduate are likely to enter the labour market with lower skills.

Students in smaller towns and rural areas now have more opportunities to access higher education thanks to the establishment of additional public higher education institutions in these areas. However, the delivery of high-quality education in these areas is proving challenging as it is difficult to obtain sufficient funding and high-quality academic staff.

Students in the vocational upper secondary education strand are unable to access higher education and there are limited alternative pathways through the recognition of prior learning outside of higher education (e.g. in the labour market).

The higher education system has a number of rigidities which prevent pathways between short-cycle tertiary education (ISCED 5) and bachelor's programmes (ISCED 6), and between specialisation and master's programmes (ISCED 7). It is also difficult for students to change programmes or institutions, increasing the likelihood of dropping out of higher education.

The large concentration at the bachelor's level means that there are not many graduates with the technical skills developed through short-cycle tertiary education programmes (ISCED 5) or with advanced specialised skills developed in master's and doctoral programmes (ISCED 7 and 8). Having an insufficient number of workers with different skills levels in Mexico is a major barrier to productivity, diversification and sophistication of production (OECD, 2017[27]). The current funding system for public higher education institutions does not provide any incentives to offer a diverse range of programmes in terms of levels and fields of study.

A high-quality higher education system helps students develop strong knowledge and skills relevant to the labour market so that they can achieve good employment outcomes. Despite efforts to ensure quality across the Mexican higher education system, there are no

mechanisms to guarantee a minimum of quality. The quality assurance system is voluntary in nature, fragmented, unclear, overlapping, rigid and focused on inputs, without sufficient emphasis on quality in general and labour market relevance in particular. As a result, employers may not have the confidence that higher education graduates have the skills they need to perform well in their jobs.

There are significant gaps in the information collected on higher education and the labour market outcomes of students by the different agencies; this information is also difficult to access, as it is made available through a range of publications and on different agency websites. Students have difficulties deciding in which institution and programme to enrol, and employers face uncertainty about what skills to expect of graduates from different institutions and programmes.

The federal government's role to steer higher education is limited due to the insufficient regulatory framework, the large degree of autonomy of some subsystems, the involvement of multiple agencies, and the need for co-ordination with state governments.

Although the decentralised governance system represents an opportunity to align the provision of higher education with the different labour market needs of each state, the lack of co-ordination between the different government levels has caused tensions and fragmentation.

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Annex 3.A. Key student evaluation tests

Annex Table 3.A.1. Summary of Mexican students' results in key student evaluation tests

Variable	PISA 2015 (Mexico results)	PLANEA (2017)	EXANI-II (2016)	EXANI-III (2016)
Reporting organisation	OECD	National Institute for the Evaluation of Education (INEE)	CENEVAL	CENEVAL
Level of study	Secondary education	Secondary education	To access bachelor programmes	To access postgraduate programmes
Exams/modules	Language, mathematics and science	Language and communication and mathematics	Analytical thinking, mathematical thinking, reading comprehension, structure of language	Analytical thinking, mathematical thinking, reading comprehension, structure of language, English reading comprehension, English grammar use, and project methods
Points/grades	From below level 1 to level 6	From level 1 to level 4	From 700 to 1300 points	From 700 to 1300 points
Gender	Female students are better in language. Male students are better in mathematics and science.	Female students are better in language. Male students are better in mathematics.	Female students are better in structure of language and reading comprehension. Male students are better in analytical thinking and mathematical thinking.	Male students are better in analytical thinking, mathematical thinking, reading comprehension, English reading comprehension, English grammar use, and project methods. Female students are better in structure of language.
Parents' educational attainment level	Countries with more highly educated adults are at an advantage over countries where parents have less education. Parents' level of education accounts for 44% of the variation in mean performance between countries/economies.	The higher the education attainment of the parents, the higher the performance of the student. Also, students with at least one parent speaking an Indigenous	The higher the education attainment of the parents, the higher the performance of the student.	The higher the education attainment of the parents, the higher the performance of the student.

		language are more likely to be low performers than those whose parents do not speak an Indigenous language.		
Type of education institution	Advantaged, urban and private schools in Mexico tend to have better science-specific resources than disadvantaged, rural and public schools. These differences are among the largest across all OECD countries.	Students in autonomous upper secondary schools achieve the best results, followed by private, federal and state ones.	Private schools perform better than public schools in all areas.	Students from public institutions perform better in analytical thinking and mathematical thinking. Students from private institutions perform better in reading comprehension, language, English reading comprehension, English grammar use, and project methods.
Mexican states / rural vs urban	No data by state in 2015. Students who reported not attending school science classes are more likely to be in schools that are socio-economically disadvantaged and/or located in rural areas. However, in Mexico, there are no significant differences in performance between students who take at least one science course per week and those who do not. In Mexico, enrolment in vocational programmes is much more common among students in urban and public schools than among their peers in rural and private schools.	In the language and communication test: Mexico City, Nuevo León, Yucatán, Jalisco and Baja California were the states with the highest share of top performing students. Chiapas, Guerrero, Tabasco and Michoacán had the lowest performance. In the mathematics test: Aguascalientes, Jalisco, Querétaro, Nuevo León and Puebla had the best performance. Chiapas, Tabasco, Guerrero, Michoacán and Tamaulipas had the lowest performance.	Students from public institutions in Yucatán, Nuevo León, Querétaro, and Aguascalientes are the best performers. Students from public institutions in Tamaulipas, Tlaxcala, Sinaloa, Tabasco, and Guerrero are the worst performing. For private institutions, the best performing states are: Yucatán, Nuevo León, Querétaro, San Luis Potosí, and Mexico City. The worst performing states are: Tamaulipas and Guerrero.	
Education orientation	After accounting for students' and schools' socio-economic profile, students in vocational programmes score 20 points higher in science than students in academic programmes.		Students from international, general, intercultural, and technological upper secondary institutions are the best performers. Students	Students who studied higher education face-to-face perform better than students who undertook their education online

			from TV-assisted and community TV-assisted upper secondary institutions, as well as professional technician programmes, are the lowest performers.	and through other modalities.
Others	In Mexico, a more socio-economically advantaged student scores 19 points higher in science than a less advantaged student.	Age: students around the typical high school age (16 years or less) perform better than students over the typical age (17 years and above).	Students with more books at home are better performers.	Students with more books at home are better performers.

Source: OECD compilation from (OECD, 2015[5]) for PISA 2015; (INEE, 2017[7]) for PLANEA and information provided by CENEVAL for EXANI-II and EXANI-III (2016).

Chapter 4. Labour market outcomes of higher education graduates

This chapter presents the skills and labour market outcomes of Mexico's higher education graduates based on OECD data, the Mexican Labour Force Survey, other national data sources and stakeholder views reported to the OECD review team. There has been major progress in increasing higher education attainment among Mexican youth, and currently over half a million higher education graduates enter the labour market every year. Their labour market outcomes are better than those with only upper secondary education, but their working conditions are not favourable; for example, large and increasing shares of higher education graduates have informal jobs and are overqualified for their jobs. Large differences exist by gender, age, field of study, level of study and geographic location.

Note: The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Higher education graduates in the labour market

Skills outcomes

Low levels of skills in the workforce and inefficiencies in putting skills to use are hindering Mexico's effort to increase productivity and competitiveness (OECD, 2017[1]). Mexico has the lowest share of working age population (25-64 year-olds) with a higher education degree across OECD countries at 17.4%, well below the OECD average of 36.9% (OECD, 2018[2]). Major progress has been made in increasing higher education attainment over the last 10 years. As a result, the share of young adults (25-34 year-olds) who have completed higher education increased from 16.3% in 2010 to 22.6% in 2017 (OECD, 2018[2]). Currently, over half a million higher education graduates enter the labour market each year (SEP, 2017[3]).

At present, 92% of higher education students graduate from bachelor's programmes (ISCED 6 level), 3% from short-cycle programmes (ISCED 5), and 5% from postgraduate programmes (ISCED 7-8). On average, students complete a bachelor's degree before the age of 25 years; this is lower than in most OECD countries where first-time graduates tend to be older. Only in Belgium, the United Kingdom, New Zealand, the Slovak Republic, Lithuania and Italy are graduates from bachelor's programmes younger (OECD, 2018[2]).

No comprehensive data is available for assessing the skills of adults in Mexico, although the country recently joined the OECD's Programme for the International Assessment of Adult Competencies (PIAAC). In 2019, the first results will be available for Mexico's comparative performance in adult proficiency in information-processing skills, literacy, numeracy and problem solving in technology-rich environments.

Representative data on the skills of higher education graduates is not available either. The EGEL tests (*Exámenes Generales para el Egreso de Licenciatura*), which are 39 study programme-specific tests developed by national experts to assess the application of discipline-specific skills to a work setting at the end of bachelor's programmes, suggest the existence of skills gaps. Over half of the 1.38 million students who took these tests between 2005 and 2016 did not obtain the minimum grade to pass the tests, and only 8% achieved an outstanding result.[1] Differences exist between programmes: for the period 2013-2016/7, the best-performing bachelor programmes were those in industrial engineering, international commerce, communication science and informatics. Meanwhile, the programmes with the highest failure rates were architecture, chemical engineering, computer engineering and international relations. EGEL data should be interpreted with caution for various reasons. For instance, the sample composition varies annually by type of programmes, there is no public information on the institutions and the programmes that require this test, and whether or not a test is a graduation requirement.

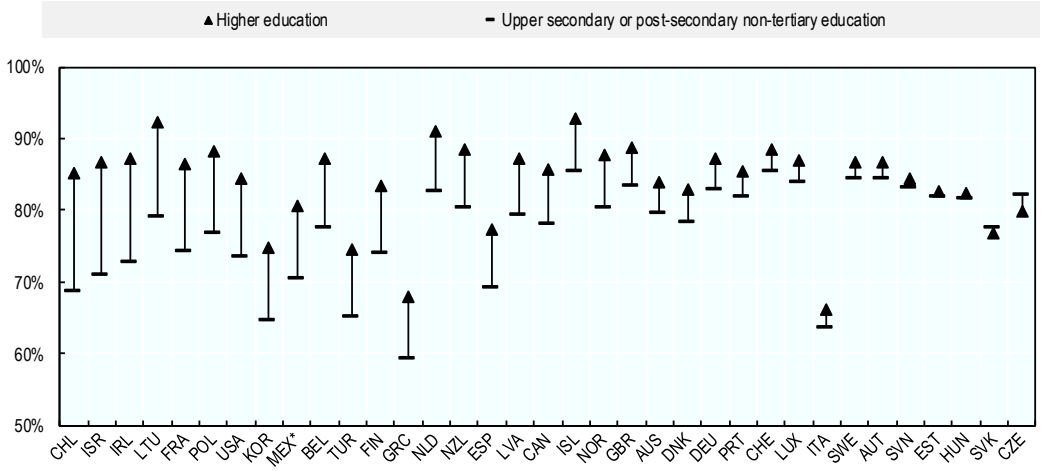
Employers claim that higher education graduates lack the skills they need, both in terms of discipline-specific knowledge and transversal skills (OECD, 2017[1]). A 2014 survey by the Research Centre for Development (*Centro de Investigación para el Desarrollo*, CIDAC) found that higher education graduates lacked skills related to written communication in Spanish and oral communication in Spanish and English. Furthermore, employers reported that graduates had limited ability in synthesising information and logical thinking, and did not show a sense of responsibility or proactivity (CIDAC, 2014[4]).

Labour market outcomes of higher education graduates

Comparison between higher education and upper secondary graduates

As in most OECD countries, a higher education degree in Mexico results in better labour market outcomes than lower levels of education. The employment rate of young workers with higher education was 10 percentage points higher than for those with upper secondary education (80.7% vs. 70.5%) (Figure 4.1). Compared internationally, employment rates for upper secondary and higher education attainment in Mexico were below the OECD averages of 77.1% and 84.1% respectively, but the employment rate of workers with below upper secondary educational attainment was 65.6%, above the OECD average of 59.3% (OECD, 2018[2]).

Figure 4.1. Employment rates of young graduates (25-34 year-olds) from higher education and upper secondary or post-secondary non-tertiary education, 2017



Note: Countries are ranked in descending order according to the difference between the employment rates of young graduates from higher education and upper secondary or post-secondary non-tertiary education.
Source: OECD (2018), Education at a Glance.

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In 2017, the inactivity rate of young workers with a higher education degree in Mexico was 14.5%, almost 12 percentage points lower than inactivity among young workers with upper secondary education (26.1%). Nevertheless, unemployment is higher for those with a higher education degree (5.7%) than for workers with only upper secondary education (4.4%) in the same age group (OECD, 2018[2]).

Young workers with a higher education degree generally enjoy better working conditions than those with only upper secondary education. In 2017, it was far more common for young workers with a higher education degree than those with only upper secondary education to have a written contract (81.1% vs. 62.9%) and to benefit from annual mandatory wage supplements (82.6% vs. 71%), paid holidays (78.2% vs. 62.7%) and access to healthcare (66% vs. 51.1%); it was less common for them to work outside normal working hours (7.9% vs. 15.1%) or in shifts (2.9% vs. 7.2%) (INEGI-ENOE, 2017[5]). Young higher education graduates use different channels to look for jobs than young workers with upper secondary education (Box 4.1).

Young workers with a higher education degree seem more exposed to the risk of losing their job due to a lack of experience than young workers with upper secondary education. In 2017, 12% of unemployed young higher education graduates had lost their previous job because they lacked experience, compared to only 5.4% of young workers with upper secondary education. For both groups, lack of experience as a reason for unemployment has increased since 2010 (INEGI-ENOE, 2017[5]).

Box 4.1. Job search practices of young higher education graduates

In 2017, 56.8% of young graduates contacted employers directly, and 10.4% contacted someone in their personal networks. Although the share of graduates searching through personal contacts has decreased since 2010, they remain the most effective ways young graduates obtain a job: 46.6% and 18.9% of all graduates, respectively, find their jobs through personal contacts. These channels are even more common for upper secondary education graduates, as around 55% search and find their jobs this way.

In 2017, 43.2% of young higher education graduates searched online, an increasing trend since 2010 (33.4%). However, only 11% of young higher education graduates reported to have found their current job advertised online. This channel is even less common for young upper secondary education graduates; only 3.5% find their jobs online.

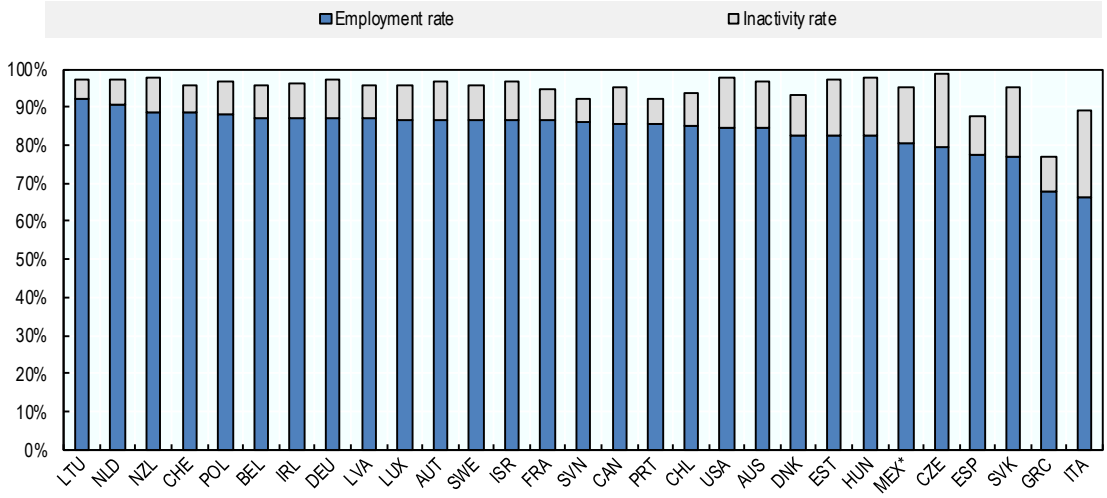
Source: Mexican Labour Force Survey, 1st semester 2017 (INEGI-ENOE, 2017[5]).

Average labour market outcomes of young higher education graduates

Labour market outcomes for young higher education graduates (25-34 year-olds) in Mexico are poorer than the OECD average (Figure 4.2). In 2017, the employment rate of young higher education graduates was 80.7%, below the OECD average of 84.1%. The inactivity rate of young higher education graduates was 14.5%, above the OECD average of 10.7%, suggesting that there are higher entry barriers to the labour market for young graduates than in other OECD countries (OECD, 2018[2]). Unemployment was 5.7%, which is similar to the OECD average of 5.8%, but as there are no unemployment benefits and very few active labour market policies in Mexico, registered unemployment is not common.

Employment outcomes for young higher education graduates have improved since 2010. The employment rate increased slightly from 79.9% to 80.7% in 2017, and inactivity decreased from 17.2% to 14.5% (OECD, 2018[2]). However, working conditions for young higher education graduates have worsened. The share of young higher education graduates who are employed informally (i.e. without social security or pension coverage) rose from 25.8% in 2010 to 26.2% in 2017. During the same period, overqualification, that is, employment in occupations that do not require a higher education degree increased from 44.3% to 45.7% (INEGI-ENOE, 2017[5]).[2] In 2017, one in three (33.2%) of the formally employed young graduates did not have access to healthcare, 21.8% had no paid annual leave, and 17.2% worked without a written contract (INEGI-ENOE, 2017[5]).

Figure 4.2. Employment and inactivity rates for young higher education graduates (25-34 year-olds), 2017



Note: Countries are ranked in descending order for the employment rates of young higher education graduates.
Source: OECD (2018) Education at a Glance.

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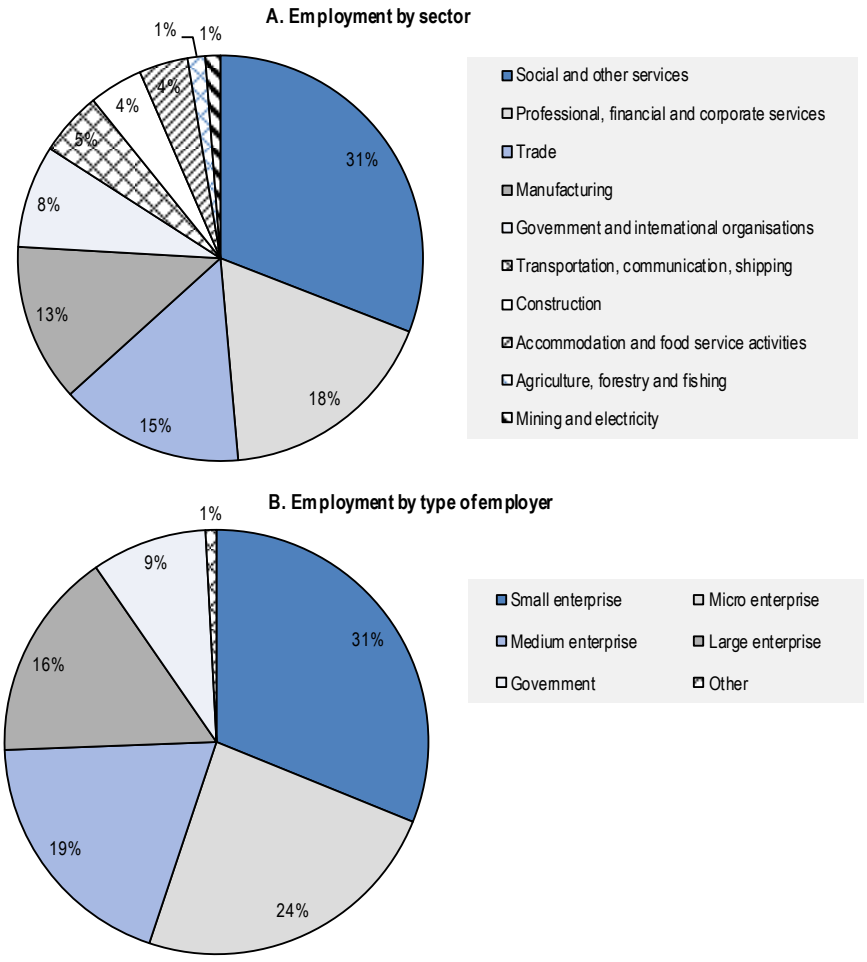
In 2017, the following four sectors employed more than 75% of young higher education graduates: social and other services (30.9%); professional, financial and corporate services (17.7%); trade (14.7%); and manufacturing (12.6%). The vast majority worked as paid employees (84.0%), 10.2% were self-employed, 3.6% were employers and 2.2% were working without pay (INEGI-ENOE, 2017[5]) (Figure 4.3, Panel A).

In 2017, more than half of young graduates worked for either small firms with fewer than 50 employees (31%) or micro firms with fewer than 10 employees (24%); about one in five worked in medium-sized enterprises (19%), and roughly one in six in large firms with more than 250 employees (16 %). The government employed the lowest share of young graduates (9%) (INEGI-ENOE, 2017[5]) (Figure 4.3, Panel B). Between 2013 and 2017, employment in government decreased by two percentage points, and employment in large firms by one percentage points; whilst employment increased in medium-sized companies (by three percentage points) and micro enterprises (by two percentage points) (INEGI-ENOE, 2017[5]). Close to 95% of all companies in Mexico have less than 50 employees.

The geographic mobility for jobs of young higher education graduates is low. In 2017, only 5.0% of young higher education graduates moved to another area for their job. The large share of informality and overqualification, along with the high reliance on personal contacts to find jobs, are likely obstacles to higher geographic mobility. Variations exist across the 32 states: Baja California Sur (north of the country) sees the highest share of young graduates who have moved to or within the state for their job (19.0%), while Tlaxcala (centre of Mexico) has the lowest share of mobility (0.2%) (INEGI-ENOE, 2017[5]).

Figure 4.3. Employment of young higher education graduates (25-34 year-olds) in Mexico by sector and type of employer, 2017



Source: Mexican Labour Force Survey, 1st semester 2017 (INEGI-ENOE, 2017[5]).

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Relative earnings for workers with a higher education degree in Mexico are the second highest among OECD countries, after Chile, and similar to other Latin American countries, such as Brazil, Colombia and Costa Rica. Young workers with a higher education degree can expect to earn 78% more than young workers with only upper secondary education (Table 4.1). For this age group, the wage premium has gradually increased from 64% in 2014 (OECD, 2018[2]). Earnings vary greatly by field of study. Engineers are among the highest earners, with monthly salaries ranging from around MXN 17 000 (Mexican peso) (approx. USD 900) in mining and extraction, to around MXN 14 000 (approx. USD 740) in construction and civil engineering. For a degree in education, salary options are among the lowest, ranging from MXN 10 000 (approx. USD 530) to MXN 8 100 (approx. USD 430) per month (STPS, 2018[6]).

Table 4.1. Employment outcomes of young higher education graduates (25-34 year-olds) in Mexico by levels of study and gender, 2017 or latest data

	Gender	Share of population (25-34 year-olds) (%)	Share of first time graduates (2016) (%)	Employment rate (%)	Unemployment rate (%)	Inactivity rate (%)	Informal employment (%)	Overqualification rate (%)	Relative earnings (upper secondary=100)
All higher education (ISCED 5-8)	Total	22.6	100	80.7	5.7	14.5	26.6	45.7	182
	Female	22.5	53.1	74.2	5.7	21.3	27.1	42.1	173
	Male	22.6	46.9	87.9	5.6	6.9	26.2	48.9	194
Short-cycle programme (ISCED 5)	Total	0.6	8.1	73.9	4.3	22.7	38.1	70.4	119
	Female	0.6	6.4	59.2	3.7	38.6	39.0	73.8	108
	Male	0.6	10.1	92.5	4.8	2.9	37.3	67.4	128
Bachelor's programme (ISCED 6)	Total	20.7	91.9	80.6	5.8	14.5	27.2	46.8	180
	Female	20.6	93.6	74.3	5.8	21.2	27.6	42.5	173
	Male	20.8	89.9	87.6	5.8	7.0	26.8	50.7	196
Master's, doctoral or equivalent (ISCED 7-8)	Total	1.2	(z)	85.2	4.4	10.9	14.3	19.4	310
	Female	1.3	(z)	81.4	5.2	14.2	14.6	24.4	(c)
	Male	1.2	(z)	89.9	3.4	7.0	14.0	23.6	343

Notes: (1) Informal employment is defined as employment without social security and pension coverage. Data on informal employment is collected by the Mexican Labour Force Survey.
(2) Data on overqualification is also reported from the Mexican Labour Force Survey, which uses job analysis to classify employment in occupations that do not require higher education qualifications as overqualification. According to this classification, occupations that do not require higher education qualifications are office workers, industrial workers, artisans and assistants, merchants, transport operators, workers in personal services, workers in protection and surveillance and agricultural workers.
(3) (c) Data below publication limit; (z) not applicable.
(4) Relative earnings are shown for full-time, full-year earners.
Source: OECD (2018), Education at a Glance, and Mexican Labour Force Survey, 1st semester 2017 for the data on inactivity rate, informal employment and overqualification.

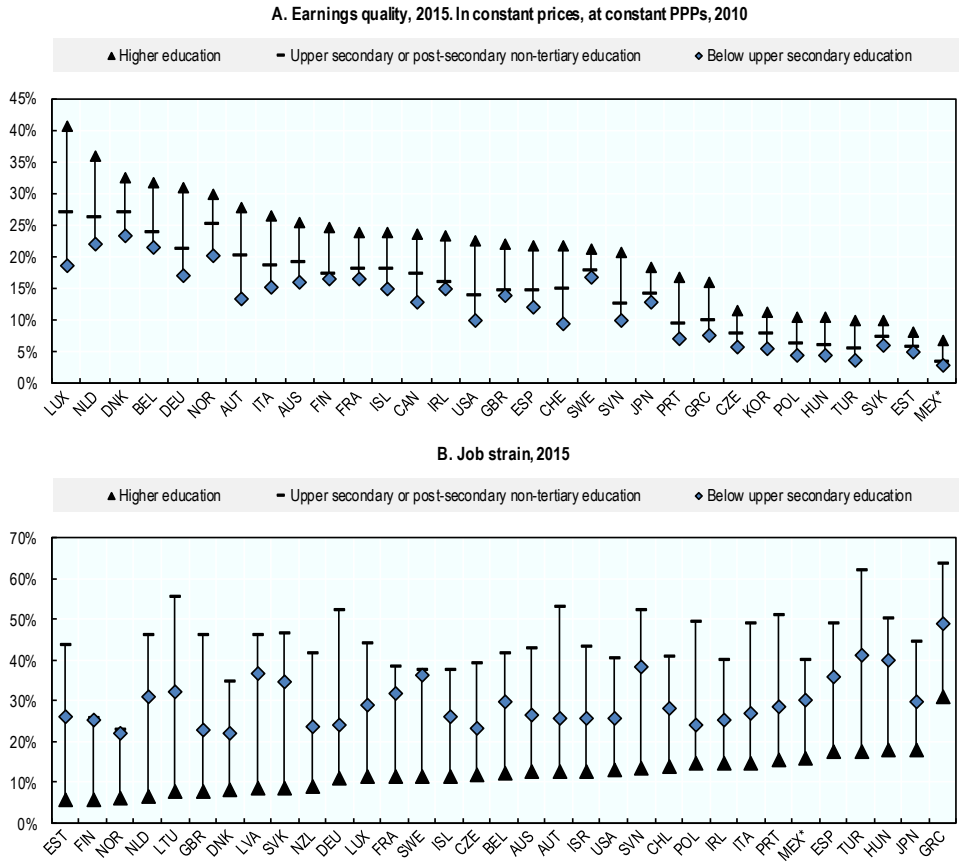
StatLink http://dx.doi.org/10.1787/888933880698

Earning quality in Mexico is the lowest among OECD countries (Figure 4.4, Panel A). Earning quality is measured as the extent to which earnings contribute to workers' well-being in terms of average earnings and their distribution across the workforce. Differences in earnings quality are primarily driven by gaps in average earnings, which are a key benchmark for assessing whether having a job ensures good living conditions. Mexico ranks last as earnings have the lowest contribution to worker's well-being. Average earnings are higher for adult workers (25-64 year-olds) with a higher education degree, but their share of the workforce is low (17.4%). Workers with below upper secondary education account for 62.3% and workers with upper secondary education for 20.2% of the workforce.

The quality of the working environment for highly skilled workers is low in Mexico (Figure 4.4, Panel B), and it ranks towards the bottom end of OECD countries in terms of job strain. Job strain occurs when high demands on workers, such as time pressure or unhealthy working conditions, are combined with low resources available to address them, such as a lack of work autonomy or training. In Mexico, similar to all other OECD countries, job strain is higher for medium skilled workers than for lower skilled workers, and higher education graduates have the lowest incidence of job strain. However, job

strain for highly skilled workers in Mexico is 16%, which is above the OECD average (12.4%), and lower only than Spain, Turkey, Hungary, Japan and Greece (OECD, 2018[2]).

Figure 4.4. Earnings quality and job strain for higher education graduates (25-64 year-olds), 2015



Note: In Panel A, the earnings quality indicator captures the extent to which earnings contribute to workers' well-being in terms of average earnings and their distribution across the workforce. In Panel B, the quality of the working environment indicator captures non-economic aspects of jobs, including the nature and content of the work performed, work-time arrangements and workplace relationships; these are measured as the incidence of job strain, which is characterised as high job demands with low job resources. In both panels, countries are ranked for adult workers with higher education degrees.
Source: OECD Job Quality Database (OECD, 2018[7]).

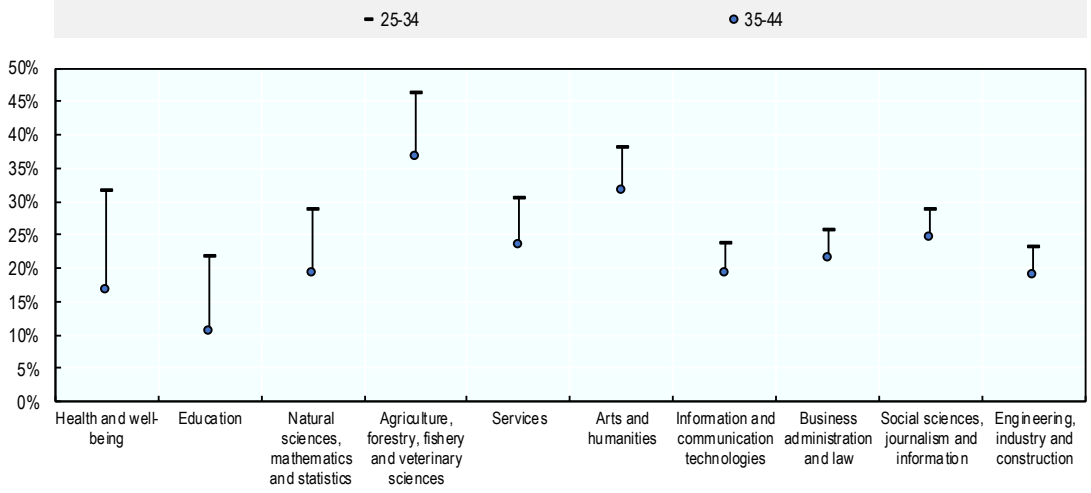
StatLink http://dx.doi.org/10.1787/888933880736

Labour market outcomes of younger versus older higher education graduates

Similar to the OECD average, young graduates (25-34 year-olds) in Mexico do not immediately obtain the same labour market outcomes from a higher education degree as older graduates (35-44 year-olds). Young graduates in Mexico have, at 14.5%, a higher inactivity rate than older graduates (12.0%), a higher unemployment rate (5.7% vs. 3.0%), and a lower employment rate (80.7% vs. 85.4%) than older graduates (OECD, 2018[2]).

When beginning their professional careers, young graduates are more likely to work informally. This is particularly the case for graduates from health and well-being programmes, for whom informal employment among young graduates over the period 2013-2017 was 15 percentage points higher than for the older cohort followed by education (21.8% for young graduates vs 10.4% for the older cohort) and natural sciences, mathematics and statistics (28.8% vs 19.2%) (INEGI-ENOE, 2017[5]) (Figure 4.5).

Figure 4.5. Informal employment rates for young (25-34 year-olds) and older (35-44 year-olds) higher education graduates in Mexico by field of study, averages 2013 - 2017



Note: Simple averages computed over the period 2013-2017. Ranked in descending order by the difference between the informal employment rates of young and older higher education graduates.
Source: Mexican Labour Force Survey, 1st semester 2013 – 1st semester 2017 (INEGI-ENOE, 2017[5]).

StatLink http://dx.doi.org/10.1787/888933880755

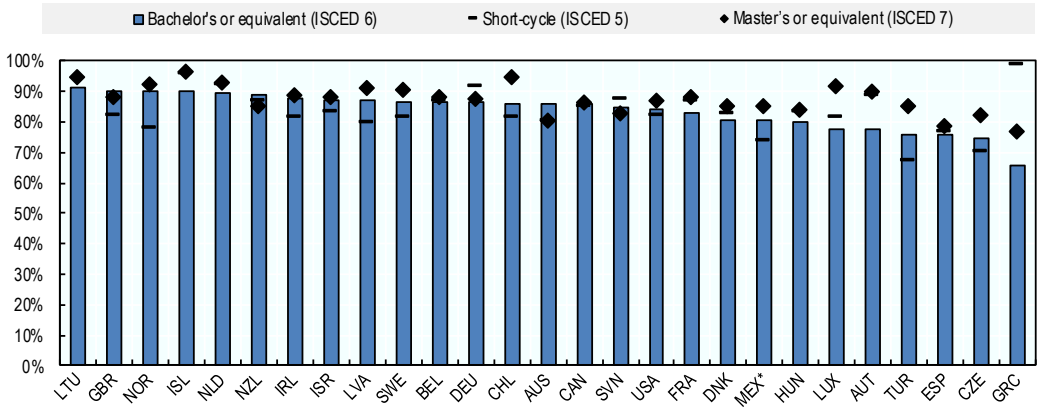
Across all levels of higher education, the prevalence of informal employment in 2017 was higher for the younger (26.5%) than for the older (19.4%) cohort of workers with a higher education degree (INEGI-ENOE, 2017[5]). The largest difference is for short-cycle degree holders: 38.1% of the younger cohort was employed informally compared to 27.9% of the older cohort. For workers with a bachelor's degree, informal employment was 27.2% for the younger cohort and 21.6% for the older cohort. The smallest gap exists for workers with a postgraduate degree (14.3% vs 8.8%) (INEGI-ENOE, 2017[5]).

Employers more often assign jobs that require higher education qualifications to older higher education graduates than to the younger cohort. This was most evident for medium-sized enterprises and small enterprises. In medium-sized firms, 47.4% of young higher education graduates worked in 2017 in jobs for which they were overqualified, compared to 39.4% of older higher education graduates. In small enterprises, which overall appear to offer a better skills match for higher education graduates, the shares of overqualified employees were 32.1% for younger and 24.3% for older cohorts. The smallest difference is for employment in government (INEGI-ENOE, 2017[5]).

Labour market outcomes for levels of study

Similar to many OECD countries, the labour market outcomes of higher education graduates in Mexico improve with increasing levels of higher education attainment (Figure 4.6) (Table 4.1, above). In Mexico, graduates from short-cycle programmes (ISCED 5) have, at 73.9%, the lowest employment rate among all higher education graduates, below the OECD average (83.3%). Employment rates for bachelor's graduates (ISCED 6) (80.6%) and for master's graduates (ISCED 7) (85.2%) were similar to the OECD average of 82.3% and 86.7%, respectively (OECD, 2018[2]).

Figure 4.6. Employment rates of young higher education graduates (25-34 year-olds) from short-cycle, bachelor's and master's programmes, 2017



Note: Countries are ranked in descending order for the employment rate of bachelor's or equivalent programmes (ISCED 6).
Source: OECD (2018), Education at a Glance.

StatLink http://dx.doi.org/10.1787/888933880774

Among young workers with a higher education degree in Mexico, those with a short-cycle programme degree have the highest inactivity rate. In 2017, the inactivity rate for short-cycle degree holders was 24.4%, higher than the inactivity rate for bachelor's degree holders (16.7%) and for postgraduate degree holders (ISCED 7-8) (14.7%). For all three levels of higher education attainment, inactivity has increased over time, with short-cycle programmes experiencing the highest increase from 20.8% in 2013 to 24.4% in 2017 (INEGI-ENOE, 2017[5]).

Overqualification is a key issue for young higher education graduates in Mexico. In 2017, 46% worked in occupations that, according to the Mexican statistics agency, do not require a higher education degree, such as office workers, industrial workers, craftsmen and assistants, merchants, transport operators, workers in personal services, workers in protection and surveillance, and agricultural workers. Employment decreased by 3% over the period 2010-2017 in occupations that require a higher education qualification (e.g. professionals, technicians, art workers, public officials, managers and education workers). Short-cycle degree holders had the highest incidence of overqualification at 70.4%, in contrast to 46.8% of bachelor's and 19.4% of postgraduate degree holders (INEGI-ENOE, 2017[5]).

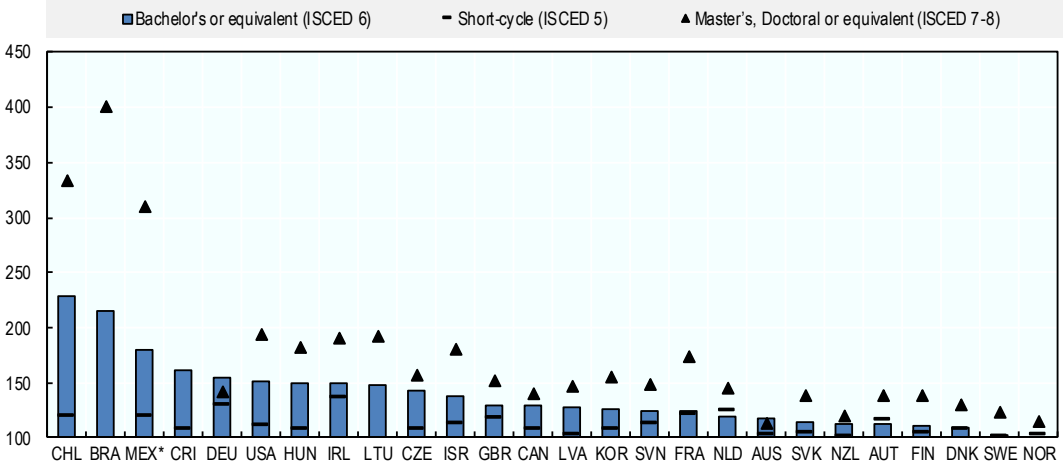
Young workers with a short-cycle degree also have also a higher prevalence of informal employment. In 2017, 38.1% of short-cycle degree holders were employed without social

security or pension coverage, compared to 27.2% of young workers with a bachelor's degree and 14.3% of postgraduate level graduates (INEGI-ENOE, 2017[5]).

In Mexico, the wage premium for young higher education graduates (Figure 4.7) also increases with advanced levels of higher education. Young workers with a short-cycle degree can expect 19% more pay than upper secondary education graduates. Bachelor's degree holders can expect a salary increase of 80% and postgraduate degree holders can expect to earn over three times more than a young worker with upper secondary education (210% increase) (OECD, 2018[2]).

Figure 4.7. Relative earnings of young higher education graduates (25-34 year-olds) by educational attainment, 2016

Upper secondary level education (ISCED 3) or (ISCED 3+4) = 100. Full-time, full-year earners.



Note: Countries are ranked in descending order for the employment rate of bachelor's or equivalent programmes (ISCED 6).
Source: OECD (2018), Education at a Glance.

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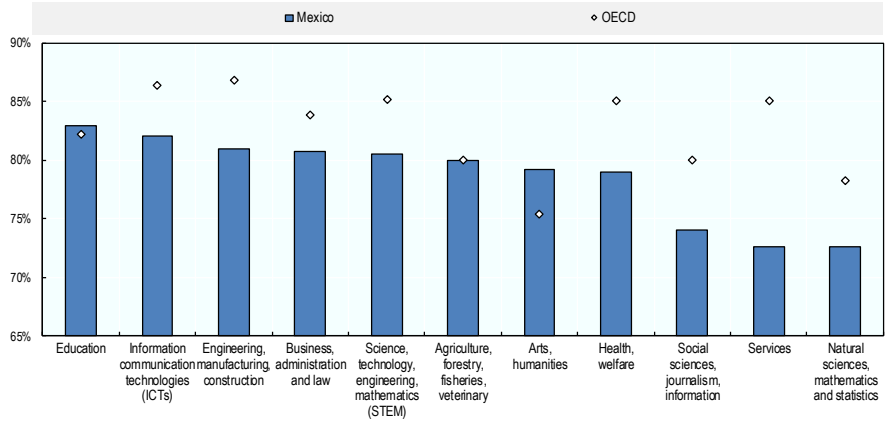
Labour market outcomes by field of study

The two largest fields of study in Mexico are law and business administration, which has a share of 35.1% of young graduates, well above the OECD average (22.8%), and engineering, manufacturing and construction (16.6%), which is slightly above the OECD average (15.8%) (Table 4.2). Programmes in education are also relatively common in Mexico, as are health and welfare, and information and communication technologies (ICT). Less popular fields of study are arts and humanities, and natural sciences, mathematics and statistics. The field of study with the lowest share of graduates is services, with only 0.7% of graduates (OECD, 2018[2]).

Labour market outcomes vary by field of study in Mexico and are, excluding education, arts and humanities, less favourable than the OECD average (Figure 4.8) (Table 4.2). In 2017, fields of study with employment rates above the national average were education (82.9%), ICT (82.0%), and engineering, manufacturing and construction (80.9%). Employment rates were lowest for services (72.6%) and natural sciences, mathematics and statistics (72.6%) (OECD, 2018[2]).

Figure 4.8. Employment rates of young higher education graduates (25-34 year-olds) by field of study in Mexico compared with the OECD average, 2016



Note: Ranked in descending order by the employment rate for young higher education graduates (25-34 year-olds) in Mexico per field of study. The employment rate for agriculture, forestry, fisheries and veterinary is from 2015.
Source: OECD (2018) Education at a Glance.

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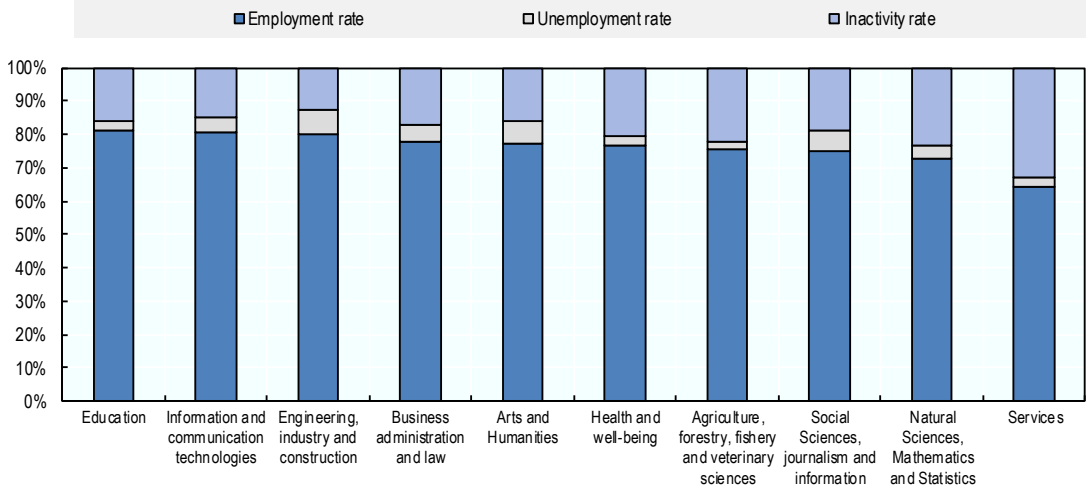
Between 2013 and 2017, employment increased from 66.4% to 73.0% for graduates from programmes in natural sciences, mathematics and statistics; from 73.4% to 77.6% for arts and humanities; and from 72.3% to 74.8% for social sciences and journalism. ICT showed stable employment, but employment for all other fields of study decreased over the same period (INEGI-ENOE, 2017[5]).

Figure 4.9. Labour market outcomes of young higher education graduates (25-34 year-olds) in Mexico by field of study, 2017



Note: Ranked in descending order by the employment rate per field of study.
Source: Mexican Labour Force Survey, 1st semester 2017, (INEGI-ENOE, 2017[5]).

StatLink http://dx.doi.org/10.1787/888933880831

In 2017, inactivity rates were particularly high in services (32.8%) and natural sciences, mathematics and statistics (23.2%), while graduates from engineering programmes had the lowest incidence of inactivity (12.4%). Unemployment rates also varied by field of study: graduates from programmes in engineering, industry and construction had the highest incidence of unemployment (7.6%), and graduates from agriculture, forestry, fishery and veterinary sciences the lowest (2.1%) (INEGI-ENOE, 2017[5]) (Table 4.2) (Figure 4.9).

In 2017, informal employment was highest among graduates from programmes in agriculture, forestry, fisheries and veterinary (45.0%), and arts and humanities (41.9%); and lowest for graduates from programmes in engineering, manufacturing and construction (22.0%), education (23.4%) and ICT (23.5%) (INEGI-ENOE, 2017[5]).

Table 4.2. Employment outcomes of young higher education graduates (25-34 year-olds) in Mexico by field of study, 2017 or latest data

Field of study	Share of tertiary educated population (24-65 year-olds) (%)	Share of young graduates ISCED 5-8 (%), 2016	Employment rate (%)	Inactivity rate (%)	Informal employment (%)	Overqualification rate (%)
Education	12	14	82.9	16.0	23.4	23.6
Arts and humanities	5	4	79.2	16.1	41.9	35.4
Social sciences, journalism and information	10	9	74.0	18.7	28.9	48.7
Business, administration and law	35	35	80.7	16.8	25.0	56.1
Natural sciences, mathematics and statistics	2	3	72.6	23.0	35.1	39.8
Information communication technologies	8	2	82.0	15.1	23.5	44.6
Engineering, manufacturing & construction	17	21	80.9	12.4	22.0	53.5
Agriculture, forestry, fisheries and veterinary	2	2	80.0	22.3	45.0	50.1
Health and welfare	9	10	79.0	20.4	33.6	19.5
Services	1	1	72.6	32.8	26.0	66.4

Note: Informal employment is defined as employment without social security and pension coverage. Data on informal employment is collected by the Mexican Labour Force Survey. Data on overqualification is also reported from the Mexican Labour Force Survey which uses job analysis to classifies classify employment in occupations that do not require higher education qualifications as overqualification. According to this classification, occupations that do not require higher education qualifications are office workers, industrial workers, artisans and assistants, merchants, transport operators, workers in personal services, workers in protection and surveillance and agricultural workers.
Source: OECD (2018) Education at a Glance, and for the data on inactivity rate, informal employment and overqualification Mexican Labour Force Survey, 1st semester 2017 (INEGI-ENOE, 2017[5]).

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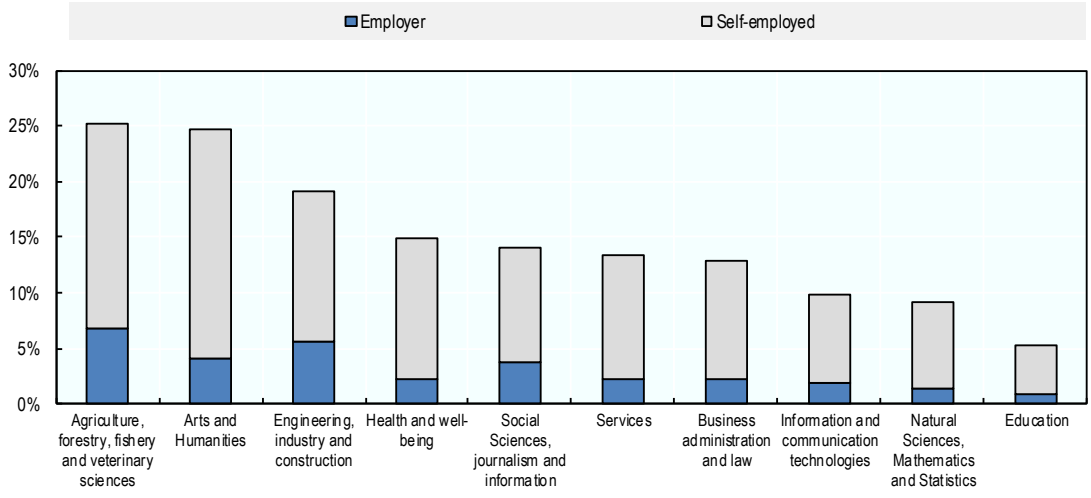
Overqualification varies across fields of study (Table 4.2). The lowest incidence of overqualification occurs for graduates from health and well-being (19.5%), who account for less than 10% of young higher education graduates. In the two largest fields of study, overqualification is an issue for one out of two graduates. The highest share of overqualification occurs for graduates from programmes in business, administration and law, where 56.1% worked in occupations that did not require a higher education qualification. The outcome is similar for graduates from engineering, manufacturing and construction, 53.5% of whom are over qualified (INEGI-ENOE, 2017[5]).

Young higher education graduates are becoming more entrepreneurial. Between 2010 and 2017, the proportion of young graduates who were either self-employed or running a business that employed others increased from 12.7% to 13.8%. Most of this increase was due to a rise in self-employment from 9% in 2010 to 10.2% in 2017, whereas the share of people who operated a business that employed others fluctuated around 3% (INEGI-ENOE, 2017[5]). The fields of study with the highest rates of self-employment were arts and humanities (20.6%), agriculture (18.6%) and engineering (13.5%). Similarly, running a business that employed others was more common for graduates from programmes in agriculture (6.7%), arts and humanities (4.1%), and engineering (5.6%) (INEGI-ENOE, 2017[5]) (Figure 4.10).

Figure 4.10. Entrepreneurship rates of young higher education graduates (25-34 year-olds) in Mexico by field of study, averages 2013-2017



Note: Simple averages computed over the period 2013-2017. Ranked in descending order by the employer and self-employment rates per field of study.
Source: Mexican Labour Force Survey, 1st semester 2013-1st semester 2017, (INEGI-ENOE, 2017[5]).

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Labour market outcomes by gender

Women represent 53.1% of first-time graduates from bachelor's programmes in Mexico, a share that has been stable since 2005 (OECD, 2018[2]). Although still below the OECD average (57.3%), the fact that women represent over half of Mexico's first-time graduates confirms the important progress made towards ensuring gender equality in access to education. Women outnumber men at all levels of higher education, except for short-

cycle programmes (58.4% male vs. 41.6% female), which are mainly offered in technical fields (OECD, 2018[2]).

Women obtain major benefits from completing higher education. In 2017, the employment rate for young women (25-34 year-olds) with a higher education degree was 72.2%, well above those who had completed only upper secondary education (54.3%). In comparison, the average employment rate across OECD countries of young women with a higher education degree was 80.6%, and 68.3% for young women with upper secondary education. Mexican young women who have completed higher education can expect a wage premium of 73% compared to those who have completed only upper secondary education, well above the OECD average wage premium of 41% (OECD, 2018[2]).

However, large gender gaps in workforce participation still exist (OECD, 2017[8]). Following the completion of a higher education degree, young men (25-34 year-olds) obtain higher employment rates, higher relative earnings and lower inactivity rates than women in the same age group (Figure 4.11) (Table 4.1, above). However, for young women, inactivity decreases with increasing levels of higher educational attainment, whereas it increases for young men. In 2017, inactivity for young women who had completed a short-cycle degree (40.6%) was far higher than for those with a bachelor's (23.9%) or postgraduate (20.2%) degree. By contrast, young men with a short-cycle degree had a lower inactivity rate (1.7%) than those with a bachelor's (8.9%) or postgraduate degree (9.6%) (INEGI-ENOE, 2017[5]).

Figure 4.11. Labour market outcomes of young higher education graduates (25-34 year-olds) in Mexico by gender, 2017

Source: OECD calculations with data from the Mexican labour force survey, first trimester 2017 (INEGI-ENOE, 2017[5]).

StatLink http://dx.doi.org/10.1787/888933880888

Overqualification is more common for young men (48.9%) than for young women (42.1%) (INEGI-ENOE, 2017[5]). However, for advanced levels of higher education attainment, the share of overqualification decreases to varying extents for men and women. Overqualification for short-cycle degree holders is seen more with women (73.8%) than men (67.94%). Among bachelor's programme graduates, overqualification was more common for men (50.7%) than for women (42.5%), but at master's and

doctoral level, more women are overqualified for their job than men (24.4% vs 15.2%) (INEGI-ENOE, 2017[5]).

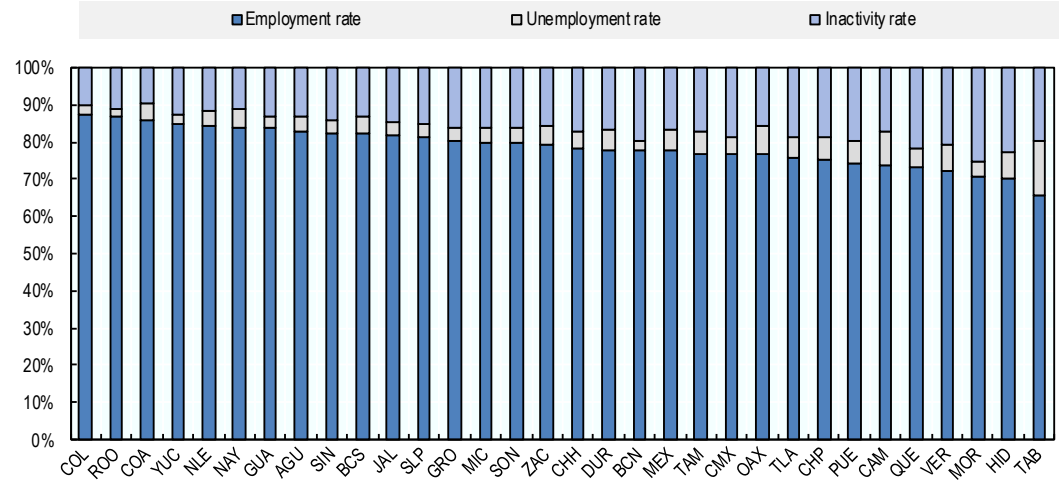
Gender differences also occur regarding the type of employer, particularly for small enterprises and large firms. In 2017, small enterprises employed more young female higher education graduates than their male peers (36.0% versus 26.7%), whereas large firms employed more young men than women with a higher education degree (17.8% vs 14.0%) (INEGI-ENOE, 2017[5]).

In 2017, paid employment was more common for young female graduates (86.8%) than for young male graduates (81.6%). However, work without payment was slightly more common for women (2.5%) than it was for men (2.0%). More men than women were self-employed (11.3% vs. 8.9%) or employed others (5.1% vs. 1.8%) (INEGI-ENOE, 2017[5]).

Labour market outcomes by state

Labour market outcomes for young higher education graduates vary greatly across the 32 states in Mexico, with particular discrepancies in inactivity rates (Figure 4.12). In 2017, graduates with the highest labour market inactivity were in three central states: Morelos (25.4%), Hidalgo (22.7%) and Queretaro (21.7%). Graduates with the lowest labour market inactivity were in Quintana Roo (10.9%), Colima (9.6%) and Coahuila (9.6%) (INEGI-ENOE, 2017[5]).

Figure 4.12. Labour market outcomes of young higher education graduates (25-34 year-olds) in Mexico by state, 2017



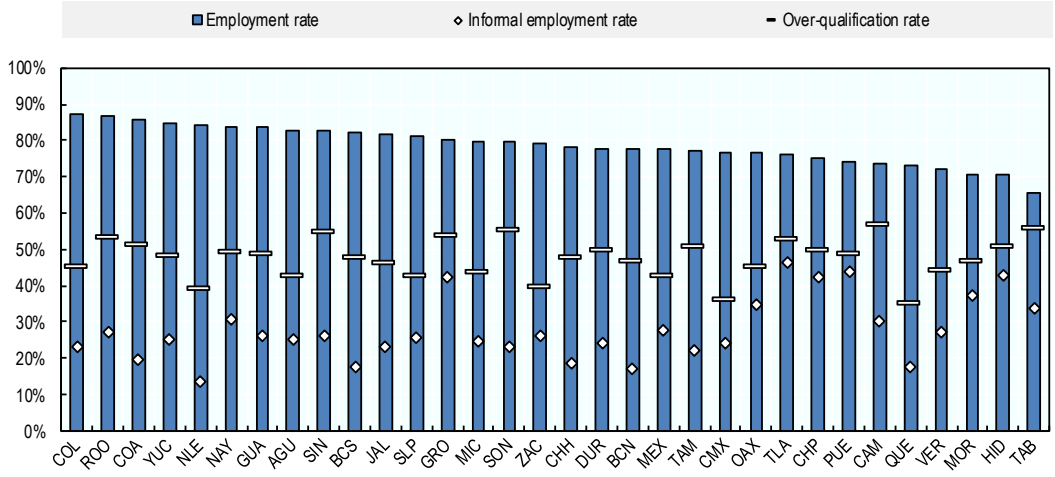
Note: States are ranked in descending order by the employment rate of young higher education graduates (25-34 year-olds).
Source: Mexican Labour Force Survey, 1st semester 2017, (INEGI-ENOE, 2017[5]).

StatLink http://dx.doi.org/10.1787/888933880907

In 2017, the employment rates of young graduates were above the national average of 80.7% in 13 out of the 32 states. Colima, in the west of the country, had the highest employment rate at 87.2%. Employment rates were lowest in the southern state of Tabasco (65.7%) and the central states of Hidalgo (70.4%), Morelos (70.7%) and Veracruz (72.2%).

Variations exist across the states in informal employment and overqualification rates (Figure 4.13) (INEGI-ENOE, 2017[5]). In 2017, graduates in northern states such as Baja California Norte, Baja California Sur, Coahuila and Nuevo León, have higher employment rates and a lower incidence of informal employment than their peers in other parts of the country. Graduates in the central states of Tlaxcala, Puebla Hidalgo and Morelos, and the southern states of Chiapas, Guerrero, Tabasco and Oaxaca, have the lowest levels of formal and the highest levels of informal employment. In most states, more than half of employed young higher education graduates were working in occupations for which no higher education qualification was needed. Overqualification was highest in the southern states of Campeche (57.0%) and Tabasco (56.1%), and lowest in the states of Queretaro (35.4%), Mexico City (36.2%), Nuevo León (39.5%) and Zacatecas (39.6%).

Figure 4.13. Informal employment and overqualification rates of young higher education graduates (25-34 year-olds) in Mexico by state, 2017



Note States are ranked in descending order by the employment rate of young higher education graduates (25-34 year-olds). *Informal employment* is defined as employment without social security and pension coverage. The Mexican Labour Force Survey uses job analysis to classify *overqualification* as employment in occupations that do not require higher education qualifications. According to this classification, occupations that do not require higher education qualifications are office workers, industrial workers, artisans and assistants, merchants, transport operators, workers in personal services, workers in protection and surveillance and agricultural workers. Informal and formal employment are presented as percentages of the total employment by state.
Source: Mexican Labour Force Survey, 1st trimester 2017 (INEGI-ENOE, 2017[5]).

StatLink http://dx.doi.org/10.1787/888933880926

Despite the large differences in labour market outcomes by state, the geographic mobility of higher education graduates is low. In 2017, 5% of young higher education graduates had to move either within their state or into another state for their job. This mobility was higher to or within states with high industrial dynamism, such as Baja California Sur (19.0%). Some fields of study showed higher mobility than others, particularly education (6.3%), health (5.4%), and arts and humanities (4.7%) (INEGI-ENOE, 2017[5]).

Alignment between skills and labour market needs

While a large young labour force is a great strength of Mexico's labour market, the country still lacks specialised talent, despite recent improvements. Less than a quarter of the young population (25-34 year-olds) have obtained higher education credentials, of which 17% graduated from engineering and 8% from ICT programmes. The OECD Skills for Jobs database identifies shortages in science and engineering professionals and ICT associate professionals, that is, the demand for these workers exceeds the supply. The low interest in enrolling in these study programmes is an obstacle to the country's specialisation in high-tech industries (OECD, 2017[9]). On the other hand, there are surpluses of managers, business and administrative professionals, and most associate professionals (OECD, 2017[9]), but, as noted above, just over 35% of young graduates are from programmes in law and business administration.

Inefficient use of skills and low capacity of the labour market to absorb graduates

Finding a good job can be more difficult for Mexican higher education graduates than for their peers in other OECD countries. Young workers with higher education degrees in Mexico face two major problems that indicate an inefficient use of skills in the labour market: informality and over-qualification. Although the prevalence of informal employment is lower for young higher education graduates (26.7%) than for workers in the same age group who completed only upper secondary education (45.8%), more than one quarter of the most qualified workers in the country have no social security or pension coverage. Informal employment is particularly high in micro enterprises (59.1%) and in social and other services (34.1%), which is the sector that employs the highest share of young graduates (INEGI-ENOE, 2017[5]).

The large size of the informal economy also has negative effects on progression rates within higher education, as the ease of finding a job with a salary that covers living costs provides an instant alternative for students who face difficulties in academic achievement (OECD, 2017[1]), and also attracts students who struggle financially. The current higher education system lacks the flexibility needed to allow students to exit and return to higher education at a later stage in life to either complete or continue studies at an advanced level. This limits the development of a skilled labour force.

At the same time, almost half (45.7%) of young higher education graduates are overqualified for their jobs (INEGI-ENOE, 2017[5]). The increasing number of graduates who have taken jobs below their qualifications has likely displaced workers with lower academic qualifications (i.e. workers with bachelor's degrees took jobs for which only short-cycle degrees were required, displacing short-cycle graduates to jobs for which no level of higher education was required).

On average, 14.5% of young higher education graduates do not participate in the labour market. This is above the OECD average (10.7%) and places Mexico in a disadvantaged position, as the skills of these graduates are not used. Although women represent 53.1% of first-time graduates, many women with a higher education degree do not participate in the labour market; their inactivity rate is three times higher than that of male graduates (21.3% vs 6.9%) (OECD, 2018[2]). Women are also less likely than their male peers to find employment. The high inactivity and low employment of women can be partially attributed to cultural reasons, but also to business practices that discriminate against women, especially those with young children. In 2016, only 5.2% of Mexican women had a seat on the boards of the largest publicly listed companies (20% OECD average) (OECD, 2017[10]). This shows a great deal of room for improvement. Highly skilled

women who are not participating to their full capacity in the labour market present a particularly large untapped potential to boost Mexico's economy.

Despite recent reforms, key structural barriers of the economy remain, hindering a more efficient use of skills. The focus on traditional sectors and small and medium-sized enterprises (SMEs), along with low productivity, research and development (R&D) and value-added, might cause more young graduates to be unemployed, employed in the informal economy or overqualified for their jobs. Signs indicate that the Mexican labour market demonstrates an inability to absorb enough graduates into qualified positions. Unemployed graduates have reported that labour market saturation, a lack of vacancies in their field, fierce competition and their own lack of experience are the main reasons why they thought they were unemployed (UVM, 2018[11]). The share of graduates who are self-employed has increased (INEGI-ENOE, 2017[5]), and more claim to have become entrepreneurs because of their inability to find a job (UVM, 2018[11]).

Misalignment of skills supply and demand

Over half (51.7%) of graduates in Mexico come from the two most common fields of study: business administration and law, and engineering and construction (OECD, 2018[2]). Their employment rates are above average and employers state that these graduates are hired for a wide range of occupations. However, high rates of over-qualification suggest that there are not enough graduate-level jobs for graduates in these fields. Graduates in the fields of social sciences and natural sciences face some of the worst labour market outcomes, including the lowest employment rates, suggesting a lack of jobs for these graduates. Graduates from agricultural study programmes have a slightly below average employment rate, but their high informality and over-qualification rates suggest that they face a lack of adequate jobs with favourable working conditions. The main challenge for graduates from programmes in arts and humanities appears to be finding formal jobs. On the other hand, graduates from ICT and education have the most positive labour market outcomes with the highest employment, one of the lowest informality rates and below average over-qualification.

Most higher education graduates in Mexico have bachelor's degrees (91.9%) (OECD, 2018[2]), but employers advised the OECD review team that they need more graduates at the postgraduate level (specifically specialists in certain sectors, e.g. engineers in strategic sectors), as well as more graduates from short-cycle tertiary education programmes. Seven of the top ten positions most difficult to fill by employers in Mexico are offered as short-cycle tertiary education programmes (Manpower Group, 2017[12]). However, these programmes are not attractive for students or for higher education institutions to offer, as they are considered less prestigious and result in poorer labour market outcomes than higher level qualifications. Graduates from short-cycle tertiary education programmes are likely to be displaced to medium- and low-skilled jobs by graduates from bachelor's programmes, who themselves take jobs below their qualification levels. In 2017, 70.4% of short-cycle tertiary education graduates worked in occupations for which no higher education qualification is needed (INEGI-ENOE, 2017[5]).

Throughout the 32 Mexican states, there are large differences in inactivity, employment, informality and overqualification rates, as well as working conditions (including salaries) of higher education graduates. This presents a fragmented scenario of 32 diverse regional labour markets within the national labour market. Overall, graduates in northern states (e.g. Nuevo León, Baja California and Coahuila) present the best labour market outcomes (INEGI-ENOE, 2017[5]). These are generally the states with stronger and more dynamic

economies and those more specialised in high-tech sectors and offering more occupations for the highly skilled. The higher education offer at the state level, including all institutions and programmes, is not necessarily well aligned with the regional labour market needs. This results in an under or over-supply of graduates from certain fields of study. For example, in the state of Veracruz, 2 500 engineers graduate annually, but there is no developed manufacturing industry in the state. This, along with the low geographic mobility of graduates in this state, results in graduates who remain in their state working in unrelated fields or in lower level occupations.

Graduate mobility to obtain a job, or move to a better job, is generally low (5%), only around half of which is interstate mobility (INEGI-ENOE, 2017[5]). Employers mentioned during the OECD review the reluctance of graduates to move to other cities as an obstacle to finding suitable candidates. This presents a barrier to aligning skills and labour market needs nationally and between urban and rural areas, as most higher education graduates are located in cities (Hays and Oxford Economics, 2018[13]). However, mobility within or to those states with dynamic economies can be twice or three times the average (e.g. Baja California Sur 19%).

Wage premium and unmet expectations

Overall, young employed higher education graduates benefit from better conditions, including better salaries, than those with only upper secondary education. The wage premium is one of the highest across the OECD and has remained stable over the last five years (OECD, 2018[2]). From a sectoral point of view, wages in some industries have been growing much faster than in others relative to the past, indicating sector-specific skills shortages (Hays and Oxford Economics, 2018[13]).

Despite this premium, around half of working graduates admit that they expected their salary to be higher (UVM, 2018[11]), and those who graduated from a private university considered their salary insufficient to pay back their student loan or to see a worthwhile return on their investment in higher education. Graduates who work in occupations for which no higher education qualification is required, or who are employed informally, are unlikely to benefit from the wage premium of a higher education degree. Over half of young graduates find jobs through personal contacts (INEGI-ENOE, 2017[5]); these graduates are more likely to have lower salaries and work in an unrelated field than graduates who obtained jobs through internships or career services (UVM, 2018[11]). Graduates explained to the OECD review team that sometimes they have rejected job offers that were not up to their expectations. However, in a system without any public unemployment benefits, graduates can only do this if they have the financial support of their family or are able to support themselves while waiting for a better job opportunity.

For employers, the high salary expectations of applicants are the second biggest problem in filling vacancies (Manpower Group, 2017[12]). Employers commented to the OECD review team that this was particularly the case when hiring higher education graduates, whose unrealistic salary expectations resulted in dissatisfaction for both parties. Unmet salary expectations also affect the rest of the Mexican workforce: in 2016, 90% of the Mexican workforce considered changing jobs, and over half (53%) were motivated by the chance of seeking a better salary elsewhere (Hays, 2016[14]).

The high wage premium of higher education graduates represents a considerable investment for employers, particularly SMEs. Further barriers to the employment of graduates include the focus on the short-term due to the uncertain economic environment,

and the inability of many employers to see the value that graduates could bring to their companies.

Lack of discipline-specific knowledge and transversal skills

Overall, 46% of Mexican employers stated that there is a lack of talent in their sector, and most (83%) consider the education and training of applicants unsuited to their sector (Hays, 2018[15]). This view was confirmed in meetings with the OECD review team, which also brought in the views of graduates and academic staff. Employers claimed that some graduates have insufficient discipline-specific knowledge, which is also indicated by the EGEL exams and recognised by graduates themselves. This problem is particularly important in certain professions, such as doctors, nurses, architects and engineers, raising serious questions about the quality of higher education programmes. Employers also identified the disconnection between the knowledge and skills developed in higher education programmes and their labour needs as an important issue, and suggested that they should be more involved in curriculum design and the delivery of study programmes. Academic staff recognised that curricula is not changed often enough to adapt to the needs of a rapidly changing labour market.

A recent report of the main Mexican association of universities, ANUIES, states that graduates particularly lack transversal skills (ANUIES, 2017[16]). The lack of a range of transversal skills, as identified in Box 1 of the Reader's Guide to this report, limits the capacity of graduates to perform in a job successfully, as well as their ability to adapt to other jobs. The OECD Skills for Jobs database identifies that, unlike many OECD countries, Mexico has a surplus in various cognitive skills, such as quantitative abilities, complex problem solving and system skills (OECD, 2017[9]). This atypical skills surplus suggest that there is the lack of demand for these skills in the Mexican labour market and that the importance of these skills is not recognised by employers. This is supported by the high level of over-qualification in Mexico, which is a signal that the labour market is not able to absorb all graduates in appropriate jobs.

Employers also highlighted to the OECD review team that graduates' language skills are unsatisfactory, particularly those from public higher education institutions. However, languages, specifically English, are not integrated into the curriculum of most study programmes. Employed graduates raised concerns about the quality of their studies, stating that they did not develop the skills they needed in their current jobs.

Graduates who lack discipline-specific knowledge and transversal skills require on the job training to enhance their performance. However, Mexican companies do not have a culture of training to up-skill or re-skill their employees, and incentives for companies to offer employee training are limited. This situation further hinders the potential for graduates to contribute to productivity growth.

Meeting future labour market needs

The number of higher education graduates in Mexico is expected to increase, and recruitment for strategic and specialist positions is expected to get even more difficult by 2020 (World Economic Forum, 2016[17]). Only the joint efforts from stakeholders in higher education, the labour market and the economy can enhance the current alignment of skills and knowledge, and thus the contribution of higher education graduates to productivity and economic growth.

If the current situation continues, the prospects for higher education graduates and the Mexican economy are not favourable. If the Mexican economy does not increase R&D investment, provide incentives and remove barriers for business growth, and focus on technologically advanced industries and more value-added activities, it will continue to be a prime supplier of intermediate goods and assembler for the manufacturing sector in the United States, exporting low value-added products (OECD, 2018[18]). Under this scenario, the Mexican labour market will be unable to absorb the increasing number of higher education graduates, who will potentially face more inactivity, unemployment, informality, over-qualification and lower salaries. Higher education will not sufficiently help graduates' socio-economic mobility, and higher education investment (public or private) will not be profitable for individuals or for society as a whole.

At the same time, if higher education cannot guarantee a minimum level of quality across all institutions, graduates will not be able to perform well in graduate-level occupations. Unless graduates exit higher education with adequate transversal skills, it will be difficult for them to excel in a changing labour market. The development of skills for entrepreneurship through higher education is important, as these skills will help students to successfully create companies and jobs and become self-employed, as well as employ others. This could also help address the potential lack of absorption capacity in the labour market for higher education graduates.

First steps have been made to improve Mexico's integration into global value chains, and there are plans to increase specialisation in high-tech industries (e.g. automotive and aerospace supply) and raise productivity in large traditional sectors (e.g. retail and tourism). The expected growth of the automobile, aerospace, chemical and electronics industries calls for more professionals at the postgraduate level, particularly engineers specialised in these industries, as well as more graduates of short-cycle tertiary education programmes. The energy sector will also require more higher education graduates of different fields specialised in this sector (SENER, 2015[19]). More efforts will be needed to promote and raise the offering and student demand of short-cycle tertiary education programmes, which currently only produce 8.1% of higher education graduates (OECD, 2018[2]). Although Mexico has enough engineers at the bachelor's level to cover the future demand in the short-term, graduates will need to acquire sector-specific and transversal skills to improve their transition to, and success in, the labour market (Indra Business Consulting, 2017[20]).

ICT graduates have, after engineers, the second highest salaries (STPS, 2018[6]), and the need for ICT graduates, as well as professionals from other fields with strong digital skills, is expected to increase (Hays, 2018[15]). With a share of only 7% of the tertiary educated workforce, and 2% of graduates in 2016 (OECD, 2018[2]) from ICT programmes, it is questionable whether Mexico is in a good position to successfully manage global automation and digitalisation challenges as this would require an increase in the number of graduates in ICT fields of study. However, the fact that over 40% of 15-year-old students expect to work in science-related professional and technical occupations when they are 30 (well above the OECD average) (OECD, 2017[21]) shows promise for future specialisation.

Moving forward successfully will require a better integration of higher education graduates in the economy, the success of which depends on the ability of the labour market to provide a greater number of formal graduate-level jobs with adequate salaries and good working conditions.

Notes

[1] The EGEL tests are intended to measure the application of discipline-specific knowledge to a work setting environment at the end of bachelor's programmes. The tests were developed by experts based on a common methodology of the National Centre for Higher Education Assessment (CENEVAL). Higher education institutions can decide on whether to administer an EGEL test in one or more of their programmes, and whether or not passing the test is a graduation requirement for students. Since 2018, higher education institutions have an additional incentive to administer EGEL tests, as programmes with students performing at an outstanding level are listed in the registry of "good quality programmes" of the Secretariat of Public Education (Secretaria de Educación Pública, SEP).

[2] The National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI) uses job analysis to classify occupations in nine groups, generating the National Classification System of Occupations (Sistema Nacional de Clasificación de Ocupaciones, SINCO). Occupations that require a higher education degree are listed in the following two occupational groups: officials, directors and managers (funcionarios directores y jefes); professionals and technicians (profesionistas y técnicos) (INEGI-SINCO, 2011[22]).

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Chapter 5. Enhancing labour market relevance and outcomes through higher education

This chapter examines the prevalence and effectiveness of key practices in higher education institutions and by employers in Mexico to support the labour market relevance and graduate outcomes of higher education. It also identifies the enabling factors that help facilitate the use and effectiveness of these practices and any barriers that prevent or hinder them. The chapter draws on literature and secondary sources, as well as data gathered through OECD workshops, interviews, phone calls and an online survey with higher education policy makers and representatives of Mexico's higher education institutions and employers.

Practices to support the labour market relevance and outcomes of higher education

Higher education institutions can use various practices or activities to enhance the labour market relevance and outcomes of higher education, alone or in collaboration with social partners (employers and trade unions). The success of these practices depends on their effective provision and implementation, as well as the degree to which students make use of them. The key practices to enhance labour market relevance and outcomes in higher education are listed in Figure 5.1, along with their main barriers and enablers in Mexico and their potential benefits.

The implementation of such practices can create mutually beneficial situations for all stakeholders. They can help students develop knowledge and transversal skills aligned with labour market needs, which enhances their employability (OECD, 2012[1]). Students also gain practical experience, build professional networks, and potentially gain mentors (Bozeman and Boardman, 2013[2]; Rampersad, 2015[3]). Better preparation and alignment with labour market needs often translates into better labour market integration (Tomlinson, 2017[4]).

Higher education institutions can benefit from the input of social partners regarding the design, delivery and evaluation of programmes to ensure that they are aligned with the current and emerging needs of the economy (OECD, 2012[1]). An increase in positive labour market outcomes for graduates can enhance an institution's reputation and help attract students. Some practices, such as continuing education, provides not only education and training to the wider public, but also an additional stream of funding.

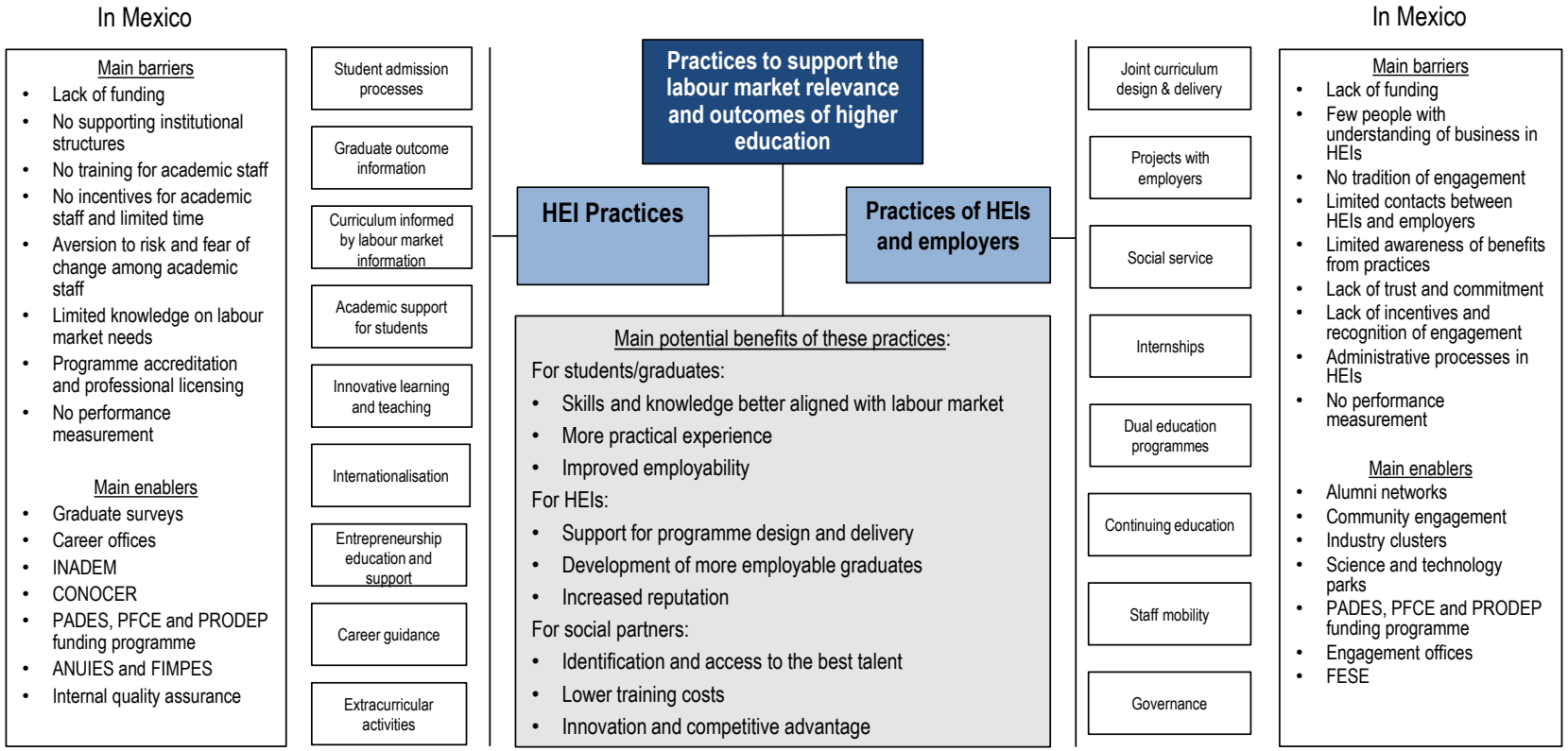
By collaborating with higher education institutions, social partners can help ensure skills alignment by influencing the education of prospective employees. These practices also help employers build relationships with students, which facilitates the identification, recruitment and integration of graduates who fit their needs (Centre for Career Management Skills, 2009[5]), while lowering hiring and training costs. This direct access to qualified graduates brings key problem-solving capabilities to the workplace (Rossano et al., 2016[6]), raises employers' brand profile (Van der Sijde, 2012[7]) and improves their competitiveness in knowledge-intensive labour markets.

Practices to support the labour market relevance and outcomes of higher education in Mexico

Literature and secondary information on the practices used in Mexico to enhance the labour market relevance and outcomes of higher education are limited. The OECD review team conducted interviews and workshops with Mexican higher education stakeholders and employers (Box 5.1) to better understand whether these practices were being used, and to what extent, across the Mexican higher education system.

Without a broader research base to support the review findings it is difficult to make definitive conclusions about practices across the system as a whole. However, the review team found that good practices to help students develop labour market relevant skills exist in a number of Mexican higher education institutions or faculties within institutions, but they do not appear to be applied consistently across the system. In addition, the involvement of social partners, particularly the participation of trade unions, is generally low. Stakeholders were often not aware of the practices that take place within their own organisations, much less the system as a whole.

Figure 5.1. Higher education institution and social partner practices to enhance the labour market relevance and outcomes of higher education



Note: HEI: higher education institution, ANUIES: National Association of Universities and Higher Education Institutions, CONOCER: National Council for Standardisation and Certification of Labour Competencies, FESE: Higher Education-Industry Foundation, FIMPES: Federation of Mexican Private Higher Education Institutions, INADEM: National Institute for Entrepreneurship, PADES: Programme to Support Higher Education, PFCE: Strengthening Education Quality Programme, PRODEP: Programme for the Professional Development of Academic Staff.

Box 5.1. OECD review team visit to Mexico

In January-February 2018, the OECD review team for the in-depth analysis of the labour market relevance and outcomes of higher education in Mexico visited Mexico City, Monterrey and Tuxtla Gutierrez. The review team conducted workshops and interviews with a wide range of stakeholders to identify and discuss current practices in the higher education system to support labour market relevance and outcomes.

During the visit, the OECD review team held workshops in four higher education institutions with the participation of students, graduates, academic staff, non-academic staff and employers. In addition, the review team undertook face-to-face interviews with employers, trade union representatives, rectors, and representatives from private, public and direct-provision higher education institutions and associations.

Telephone interviews were also conducted throughout 2018 to gather further opinions, experiences and good practices from key stakeholders. In March and April 2018, an online survey on practices collected the views of over 6 500 higher education students, academic staff, non-academic staff and rectors in Mexico.

Higher education institution practices to support the labour market relevance and outcomes of higher education

Higher education institutions can use a range of practices to ensure study programmes are relevant to the labour market and help students achieve good labour market outcomes. They can take account of supply and demand and try to align their study programmes with the labour market by using labour market information when making decisions about which programmes to offer or to close, and the number of places to offer in different programmes. Linking higher education and the world of work through curriculum design and delivery can enhance skills development. Higher education institutions can also collect information on the labour market outcomes of their graduates to inform programme delivery and admissions to their programmes. This information can also help prospective students make choices about which study programme to enrol in. Innovative learning and teaching practices, as well as practices that boost internationalisation, have proven to be valuable in increasing the labour market relevance and outcomes of graduates by helping them to develop the skills valued by employers. Moreover, supporting students academically and providing career counselling services helps students transition to the labour market.

Labour market information to inform the mix of programmes and curriculum

Using labour market information, such as skills needs and deficiencies, can help the strategic and operational planning of higher education institutions, which minimises risks. Information showing declining demand for study programmes can inform decisions to either close or change programmes that are no longer economically viable. Data showing growing demand can indicate which programmes to expand. A thorough scan of the environment and labour market demand can help make decisions about opening new

campuses or programmes. This information can also help ensure the curriculum is relevant to employer needs. Valuable sources of information on the types of skills in demand include employer contacts, reports from trade and industry bodies, professional institutes, and practitioner journals. Former graduates provide valuable information on the skills they developed in higher education and the labour market relevance of their programmes. Students engaged in work-based learning can provide insights into the sort of skills employers currently require and value (Maginn and Dench, 2000[8]).

Unfortunately, many higher education institutions in Mexico do not make the best use of labour market information. Many autonomous universities and private universities determine the programmes on offer and the number of student places they deliver based primarily on the availability of financial, physical and human resources, the estimated cost to deliver the programme and the expected student demand, rather than labour market outcomes for graduates. Stakeholders have reported that many of these universities, for instance, have responded to the high demand for law programmes, particularly among students who are the first in their families to attend higher education, by expanding their delivery. However, there is a risk that the creation of new law programmes and increased student intakes will create an oversupply of law graduates in the labour market.

On the other hand, direct-provision higher education institutions, state public universities with solidarity support and intercultural universities are required to undertake a feasibility study that includes an assessment of their labour market relevance when seeking government approval to open new programmes. As part of this process, higher education institutions are required to consult local employers on the relevance of the proposed programme to the regional economy. However, once the programme has been approved, there are no further requirements to consider labour market relevance or outcomes when adjusting the number of student places or revising the curriculum.

To complement the analysis of recent labour market information, some Mexican higher education institutions collect and analyse real-time information and make future projections of labour market needs. For example, the Autonomous University of Nuevo León (UANL) conducted a 25-year projection of the state labour market in collaboration with the state government and the chambers of commerce. UANL is using this information to help make decisions about the programmes it offers. Other institutions, such as the Autonomous University of the State of Hidalgo (UAEH), the *Instituto Politécnico Nacional* (IPN) and *Instituto Tecnológico de Monterrey* (ITESM), generate their own real-time labour market information and projections through a technology observatory and make the information publicly available. They collect, monitor and analyse data and information on business trends and the labour market needs of strategic sectors and industry clusters to identify potential opportunities for greater university-business collaboration

Institutional labour market information to help students make an informed decision

Higher education institutions can help students make informed choices by providing them with labour market information about the prospects of their programmes, including information about the outcomes of past cohorts. Higher education institutions can generate this information directly (through graduate and/or employer surveys) or they can disseminate information collected by other organisations or the government.

It appears that Mexican higher education institutions rarely provide students with institutional labour market information; and only a minority (e.g. UANL) presents students with a range of potential careers by programme. As a result, students and their families must find other sources of information to support their decision making. Family tradition and recommendations remain the strongest influences for Mexican prospective students.

Prospective students have some exposure to graduate labour market information generated and made publicly available by other organisations. The think-tank, the Mexican Institute for Competitiveness (*Instituto Mexicano para la Competitividad*, IMCO), created a platform (www.comparacarreras.org.mx) to compare the outcomes of higher education programmes using the average salary, unemployment rate and informality rate. An investment index was designed to divide programmes into excellent, good, insecure and very insecure study investment choices (IMCO, 2016[9]). In 2017, an average of 495 people compared 6.5 programmes daily on the website. In 2014, the Centre of Research for Development (*Centro de Investigación para el Desarrollo*, CIDAC) published the Survey on Professional Competences (*Encuesta de Competencias Profesionales*, ENCOP), which focused on higher education graduate skills, first employment and university-employer engagement. The centre also manages a website (www.profesionistas.org.mx) that has relevant labour market information for students and recent graduates (CIDAC, 2014[10]).

The development of a graduate survey is a requirement for undergraduate and postgraduate programme accreditation, and to access certain public funds, but survey implementation and results are not considered in either process. Stakeholders advised the OECD review team that graduate surveys are rarely implemented successfully in Mexico because of the poor and outdated tracking systems of graduates, which prevent institutions from contacting a large number of graduates. There are also low response rates to surveys, resulting in unrepresentative or incomplete samples. Moreover, the generation and analysis of robust information may be too costly for some institutions.

Comparability across Mexican higher education institutions is impossible as institutions, and faculties within institutions, use a variety of methods to design and implement graduate surveys. The National Association of Universities and Higher Education Institutions (ANUIES) proposed a common methodology for the development and implementation of graduate surveys in 2009 (Ramírez Domínguez, Reséndiz Ortega and Reséndiz Ortega, 2017[11]). However, most higher education institutions continue to apply their own methodology.

A large and active alumni network can facilitate the application of graduate surveys, but few Mexican higher education institutions have an established alumni network. The National University of Mexico (UNAM), the largest university in the country with close to 330 000 students, is an exception. Since 2008, UNAM's alumni network has gathered 156 existing alumni associations by faculty, programme, cohort and state. With almost two million members, it generates over MXN 200 million) (USD 1.1. million) of revenue annually. UNAM uses the alumni network to conduct its graduate survey, which helps inform the university about labour market activity and graduate outcomes.

Student admission processes

Higher education admission processes can help ensure that students are prepared for higher education and well matched to their choice of programme. In Mexico, higher

education institutions set their own admission criteria, resulting in a variety of requirements and processes.

Many higher education institutions admit students only on the basis of an upper secondary education certificate from a general or combined programme. This is the case for most private higher education institutions, which accept 93.8% of applications (SEP, 2017[12]). The higher education institutions that own or are associated with upper secondary schools admit students from these schools (*pase automático*) with lower admissions criteria (see Chapter 3).

However, as noted in Chapter 3, there are concerns about the quality of secondary schools in Mexico, as measured by the Programme for International Student Assessment (PISA) and National Plan for the Evaluation of Learning (PLANEA) tests. Students may therefore be entering higher education with very poor skill levels. This increases the likelihood of non-completion or poor graduate outcomes.

More prestigious institutions are able to be more selective and use additional admissions criteria to ensure that students admitted into their programmes are better prepared for higher education. This includes interviews with prospective students and the use of standardised tests, such as the EXANI-II and EXANI-III conducted by the National Centre for Higher Education Assessment (CENEVAL). These tests assess specific and transversal skills, such as: verbal and mathematic reasoning; capacities to infer, analyse and synthesise; and competencies in information use, such as organising, obtaining and understanding information (see Chapter 3). However, higher education institutions generally do not use the results of these tests as an admission cut-off score, but rather as a way of ranking applicants. As a result, some institutions may accept applicants who performed poorly in the standardised tests.

Academic support for students

Academic support helps students who are struggling to succeed in their studies. As noted above, some students are entering higher education with poor skills levels and may not have the academic aptitude and preparedness for higher education. Some higher education institutions are tackling this problem by offering introductory courses, largely focused on numeracy and literacy. These courses can be offered over several weeks, an extra semester or a year before starting the programme.

To improve student retention levels in higher education, all public higher education institutions offer individual and group tutoring, some of which are supported by the government programme to support professional development in academic staff (*Programa para el Desarrollo Profesional Docente*, PRODEP) (see Chapter 6). Tutoring identifies students who are lagging behind or groups considered to be at risk and provides them with the academic support they need to succeed. For instance, UAEH identified that Indigenous students in their institution had a higher risk of dropping out, so created a programme aimed to provide them with additional academic support.

Higher education institutions in the three technological subsystems provide additional tutorials and systematic academic support throughout the entire programme for all students *(tutorías*), with specific support for students who lag behind *(asesorías*). However, outside the technological subsystems, higher education institutions in general appear to lack systematic institutional approaches to supporting students; and often the support offered does not reach all students in need. This can contribute to increase the

dropout rates. Stakeholders noted that there is insufficient public and institutional funding for academic support and not enough qualified personnel.

Innovative learning and teaching

Higher education institutions worldwide have traditionally focused on developing deep discipline-specific knowledge. However, there is an increasing emphasis in many higher education systems on the development of a wide range of transversal skills, which increase student employability and their success in the labour market. This has been accompanied by changes to learning and teaching approaches from a teacher-centred didactic information transmission model, which relies heavily on lectures, to student-centred approaches, such as competency-based learning and problem-based learning that use innovative methods such as blended learning, flipped classrooms, design thinking, and project or game-based learning.

Box 5.2. The Tec21 Educational Model

The *Instituto Tecnológico de Monterrey* (ITESM) has designed and implemented a new educational model, Tec21. Tec21 aims to create graduates with deep knowledge of their disciplines and transversal skills that allow them to solve problems in interdisciplinary team-based settings. The model has four pillars:

- A challenge-based approach that engages students with problems of the surrounding community. This facilitates the development of leadership and entrepreneurial skills, generating tangible value.
- Flexibility to choose what, how, when and where to learn. For example, students can choose modules from different programmes on any of the 29 campuses.
- Inspiring lecturers who use innovative teaching methods and tutorials to enhance student learning and development inside and outside of the classroom.
- Wide offer of athletic and cultural extracurricular activities, including international experiences, entrepreneurship programmes and community work.

Tec21 also aims to transform ITESM's traditionally isolated infrastructure into multi-purpose shared spaces where students and academic staff can socialise and collaborate with each other, as well as interact with industry representatives and the community.

Source: (Pieprz and Sheth, 2017[15]).

Higher education stakeholders interviewed by the OECD review team noted that most teaching in Mexico is still centred on lecture-based classes where students play a passive role. They advised the review team that individual learning needs are rarely considered, and assessment is almost uniquely based on student knowledge and memory. Stakeholders also advised that the curricula in most programmes is largely theoretical, without enough real-life cases, and suggested that it needs to be updated more regularly. However, a small number of Mexican higher education institutions have recently

developed more innovative approaches to learning and teaching, such as the Tec21 Educational Model (Box 5.2).

In technological and polytechnic universities, the competency-based learning approach consists of 70% practical and 30% theoretical content. Through the use of new technologies and real situations, and using a mix of guided, independent and group learning, this approach aims to provide students with the knowledge, skills, attitudes and values they need to solve problems, manage projects and communicate effectively throughout their lives (Mota and de Ibarrola, 2012[13]). Despite their innovative approach to learning and teaching, these universities are not the first choice of prospective students, many of whom prefer to undertake bachelor's programmes in traditional institutions.

Some of the main barriers to wider implementation of the competence-based learning approach include the lack of training for academic staff to apply this method in their teaching and assessment methods, and a general reluctance of academic staff to change traditional teaching methods. The lack of appropriate infrastructure, laboratories, equipment, and teaching resources also hinders wider implementation. Furthermore, experience in innovative learning and teaching methods is not considered when hiring new staff or in terms of career progression (Lozano Rosales, Castillo Santos and Cerecedo Mercado, 2012[14]).

Innovative teaching often includes interdisciplinary approaches, which expose students to knowledge in different disciplines and allow them to collaborate in teams with students from different backgrounds. The tolerance, flexibility, critical thinking and communication skills developed through this approach prepare students for diverse working environments (Detmer Latorre, 2017[16]). Although stakeholders mentioned to the OECD review team that interdisciplinary approaches, such as including humanities courses in technical programmes, could have a very positive effect, these approaches are still uncommon in higher education. The main barriers to implementation include the silo structure of departments, time and resources for academic staff to better co-ordinate these approaches, and the current emphasis on the discipline-specific knowledge and skills of the accreditation process and the professional license.

Mexican higher education institutions are slowly starting to implement technology-based innovative approaches to learning and teaching that support individualised, flexible and remote learning or new approaches in terms of pedagogy and content. In 2015, Mexico had a wide range of e-learning programmes, covering around 7% of total demand for higher education. In absolute terms this amounted to 200 000 students taking various types of programme, but especially advanced technical degrees and bachelor's degrees (OECD, 2015[17]). A small number of Mexican higher education institutions offer massive online open courses (MOOCs), and some have recently introduced game-based courses within higher education programmes. However, some institutions, particularly those in remote rural areas, face significant technical difficulties due to low penetration rates for the Internet and other technologies, which hinder the implementation of technology-based initiatives (OECD, 2015[17]). A lack of financial resources and staff training in the use of technology in higher education are common barriers for many higher education institutions across all subsystems.

In the meetings and workshops with the OECD review team, students mentioned that they would like to experience more innovative learning and teaching approaches. Academic staff were supportive, but recognised the need for training to improve their teaching and introduce more innovative practices. However, they stated that there were few training opportunities and limited support in this area, outside recent efforts in certain subsystems

(e.g. institutes of technology) and a small number of other institutions. Academic staff also advised that the curriculum is too rigid, which deters the introduction of different approaches, particularly in programmes that are or aim to be externally accredited. As with many higher education systems, incentives for academic staff focus on research performance rather than teaching. Additional remuneration for high-performing academic staff through the National System of Researchers (*Sistema Nacional de Investigadores*, SNI) is based mainly on research performance and teaching hours, without considering the quality or innovativeness of teaching.

Data on measuring the quality of learning and teaching in higher education institutions and student learning outcomes, particularly with value-added models that attempt to attribute changes in student performance to a higher education institution, can drive improvements in learning and teaching (Kuh and Jankowski, 2017[18]). Recent initiatives, such as the DESCAES project (Box 5.3), have begun to address the issue of measuring the impact of higher education on the development of skills.

Box 5.3. DESCAES project

The Skills Development and Evaluation for Higher Education Learning (*Desarrollo y Evaluación General de Competencias para el Aprendizaje en Educación Superior,* DESCAES) pilot project is being carried out by a network of 15 Mexican higher education institutions across five subsystems. The aim of the pilot is to measure students' skills in their first and third year of higher education so that improvements made during higher education can be recorded. This information will then be used to improve skills development.

The pilot includes two tests:

- The DESCAES test, which measures communication, information management and problem-solving skills using 54 items.
- The metacognition and self-regulation test, which measures the ability to learn through planning, control of execution and self-reflection.

Based on their results, students are assessed as having initial, basic, intermediary or advanced skills.

The tests were conducted on 6 747 first-year students in 2017 and show that 28% of these students have initial skills and only 9% of students have advanced skills. By field of study, first-year students in basic sciences (physics, chemistry and mathematics) achieved the highest scores in the DESCAES test, and health sciences students reached the highest score in the metacognition and self-regulation test. The same students will be tested again in their third year.

Higher education institutions within this network co-design and exchange strategies, projects, practices and resources for skills development. The Secretariat of Public Education (*Secretaría de Educación Pública*, SEP) funded the pilot project through the PADES programme in 2014, but its future sustainability will depend on the individual institutions.

Source: Based on discussions with the DESCAES project co-ordinators.

Internationalisation

International student mobility – inward and outward – and an internationalised curriculum can help students develop a set of skills often labelled as "intercultural competencies" or "cross-cultural capabilities", i.e. the skills, attitudes and values that allow them to operate effectively in diverse cultural environments (The Higher Education Academy, 2014[19]). Travelling abroad as part of a study programme can help students develop these cross-cultural capabilities. Students who cannot travel abroad to study can also develop these skills through an internationalised curriculum that provides them with global perspectives in their field of study and exposes them to international students. These skills are highly valued by employers and are of particular importance in an open economy such as Mexico's, which is integrated into global value chains. Nevertheless, internationalisation does not appear to be a priority for many higher education institutions in Mexico, where the current focus is on responding to the rapidly growing demand of national students.

Student mobility

Mexican higher education institutions do not attract international students. Less than 1% of undergraduate students, 1% of master's students and 3% of doctoral students come from abroad to study in Mexico. This limits the opportunities for national students to interact with foreign colleagues on campus. There is also little outward mobility, with only 0.9% of Mexican students studying abroad (OECD, 2018[20]). The majority of these students are in the United States: almost 17 000 Mexican were enrolled in American higher education institutions in 2017 (9 400 undergraduate students, 4 100 postgraduate students, 1 900 students in non-degree programmes and 1 500 in optional practical training) (Institute of International Education, 2017[21]).

The language used in learning and teaching is likely to affect international students' selection of potential destination countries. The prevalence of predominantly English-speaking destinations, such as Australia, Canada, New Zealand, the United Kingdom, and the United States, as the most popular countries for international students in part reflects the progressive adoption of English as a global language. English-taught higher education programmes are also offered in an increasing number of institutions in non-English-speaking countries. Only a small number of Mexican higher education institutions offer programmes taught in English, despite Mexico's trade links with the United States and Canada and its aims to further integrate into global value chains. Those that do offer programmes taught in English tend to have close links with strategic industries. For example, the industrial engineering programme at the Hermosillo Institute of Technology (ITH), which is delivered in collaboration with automotive and aerospace companies in the state of Sonora, is taught completely in English. The Technological University of Puebla is part of the bilingual, international and sustainable (BIS) model launched by the Mexican government in 2012. Established in 2016, the university offers 28 programmes related to the automotive sector taught exclusively in English.

Internationalisation efforts by Mexican higher education institutions are supported by the Mexican Association for International Education (AMPEI), but with around 350 members, the work of this non-profit organisation only reaches a small share of the system. The government supports international mobility through the National Science and Technology Council *(Consejo Nacional de Ciencia y Tecnología,* CONACyT), which has awarded over 44 000 scholarships for postgraduate studies abroad since 2007. The majority of these were for programmes in the fields of science, technology, engineering and mathematics (STEM).

Mexican students can participate in mobility programmes that are based on government agreements, for example, the Mexico-France Programme for Engineering Students (MEXFITEC), the Ibero-American Programme for Academic Mobility (PIMA-OEI), the Fulbright-García Robles scholarship programme and the Platform for Academic and Student Mobility of the Pacific Alliance. Co-operation with the United States is currently framed under the Bilateral Forum on Higher Education, Innovation and Research (FOBESII) (Box 5.4) and includes numerous bilateral agreements, mainly with higher education institutions in the American border states, such as Texas, California and Arizona.

International networks of higher education institutions can facilitate student mobility. Mexican higher education institutions are part of a range of programmes and associations, such as the Mexico-Argentina Youth Exchange Programme (JIMA), the University Mobility in Asia-Pacific Programme (UMAP), the Programme of Academic Mobility in Latin America (PIMA), the Academic Programme for Student Mobility of the Association of Universities in Latin America and the Caribbean (PAME-UDUAL), the mobility programme of the Consortium for North American Higher Education Collaboration (CONAHEC), and the Santander Group internationalisation programme. However, bilateral institutional agreements between higher education institutions in Mexico and abroad are the most common mechanism for mobility.

Box 5.4. Bilateral Forum on Higher Education, Innovation and Research (FOBESII)

The Bilateral Forum on Higher Education, Innovation and Research (FOBESII) was established in 2013 as a joint initiative by the Mexican and US governments. It aims to develop a successful labour force for the 21st century by enhancing mutual understanding and creating knowledge networks through academic exchange, student mobility and research and innovation joint programmes.

Under this framework, higher education institutions in Mexico and the United States have signed over 120 new agreements. The University of California raised around USD 15 million to support programmes in collaboration with Mexican higher education institutions. There are also joint projects between the US National Science Foundation and CONACyT. Some US universities have opened "Mexico Centres", e.g. the Mission Foods Texas-Mexico Center at the Southern Methodist University. A number of bi-national research and innovation centres have been established, e.g. the CaliBaja Research Center in San Diego.

Since 2013, the United States has received over 100 000 Mexican graduate students, researchers or enrolled students in short programmes to improve their English proficiency; and the movement of US students to Mexico has increased by 20%.

FOBESII also includes a professional internship programme for Mexican graduates that is focused on strategic sectors such as aerospace, automotive, manufacturing, telecommunications and energy.

Source: (SEP, 2017[22]).

Despite this range of programmes, the OECD review team learned of significant barriers to student mobility. Stakeholders reported that key factors hindering more internationalisation included competing priorities in higher education institutions, the

limited number of international mobility places (some of which do not include financial support), the limited funding for student mobility, the lack of a national credit system, rigidity of the curricula, and the internal bureaucracy in higher education institutions to apply for a mobility programme. Consequently, internationalisation efforts reach only a small number of students who can afford to study abroad.

The lack of international units in higher education institutions with clear strategies or institutional policies for internationalisation is another limitation to both inward and outward mobility. Information about mobility opportunities is often not disseminated across the student body, leading to a frequent lack of awareness among students. Students also advised the OECD review team that credits for courses taken abroad may not be recognised in their home institution in Mexico, which can prolong programmes and have associated costs.

Internationalisation of the curriculum

The majority of programmes offered at Mexican higher education institutions are not internationally oriented and there is little evidence of attempts to internationalise the curriculum. An internationalised curriculum uses learning and teaching activities, resources and tools, classroom practices, and assessment tasks that are designed to help students develop cross-cultural competencies (Griffith Institute for Higher Education, 2011[23]). An internationalised curriculum can help students develop these competencies without the need to travel abroad, and can provide students with valuable skills for the labour market by including diverse perspectives and presenting different professional practices across cultures.

Joint programmes with foreign higher education institutions can also promote student mobility and ensure a more internationalised curriculum. However, this model is not common in Mexico, with only a small minority of institutions developing double degree programmes with institutions abroad. ITESM has developed a bachelor's programme in automotive engineering with the Technical University of Cologne in Germany and a Master of Science programme in information technology with Carnegie Mellon University in the United States. UNAM has a double degree doctoral programme with Groningen University in the Netherlands.

Mexican higher education institutions have participated in a number of international projects that have allowed them to interact with higher education institutions and social partners in other countries, contributing to the internationalisation of the curriculum and, in some cases, to staff and student mobility:

- The European Union (EU) programmes, Latin America Academic Training (ALFA) and Erasmus+, which support the establishment of networks of European and Latin American institutions to improve the quality and relevance of higher education in Latin America, and the labour market outcomes of students.
- The EU-supported Tuning Latin America projects, which sought to develop easily comparable and comprehensible qualifications across Latin America, develop professional profiles in terms of generic and discipline-specific competences, facilitate transparency, and help create networks to share good practice.
- The Ibero-American Knowledge Space project (*Espacio Iberoamericano del Conocimiento*), which is aimed at enhancing interaction and co-operation across institutions in the region.

Entrepreneurship education and start-up support

Higher education institutions can support the development of entrepreneurial skills by helping students think like an entrepreneur, training them to start up their own companies, and supporting them in establishing and growing their companies. While these practices are rapidly evolving in higher education institutions worldwide, Mexican higher education institutions lag behind and rarely involve employers in these practices.

The three technological subsystems have well-developed entrepreneurship support models in place in all their institutions. However, very few Mexican higher education institutions outside these subsystems offer entrepreneurship courses. Furthermore, most entrepreneurship courses in Mexico are offered as extracurricular activities or as part of business programmes. Entrepreneurship courses delivered outside of business programmes and across disciplines with students from different programmes can positively affect the development of entrepreneurial and transversal skills in general, since students are required to collaborate with people from different backgrounds and with different points of view (Detmer Latorre, 2017[16]). The introduction of entrepreneurship courses across a broader range of programmes is also hindered by the organisational barriers that can affect interdisciplinary activities, such as the silo structure of faculties and departments or the time and resources needed to co-ordinate across the institution.

Some higher education institutions organise conferences, events and contests (e.g. *Semana I* at ITESM) where entrepreneurs meet with students or where students can present their business ideas and projects to the public and potential investors. The National Event of Technological Innovation (*Evento Nacional de Innovación Tecnológica*), organised by *Tecnológico Nacional de México* (TecNM), aims to enhance students' entrepreneurial skills through events at local, regional and national levels. Students apply technology to develop innovative products, services and processes that address societal problems.

Support for business start-ups is more common. The three technological subsystems have well-developed incubation support practices and over 200 public (around 20%) and 130 private (5%) higher education institutions in Mexico have an incubation programme to support business start-ups created by students and staff. Around 60% of incubators are located in three states: Mexico City, Jalisco and Nuevo León. The incubation programmes often include advisory services and access to infrastructure. For instance, the UANL provides students with a large network of mentors, workshops, boot camps, pitch competitions and support for crowdfunding. It also provides support to academic staff to help develop their entrepreneurial skills.

The Secretariat of the Economy (*Secretaría de Economía*, SE) certifies and financially supports the establishment and development of incubators and accelerators through the National Institute of the Entrepreneur (INADEM), a number which are located in higher education institutions, for example, IPN, the University of Sonora, the Autonomous University of the State of Mexico and the Autonomous Metropolitan University. Start-up businesses located in these incubators can also apply for financial support from INADEM. INADEM also runs online courses in entrepreneurship and an annual national award scheme for education institutions that foster an entrepreneurial mind-set. The Autonomous University of Sinaloa won the award in 2016 based on its support to students in creating successful companies that generate jobs. However, the lack of transparency in the INADEM criteria for the awards is a concern.

A number of Mexican incubators have recently developed connections with innovation hubs in the United States and other countries. Santander Group partners with 158 Mexican public and private higher education institutions to develop students' skills for entrepreneurship and support start-ups by funding summer stays in US entrepreneurial hubs. Santander Group also runs a contest where students set up a virtual enterprise and business innovation prizes are awarded to the best student business projects. In 2017, 5 572 students presented 1 066 projects in the entrepreneurship contest and were awarded MXN 800 000 (USD 42 500) in prizes. Junior Achievement Mexico also offers several programmes to support entrepreneurship in young people, such as the International Entrepreneurs' Forum, business simulations and seminars.

Nonetheless, most start-ups in Mexican higher education incubators are either low or medium-tech (Martínez Ramírez, Torres Vargas and Munoz Flores, 2017[24]), despite the large amount of support that the government and higher education institutions provide for high-tech start-ups. The key barriers to entrepreneurship in higher education are the lack of professional experience among the managers of the incubation centres and mentors, the poor management of incubators and their weak ties with businesses (Gallegos, Grandet and Ramirez, 2014[25]), and investors.

Some Mexican higher education institutions are exploring how they can use an entrepreneurial approach to tackle social problems rather than exploit market opportunities. Social entrepreneurship aims to provide innovative solutions to unsolved social problems (OECD, 2010[26]) and, as an activity, is developing quickly around the world. This presents a significant and untapped opportunity for innovation and new approaches in Mexico to benefit society and reduce the existing economic and social gaps. ANUIES recently signed an agreement with the global Enactus network of students, academics, and business leaders across 36 countries to promote social entrepreneurship in Mexico.

Provision of extracurricular activities

Sports activities, student clubs, academic societies and other extracurricular activities are effective ways for students to develop transversal skills such as leadership, communication and teamwork, which are highly valued by employers. However, there is not a tradition of offering extracurricular activities in Mexican higher education. The few institutions that do offer extracurricular activities tend to only provide a narrow range of activities. This reflects the absence of a student-centred approach in Mexican higher education, as well as insufficient infrastructure and financial resources.

Nonetheless, a number of Mexican higher education institutions, particularly large private universities, have recently created institutional units responsible for extracurricular activities. The technological universities host regional and national gatherings each year, which are dedicated to sports and culture. TecNM organises art and culture festivals and the technological universities offer theatre, painting and dance as extracurricular activities, as well as athletic competitions. However, it is a challenge to reach a large percentage of students and keep the activities free or low cost for students.

Box 5.5. Practices in institutes of technology to enhance labour market relevance and outcomes

An online survey implemented by the Engagement Unit at TecNM in 2017 surveyed the engagement directors and vice-rectors of the 262 institutes of technology across the country on practices to enhance labour market relevance and outcomes in higher education. With a response rate of 89%, the survey offers valuable insights concerning the practices within this subsystem:

- Almost 80% of respondents stated that students lack basic discipline-specific knowledge and skills, as well as communication and writing skills, at entry to higher education programmes. Over 80% of institutes offer introductory courses to improve these skills before the first semester, and 75% have a programme to continue supporting students' low skills during their studies.
- Eighty percent of respondents said that the competency-based model is more effective in preparing students for the labour market than traditional lecture-based classes. However, many noted that this is only the case when the model is correctly implemented. Respondents reported that the lack of training for academic staff was a key barrier to successfully implementing competency-based approaches.
- Almost 70% of respondents were aware of existing incentives for academics to teach innovatively.
- Seventy percent of higher education institutions measure skills and competences in their institutes with methods other than exams.
- Around 75% of the institutes of technology use the subsystem's student mobility scheme.
- Approximately 80% of institutes administer graduate surveys to monitor the performance of their graduates in the labour market.

Source: Information provided by TecNM.

Career guidance

Career guidance services offered in higher education institutions can help students transition more successfully to the labour market. They support students through a range of different activities, such as information sessions, interview preparation, internship support, career fairs, resume-writing workshops and training in soft skills. Higher education institutions in the United Kingdom and the United States are recognised for their comprehensive career guidance to students.

In Mexico, 11% of companies recruit graduates through higher education institutions (CIDAC, 2014[10]), and many of these companies reported long-lasting economic benefits from this collaboration (De Fuentes and Dutrenit, 2012[27]). These companies are usually those that regularly collaborate with higher education institutions to organise joint workshops and job fairs. The Autonomous University of San Luis Potosí (UASLP) has been organising annual job fairs for internships and graduate jobs since 2010. This has helped to raise the employment rate of graduates within one year of graduation to 95%. In

preparation for the annual fair, UASLP organises workshops with students to train them in writing successful job applications and interview.

Most Mexican higher education institutions have a career office to help students prepare for the labour market (*oficina de servicio social y prácticas profesionales*), but holistic, individual and interactive student guidance is not a well-established practice. These services are generally understaffed and the personnel often do not have any professional training in career guidance. Collaboration with academic staff and other offices responsible for engagement activities (e.g. incubators and technology transfer offices) is weak, and the offices often lack industry connections and labour market information. There is also limited use of technology to help more students in a personalised way, for example, by offering personalised online courses to develop employability skills or an online platform to match student profiles with suitable employers. Students reported to the OECD review team that they were unaware of the existence of this office in their institution or of the services provided.

Enabling factors and barriers to the use of higher education practices that enhance labour market relevance and outcomes

Designing and implementing practices that raise the labour market relevance and outcomes of higher education has been difficult for Mexican higher education institutions. Discussions in the meetings and workshops with the OECD review team show that institutions face some common barriers, the largest of which is the lack of institutional and public funding to support these activities. Although the government provides support for some of these practices through targeted funding, stakeholders reported that the programmes do not provide sufficient funds and their limited duration does not allow sufficient time to embed practices within the system.

Low funding levels and variations across institutions and subsystems (see Chapter 3) mean that some public higher education institutions do not have the resources to support additional activities that could enhance the labour market relevance and outcomes of higher education. Large private higher education institutions with stable financial situations are able to focus more on the labour market relevance and outcomes of their education activities, but small public and private institutions have difficulty dedicating enough resources to these practices.

Higher education institutions in Mexico tend to have a large administrative structure with complex processes (Badillo Vega et al., 2016[28]), which is exacerbated by the siloed nature of faculties and departments. This unfavourable context hinders the development and use of practices to raise the labour market relevance and outcomes of higher education. They can impede opportunities to collaborate between faculties, and create barriers to: modifying curricula or assessment methods, recognising modules undertaken in a different institution, and creating new programmes or modules to respond rapidly to labour market demands.

There are no incentives for Mexican academic staff to develop more innovative learning and teaching practices or to improve their teaching skills. Academic staff are not provided training or support in developing or implementing new teaching and assessment methods. They are generally reluctant to change their teaching methods and there are no financial or career incentives to develop better learning and teaching practices. The financial rewards and career progression provided by SNI are based on research performance, knowledge transfer and the amount of time spent teaching, but not on the quality of

teaching. The rigidity of the curriculum also prevents the incorporation of these practices, particularly in programmes seeking external evaluation or accreditation.

The lack of information on labour market needs also hinders the introduction and greater use of these practices. The quality of institutional-based graduate surveys is generally low and there is no nationwide methodology that allows comparisons across institutions.

Despite the efforts of some higher education institutions, the system-wide implementation of these practices still appears to be very limited. Improvement requires financial stability, but also a model that is centred on the student, academic staff with up-to-date pedagogical expertise and academic incentives to put these practices in place. The measurement and evaluation of practices can be very useful to identify good practice and share this information across higher education institutions. Stronger internal quality assurance mechanisms could also facilitate the application and success of practices to support the labour market relevance and outcomes of higher education.

Collaborative higher education institution and social partner practices to enhance the labour market relevance and outcomes of higher education

Higher education institutions can work together with social partners to support labour market relevance and outcomes. Through collaborative practices with employers and trade unions, higher education institutions can ensure that the design and delivery of programmes is relevant for current and future business needs, and they can offer students and graduates meaningful work-based learning where they solve real problems, which will help them develop labour-market relevant skills. Interactions with academic staff and students can also help employees update their skills (Wilson, 2012[29]). It is common practice in US higher education institutions to appoint a senior staff member with leadership responsibility for engagement to oversee and co-ordinate these practices (Zellner and Washington, 2012[30]).

In 2014, approximately 87% of Mexican companies that collaborated with higher education institutions reported that the collaboration improved student skills, and 91% reported benefits for their company (CIDAC, 2014[10]). Most higher education institutions in Mexico include collaboration with social partners as part of their institutional mission. However, it is often poorly developed and generally only takes place with large companies, particularly international firms. In most higher education institutions, there is no institutional policy for engagement with external stakeholders in general, and employers in particular.

Levels of collaboration vary greatly across subsystems and institutions. Collaboration with employers is a common practice in the three technological subsystems as these institutions were established to support regional development in lagging regions or to raise the level of skills in well-developed industrial areas. The programmes offered are aligned with regional needs and their competence-based learning approach has a strong practical component that involves collaboration with employers in the region, particularly small and medium-sized enterprises (SMEs).

Role of social partners in the governance of higher education institutions

Higher education institutions are increasingly accountable to employers for the quality and relevance of their graduates, and to students for the labour market relevance and outcomes of their study programmes. As a result, social partners and members of the broader community are often appointed to the governing boards of higher education

institutions in many OECD countries. This provides employers and others with the opportunity to contribute to the strategic vision and plan of institutions, as well as setting institutional policies and monitoring their performance. In some countries, higher education institutions establish advisory bodies, which include social partners, to help improve the labour market relevance and outcomes of higher education.

Many Mexican higher education institutions include employers in an advisory role, but few engage with social partners in their governing bodies. Only the three technological subsystems are governed by a legislative framework that requires employer engagement in their governing and advisory boards. Mandated employer engagement on governance bodies in these subsystems ensures that external members from the world of work are in a position to support decision making and provide advice on aligning education with regional labour market needs. Within these subsystems, employer representatives take part in engagement councils at institutes of technology and polytechnic universities, in relevance and engagement councils at technological universities, and in patronage and social councils at polytechnic universities. However, there is no evaluation of the effectiveness of these councils in improving collaboration with employers or enhancing the labour market relevance of study programmes and outcomes of graduates.

The autonomous universities may include social partners in various governing bodies, including on university councils (*consejos consultivos*) and patronage boards. These bodies provide an important forum for employer input into the operations and outcomes of institutions. University councils provide recommendations on the performance of the institution; and patronage boards manage the assets of institutions, raise additional funding and, in some cases, establish tuition fees. However, the universities are not required to include social partners in these governing bodies and there is no data on the number of external representatives on these bodies.

Collaboration on curriculum design and delivery

Higher education institutions can directly involve social partners in designing new programmes and in developing, updating and delivering the curricula of existing programmes to enhance their alignment with labour market needs. Social partners can help deliver programmes by being involved in teaching as either a guest lecturer or as an adjunct or part-time lecturer. These forms of collaboration can help ensure study programmes are endorsed by industry and the curriculum is more responsive to the labour market. Collaborating with social partners on curriculum design and delivery can help academic staff develop their own skills and identify new research and consultancy opportunities. Students benefit from real-world experiences and employers can influence the development of the kinds of skills they are looking for in the workplace.

Overall, collaborating with social partners in the design of programme curriculum is not common across the Mexican higher education system, and practices vary between institutions. Autonomous universities are reluctant to involve employers in curriculum design and delivery on the basis of maintaining their autonomy and academic freedom. It is more common in direct-provision higher education institutions, which are required to include a feasibility study in which employers confirm the labour market relevance of the proposed programme. National academic relevance commissions (*Comisiones Nacionales Académicas de Pertinencia*) in the technological university subsystem include employers and define 80% of the programme content of all institutions every three years. Local relevance commissions define the specific content of programmes (20%) based on regional needs. Stakeholders advised the OECD review team that joint delivery is more

common because it is relatively easy for higher education institutions to invite employers as guest lecturers or to lecture a course for a whole semester or year (Box 5.6).

Box 5.6. Joint curriculum design and delivery in Mexican higher education institutions

Some of the Mexican higher education institutions that co-design and co-deliver programmes together with employers belong to two large industry clusters in the state of Querétaro. The Technological University of Querétaro (UTQ) and the Polytechnic University of Querétaro (UPQ) co-design ad co-deliver curriculum with companies in the automotive cluster (e.g. Peugeot), while the UPQ and the Aeronautical University of Querétaro collaborate with aeronautic and aerospace companies in the *Aerocluster* (e.g. Airbus and Bombardier).

The Popular Autonomous University of the State of Puebla and Volkswagen Mexico co-created the bachelor's programme Automotive Design Engineering in 2008, and the Technical University of Jalisco and Caterpillar co-created the Heavy Machinery Maintenance two-year programme in 2007. The curricula of both programmes were designed and delivered jointly by academic staff and employers. In addition, the companies donated machinery to the university workshops, where students can practice and host student internships. Volkswagen also offers scholarships to the highest-performing students of the programme.

Work-based learning integrated into the curriculum

Work-based learning includes a wide range of actions, from social service, internships or dual education programmes to activities and projects with employers. Work-based learning helps students to foster relationships with employers and develop work-relevant professional and technical skills, as well as transversal skills such as communication, negotiation or teamwork. However, generating a good match between the student and the position in the company is critical for the success of work-based learning and the potential hiring of students by employers afterwards.

As a lack of experience in the labour market is the main reason that young Mexican graduates are unemployed (CIDAC, 2014[10]), the opportunity to gain work experience during their studies is important. Work-based learning helps employers identify talented students, which can reduce hiring and training costs. Almost one fifth of Mexican higher education graduates found their job because of their social service and internships. This is the second most common way to get a job for graduates, and is especially common among recent graduates (UVM, 2018[31]).

Internships

As in many countries, there are various types of internship in Mexico. For the purposes of this report, the discussion is restricted to internships that are part of formal education. Over half of the overall collaboration between Mexican higher education institutions and employers is through student internships (*prácticas profesionales*) (CIDAC, 2014[10]). While many institutions offer internships as part of the curriculum to develop professional skills and gain work experience, ANUIES estimates that they are not compulsory in 45% of institutions.

Internships in Mexico (in the form of clinical placements or teaching practicums), as in many countries, are compulsory and a requirement to obtain the professional licence for programmes such as medicine, nursing, dentistry and teaching. They are also compulsory in some higher education subsystems, including the technological subsystems. For example, in programmes delivered by the technological universities, students must undertake three compulsory internships: two short internships (60 and 120 hours) undertaken part-time in the fourth and seventh semesters, respectively, and a longer internship (600 hours) undertaken full-time in the tenth semester.

Box 5.7. Work-based learning in Irish higher education institutions

Career services in Irish higher education institutions recognise the importance of effectively organising work-based learning by:

- sharing information internally due to host organisation preference for single interlocutors,
- facilitating the supervision of students, especially related to academic requirements and co-tutorship arrangements,
- providing assistance to interns during work placements,
- ensuring that experience reports cover the twin objectives of supporting the student to reflect on the learning experience, and informing other students and teachers about the experience.

The Higher Education Authority (HEA) funded the Roadmap for Employment-Academic Partnership (REAP) project, which developed a model for work-based learning arrangements. This model helped to establish responsibilities and commitments for higher education institutions, students and employers (Table 5.1).

Table 5.1. Responsibilities for work-based learning

Higher education institution	Student	Employer
• Plan and clearly define responsibilities for all • Standardise duration and structure • Enhance networking and engagement • Dedicate resources • Develop employer and student placement information packages • Design structured alternatives to placement • Organise preparatory and reflective learning activities	• Participate in preparatory and reflective learning activities • Manage and clarify expectations before placement • Take responsibility for achieving learning outcomes Engage in reflective learning activities	• Assist higher education institutions in developing placement contract/ agreement • Enhance networking and collaboration with higher education institutions • Develop job specification • Support workplace learning

Source: (OECD/EU, 2017[32])

Students are assessed on their performance during the internship by their supervisors in the firms. Employers commented that students frequently lack basic knowledge and transversal skills, such as responsibility and teamwork. At the same time, students and graduates advised the OECD review team that working conditions on internships are usually poor, and tasks are not aligned with skills levels or their fields of study. This

suggests that Mexican higher education institutions do not have the governance and quality assurance mechanisms in place to ensure the quality of internships for their students.

The good management of internships requires considerable resources and the commitment of both organisations. Some Mexican higher education institutions cover the insurance cost of internships to facilitate this practice, but many institutions do not have the financial resources. In addition to the costly management of internships, stakeholders suggested that the lack of employer contacts and difficulties in finding supervisors in both organisations are common barriers to internships.

The legal rules that govern internships in Mexico are not clear, and the Mexican labour law, even when part of formal education, does not regulate them. They can be paid or unpaid and it is unclear whether students have any protections based on institution-level regulation. This lack of clarity, alongside potential issues around insurance, means that some employers may be reluctant to offer internships to higher education students in Mexico.

Following an appeal by ANUIES for funding to address these issues, the Higher Education-Industry Foundation (*Fundación Educación Superior-Empresa*, FESE) was established in 2008 as a not-for-profit civil organisation supported by the federal government. Between 2008 and 2014, FESE operated as a central platform for connecting students with employers for internships. It developed guidelines to facilitate the organisation of internships and increase their relevance for students. FESE also introduced a standard contract and insurance policy for internships, thus overcoming a gap in the Mexican labour legislation. Stakeholders advised the OECD review team that FESE was largely effective, particularly for smaller higher education institutions that lack internal resources. However, they also noted that FESE could have developed better connections with higher education institutions and disseminated its services to students more effectively. The public funding for FESE ceased in 2014 and there is currently no central platform to connect students with employers for internships.

Social service

Bachelor and short-cycle tertiary education students in Mexican higher education institutions who have passed at least 70% of the academic credits of their programme must complete a social service (*servicio social*) in order to obtain their qualification and professional licence. The social service is a period of at least 480 hours intended to allow students to give back to society by working in non-governmental organisations, public education institutions, or government. Companies can also host students for their social service if they have a corporate social responsibility programme.

Students are expected to apply the discipline-specific knowledge and skills as well as transversal skills that they developed in higher education. However, stakeholders have reported that the social service is not sufficiently connected with study programmes or labour market relevant skills, and that there are no mechanisms in place to ensure that students complete a suitable social service. As a result, many students do not see the benefit of completing a social service. The co-ordination of student participation in social service is organised by a dedicated office (*oficinas de prácticas y servicio social*) in higher education institutions, but organisational capacity issues have been identified as a barrier to effective management across all subsystems.

Upon completion of the social service, students must produce a report detailing the tasks undertaken (Mexican Federal Government, 1981[33]), but this has different requirements in each institution. TecNM designed a standard evaluation form for all institutes of technology. However, the work undertaken during social service is not evaluated in terms of learning outcomes and transversal skills development. Furthermore, students do not have any avenue to provide formal feedback to higher education institutions on their social service experience, including its relevance and the types of skills they developed and applied in the workplace.

Dual education programmes

Dual education programmes, where students are employed in a firm full-time while also enrolled in an undergraduate programme, are well established in Germany. Since the 1990s, there have been several efforts to implement these programmes in Mexico, but they have been more accepted at the upper secondary education level. Started by German companies working in the automobile industry in Mexico, these programmes have also been adopted by large foreign companies in other sectors (e.g. aerospace and electronics) and, more recently, by some large Mexican companies.

Higher education institutions across all subsystems can establish these programmes; for example, Volkswagen Mexico, Audi Mexico and the private Inter-American University for Development established the first dual education programme in industrial engineering, which combines three months in the classroom and three months in the company over a period of ten semesters. However, these programmes are more common in the technological subsystems, where the SEP has developed a model for implementation.

Dual study programmes allow students to fully connect with potential employers, who also benefit from the recruitment of highly qualified and committed employees. However, there is still little awareness of these programmes or their benefits among higher education institutions, students and companies. The scarcity of resources and the lack of long-term planning dominant in many Mexican companies hinder the commitment of resources to negotiate programme conditions and to supervise and support students throughout the duration of the programme.

Collaborative initiatives and projects with employers

Students and employers can undertake a wide range of activities and projects together, which may even be included as part of the curriculum. For example, within the curricula of technological and polytechnic universities, it is common that students from the beginning of their studies work on projects based on real employer demands, which often include visits to company facilities. Students can also work with academic staff in providing consulting services to regional companies. The University of Guadalajara, which uses a competence-based and project-based approach, offers students a large project portfolio from different external organisations, and students choose projects to work on to gain academic credits.

There are other initiatives open to all students to interact with employers that are not part of the curriculum. For example, some companies launch contests targeting all higher education students to solve specific problems, such as the Valeo Innovation Challenge, which offers USD 200 000 in prizes worldwide for technological innovations or ideas for new ways to use cars. Similarly, the Schlumberger Ocean contest for university students aims to find solutions for marine oil exploration.

Other higher education institutions facilitate student interaction with employers by using common facilities. CETYS University created the Centre of Excellence for Innovation and Design where students benefit from hands-on innovative experience developing projects and solving industrial problems together with faculty and businesses in the aeronautics, automotive, electronics and renewable energies sectors.

The involvement of higher education institutions in science and technology parks can also facilitate collaboration between higher education institutions and employers. Around a dozen Mexican higher education institutions currently share a common physical space with employers to facilitate the development of relationships, which consequently increases the quantity and quality of collaborative practices. The Monterrey Research and Technology Innovation Park, which includes several universities such as ITESM and UANL, is one of the most successful parks. ITESM also owns or co-owns other 12 technology parks as part of its campuses, and UANL owns the World Trade Centre Monterrey, which is helping businesses to create and retain over 2 000 jobs annually in the state.

Similarly, the active participation of higher education institutions in business clusters promoted by SE facilitates interactions with employers and allows them to explore mutually beneficial situations. These often start with low commitment and low budget practices (e.g. a guest lecture), which can be used to develop personal relationships and progress towards more complex practices and potentially to strategic partnerships.

Staff mobility between higher education institutions and the world of work

The temporary mobility of staff between higher education institutions and external organisations has been proven to offer multiple benefits for both parties by reducing or eliminating cultural and organisational barriers. However, this practice is not common in many OECD countries due to professional norms and a lack of tradition, as well as academic workforce regulations.

Staff regulations in Mexican public higher education institutions allow full-time tenured academic staff to take a sabbatical period for a semester or a year after six years of service. During their sabbatical period, academic staff can undertake postgraduate studies, research or training, develop a business project or work in a company. For work in a company, the institutes of technology have prioritised the automotive, aerospace, agroindustry and energy sectors. Academic staff need to justify how working in their chosen sector will strengthen their academic profile and explain how the practical knowledge gained from their sabbatical period can be applied in the classroom.

Students can also benefit from practical learning through exposure to lecturers with business experience. This can be facilitated by offering experienced professionals short-term contracts in higher education to teach in specific programmes. Over 70% of academic staff in Mexico are on short-term contracts (ANUIES, 2018[34]). Some of these staff have had business experience or combine teaching with their non-academic employment, but stakeholders reported that most casual staff are teaching in areas in which they do not have any practical experience.

Students undertaking doctoral programmes in companies can be an effective bridge between higher education and business. To date, almost 1 500 doctoral candidates have participated in the CONACyT Postgraduate Programme with Industry (*programa de posgrados con industria*), most of whom were already employees before starting the programme. Joint research and development (R&D) and shared infrastructure can also

have a similar effect on mobility when employers, academic staff and, at times, students are collaborating and sharing the same physical space. However, this practice may not give students as much exposure to the business environment as if they were working in the company.

Box 5.8. Collaborative practices between institutes of technology and employers

The Engagement Unit of TecNM's online survey of engagement directors and vice-rectors of institutes of technology (detailed in Box 5.5) offers some valuable insights into the practices undertaken in collaboration with employers within the subsystem of institutes of technology.

Within the higher education system, institutes of technology are at the forefront of employer collaboration. Over half (54%) of the lecturers work part-time, and many have business experience, which helps their collaboration.

As part of their continuing education strategy, around 70% of the institutes offer at least one programme with the participation of regional companies, industrial sectors or government agencies. In addition, almost 40% of institutes of technology offer at least one dual education programme in collaboration with regional employers.

Students establish contacts with employers through their mandatory social service and compulsory internships. Almost 20% of respondents believe that the social service does not help students improve their labour market performance, mainly because the social service they complete is often not related to their studies. On the other hand, respondents indicated that compulsory internships have a greater impact on graduates' skills; and over half reported that internships help students succeed in the labour market.

Around 70% of respondents think that their institute is developing a suitable number of professionals with appropriate skills, but recognise that graduates still face major problems in entering and succeeding in the labour market. The main issue is the inability of the labour markets to accommodate all graduates.

Respondents believe that in order to improve the results of graduates in the labour market, employers should be more open to participating in dual education programmes, work-based learning, curriculum co-design and other engagement practices.

Source: Information provided by TecNM.

Continuing education

Higher education institutions can engage with employers in tailored continuing education and training courses that specifically address their needs. For higher education institutions, the tuition fees for continuing education are a source of extra funding. For employers, this can be an effective way to quickly update or improve the skills of their employees in specific areas.

Continuing education in higher education systems is common practice in many countries, where institutions offer a wide range of professional development and training courses, enabling courses to help students enter higher education through alternative pathways, and general interest courses. In some instances, students can elect to take an exam for the courses taken through this arm of the institution and receive credits for degree programmes. However, few Mexican higher education institutions offer a comprehensive

set of continuing education programmes, and most of those that do are direct-provision institutions. For instance, in 2016, UAEH delivered courses, workshops, seminars and conferences to 16 355 users and generated almost MXN 20 mill (USD 1.1 million) in revenue. While some courses are open to the public, others are tailored for public servants or for specific sectors or companies.

The National Council for Standardisation and Certification of Labour Competencies (CONOCER), a government agency of the SEP, also provides a form of continuing education through higher education. Over 110 higher education institutions act as skills certification agencies for CONOCER and, as such, not only certify specific skills, but also provide short courses and exams to help their students, graduates and the public develop occupation-specific and transversal skills. Almost 70% of certificates awarded in 2017 were in the area of information and communication technology (ICT). CONOCER has also recognised some of these institutions as "normalisation agencies", which identify and standardise new skills for inclusion in the National Registry of Competency Standards (*Registro Nacional de Estándares de Competencia*, RENEC) (CONOCER, 2018[35]). Some skills have been standardised at the request of a specific sector. For example, the Technological University of Tijuana works closely with the state government and certifies a number of public sector skills for state civil servants.

A small number of higher education institutions have a strategic relationship with employers and share infrastructure, including joint training centres, which helps ensure students are using state of the art equipment and developing current skills. This is particularly the case with foreign automotive companies based in Mexico, and has led to the establishment of the UTQ-Peugeot Training Centre and the Technological University of Puebla-Audi Training Centre.

However, on the whole, higher education plays a very small role in professional development and training in Mexico, with only 1% of Mexican companies using continuing education in higher education institutions as a way to train their staff (CIDAC, 2014[10]). Although large companies provide more training than smaller ones, there is a clear preference for either internal training or private training providers (World Economic Forum, 2018[36]). For instance, over 100 large companies in Mexico have their own institutional training programmes, and some have established universities that offer programmes officially recognised by the SEP through a Recognition of Official Validation of Studies. For example, the Liverpool Virtual University is a private university established by a shopping centre chain, which has provided its employees with government recognised bachelor's and master's programmes since 2000, as well as short certificate courses (Universidad Virtual Liverpool, 2018[37]).

The lack of a training culture in Mexican companies may also be contributing to higher education's limited role in employee training. Many employers do not provide training for their employees. This is partly because of the large share of companies operating in the informal economy, which tend to invest less in training (OECD, 2017[38]), but also due to a perception among employers that training will provide more opportunities for employees to find alternative work and leave the company (CIDAC, 2014[10]).

Enabling factors and barriers to the use of collaborative practices

Collaboration between higher education institutions and social partners is a requirement in the technological subsystems. The legal framework for these institutions facilitates the use of a wide range of collaborative practices, from the participation of social partners in governing and advisory boards to their involvement in curriculum design and update.

The participation of higher education institutions in science and technology parks and clusters involves physical proximity with companies, which facilitates personal interaction, synergies and infrastructure sharing. This is likely to lead to greater collaboration in research and education.

A number of Mexican higher education institutions have formal and well-established collaborations with companies and other higher education institutions in Mexico and abroad that have previous experience in collaborative practices. Mexican institutions can learn from these relationships and adapt the practices to their context.

However, these promising practices are hindered by the absence of a tradition of collaboration between academic staff and social partners in Mexico more broadly. Higher education institutions and employers are generally not well connected or aware of each other's needs. Many employers do not know how to get involved in collaborative practices with higher education institutions, and the staff within higher education institutions do not have a good understanding of the labour market and the types of skills needed by employers.

Higher education institutions lack formal structures and sufficient human resources to support collaborative practices with social partners. Collaboration is often the result of informal relationships at the individual level. However, many academic staff find the administration of collaboration overwhelming and time consuming.

Professional staff dedicated to supporting engagement between institutions and social partners could overcome some of these issues. However, there are few intermediaries in higher education institutions with adequate industry knowledge or professional training to assist academic staff or establish relationships with employers. In addition, initiatives or offices responsible for collaborative activities within most institutions are not connected, which limits synergies. As a result, employers also find it difficult to make contacts and build relationships with academic staff and students.

Employers and academic staff who engage in collaborative practices report significant communication issues, which are exacerbated by organisational and cultural differences (Cabrero et al., 2011[39]). They both report that they have very different objectives for education and expectations of students' skills, and that they feel as though they are speaking two different languages when discussing education matters. While employers have reported that graduates do not have the appropriate skills to succeed in the labour market, they rarely discuss this with higher education institutions, thereby missing the opportunity to provide valuable feedback that institutions could use to adjust their programmes (CIDAC, 2014[10]). The poor communication between the key actors involved in this area often leads to confusion, and even resistance against collaboration. This can hamper opportunities to transform one-off interactions into long-term strategic partnerships based on trust and commitment.

Most public funding is based on student numbers, and stakeholders have identified the lack of funding as the main barrier to the implementation of good practices to support labour market relevance and outcomes in higher education. However, funding alone will not improve the situation if academic staff and higher education managers do not change their views on the importance of developing labour-market relevant skills in students, notably with a longer-term view and an established commitment to student learning and employability. This attitude is exacerbated by the focus on research performance, the lack of business experience among academic staff, and the absence of incentives to collaborate with employers and time officially allocated to collaboration.

The absence of established methodologies for measuring collaborative practices or mechanisms to systematically share good practices are key barriers to the more widespread use of collaborative practices across the Mexican higher education system. As a result, successful practices are often not disseminated or adopted by others.

Implications for public policy

There is general lack of awareness among students, higher education institutions and employers concerning the importance of connecting higher education with the labour market. The use of practices to enhance labour market relevance and outcomes in the Mexican higher education system appear to be limited to a small group of higher education institutions or faculties within institutions (Badillo Vega et al., 2016[28]); (Badillo-Vega et al., 2015[40]). The use of these practices within subsystems and institutions is uneven, and overall only reaches a small number of students. The implementation of current practices could be improved, as many practices are not applied effectively.

There are examples of good practices in Mexico that could serve as learning models for other institutions. However, there is little attention paid to this topic by Mexican researchers and, unlike many other countries, there is a dearth of literature on practices used in Mexico or their effectiveness. The little information available is not widely or systematically disseminated across institutions and social partners. By contrast, there is a wealth of international literature on practices to enhance labour market relevance and outcomes of higher education, as well as examples of good practice in other countries. Mexican higher education institutions could use this information to adapt to their own context. However, there is no mechanism in place to share this information among higher education institutions and social partners.

Improving teaching in higher education, including through the introduction of more innovative learning and teaching practices, has the potential to improve the labour market relevance of study programmes and graduate outcomes. However, there is a great deal of room for improvement in this area as there is not a strong culture of excellence in learning and teaching, Mexican academic staff have little exposure to training on teaching in higher education, and there are no incentives in place to raise the profile of teaching in higher education.

Collaborations between higher education institutions and social partners require adequate resources and good management to be effective, but this engagement in Mexico is piecemeal. With the exception of institutions within the technological subsystems, there are a lack of comprehensive strategies, sufficient financial resources or supporting mechanisms in place to effectively collaborate with social partners. Some academics do not even see the value of these collaborative practices and do not involve social partners for fear of compromising their autonomy and academic freedom.

Within the higher education system, the government has substantial influence on the practices of direct-provision subsystems; however, most higher education institutions have significant discretion in how they develop and implement these practices. This reduces the influence of the government and makes the effectiveness of policies difficult to predict. Despite this autonomy, the government can still play a key role in creating adequate frameworks and conditions for these practices through public policy.

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Chapter 6. Enhancing labour market relevance and outcomes through policy

This chapter examines the approaches that Mexican policy makers can take to steer the higher education system towards greater labour market relevance. It focuses on how well different policy levers are working and discusses where new policy responses are required. Evidence from formal evaluations and recent OECD reviews on related topics are used for the analysis, as well as evidence gathered as part of the OECD review team's interviews and workshops with key stakeholders. The chapter also provides international examples that Mexico may wish to consider when designing new ways to better support the labour market relevance of higher education.

Skills are the foundation for inclusive growth in Mexico and, as discussed in previous chapters, higher education contributes significantly to inclusive growth in various ways. However, Mexico lacks a comprehensive strategic vision for driving the contribution of higher education to the economy and society more broadly. Furthermore, it lacks a strong, cohesive legal framework that outlines the objectives of higher education and the roles and responsibilities of the two levels of government and higher education institutions.

To meet the various needs of the labour market and the community, the higher education system has evolved over time into a complex set of 13 subsystems with varying levels of oversight by government. The quality assurance system is fragmented and has numerous agencies. Institutional and programme accreditation is voluntary and unevenly spread across the system, leaving students and employers unsure of the quality of higher education. Various regulations have been put in place to address quality issues over time, which have created a complex system of licensing and accreditation, with different processes for public and private higher education institutions. All these factors have serious implications for the labour market relevance and outcomes of higher education in Mexico.

The analysis in Chapter 5 suggests that higher education institutions do not make full use of many of the practices that can effectively help students develop labour market relevant skills. One of the main barriers for the widespread use of these practices is the weak policy framework for higher education in Mexico. There are very few policies aimed directly at enhancing the labour market relevance and outcomes of higher education, and those that exist are limited to specific subsystems. This is of particular concern given the vocational focus of higher education in Mexico and its emphasis on delivering graduates with bachelor's qualifications that lead to jobs.

This chapter considers existing policy levers in Mexico and identifies how these could be strengthened to enhance the labour market relevance and outcomes of the higher education system. It also provides policy advice on additional approaches that could improve the performance of the higher education system. These policies are aimed at enhancing the labour market relevance and outcomes of the higher education system by:

- Aligning higher education with the changing needs of the labour market.
- Helping students succeed in higher education and the labour market.
- Working together effectively to enhance labour market relevance and outcomes.

Current policies to support the labour market relevance and outcomes of higher education

Policy levers to enhance labour market relevance and outcomes in higher education

Countries signal their priorities in higher education by providing a clear articulation of the expectations of institutions. This is usually set out in a strategic document that sets the goals for the higher education system together with a long-term vision and framework for the suite of policy levers aimed at achieving those goals (OECD, 2008[1]). This approach provides a mechanism for government to steer the higher education system through incentives that shape institutional behaviour towards national policy goals. A strategic approach to enhancing the labour market relevance and outcomes of higher education in

Mexico is largely absent, and targeted policies only exist in the three technological subsystems.

The complexity of the Mexican higher education system makes it difficult for the government to steer change. While many higher education systems have a wide range of institution types, and some operate with a small number of distinct subsystems, Mexico has created 13 subsystems of higher education institutions that differ considerably in terms of governance structures, funding arrangements, and government influence and dependence.

The share of the private higher education sector, where the reach of policy levers is the lowest, accounts for approximately 70% of institutions and 33% of total student enrolment. In private institutions, regulatory policy is confined to voluntary programme licensing and accreditation. Unlike in many other countries, the government is reluctant to use available policy levers, such as conditions on funding, to steer higher education institutions, which enjoy a high degree of autonomy. Fully-autonomous institutions enrol 39% of students. On the other hand, the government directly manages and regulates the direct-provision subsystems, which account for less than 30% of student enrolment.

Funding is a key policy lever that can strategically steer higher education and encourage institutions to adhere to national priorities and objectives. This can be done by allocating some or all of the block grant on the basis of a formula that measures performance. However, the allocation of the block grant to cover staff and operating costs (ordinary funding) to public institutions in Mexico is based on historical trends and is adjusted each year, in negotiation with individual institutions, depending on the availability of federal funds.

Targeted funding (extraordinary funding) can be a very powerful policy lever to steer the behaviour of higher education institutions (Moreno Arellano, 2017[2]) (Mungaray et al., 2016[3]), and all public higher education institutions in Mexico are eligible for targeted funding allocated to institutions for specific government programmes. While there is no targeted funding focused exclusively on enhancing the labour market relevance and outcomes of higher education in Mexico, current targeted funding programmes are aimed at the following three key areas, which can help students develop labour market relevant skills and achieve good outcomes:

- Improvements in infrastructure and expansion of the higher education system.
- Upgrading the qualification levels of full-time academic staff.
- Supporting institutional projects to increase the quality of learning and teaching.

However, there are criticisms of these targeted funding programmes, such as fragmentation, complex application procedures and overlapping and unclear objectives, (OECD, 2019[4]), and the use of targeted funding by higher education institutions to cover basic costs due to insufficient block grant funding (ANUIES, 2017[5]).

The government can also use information policy levers to enhance the labour market relevance and outcomes of higher education. Information can encourage students to select programmes, help employers in their planning and recruiting processes, and help higher education institutions be more responsive to labour market demands, while enabling them to influence future demands. However, there are significant information gaps in the labour market information on higher education in Mexico. In addition, the complexity of the Mexican higher education system, regional diversity, and the lack of co-ordination mechanisms greatly limit the use of existing information policy levers.

Table 6.1. Policies outside the higher education domain that can affect labour market relevance and outcomes

Policy area	Key initiatives
Education	Education reform (2012) helped raise quality in lower levels of education and made upper secondary education mandatory.
Employment and productivity	Federal Labour Act (*Ley Federal del Trabajo*) (1970) regulates labour relationships in higher education institutions, but does not regulate internships or other student work-based learning activities. Training programmes funded by the Secretariat of Labour and Social Welfare (STPS) (e.g. Training Agents Programmes and PROCADIST), which are freely available for all workers. Employment National Service and employment fairs organised by STPS to support job seekers. National Productivity Committee (*Comité Nacional de la Productividad*, CNP) creates national initiatives to improve competitiveness with representatives from the secretariats of education, government, chambers of commerce and unions. CNP has a human capital sub-committee.
Regional	Federal Law on Special Economic Zones (2016) regulates interventions to improve development in geographic areas that are lagging behind. Industrial Clusters policy funds the establishment of industrial clusters in specific areas (e.g. automotive and aerospace) to increase employment and development. Some clusters include higher education institutions as members. Government initiatives for regional development affect the provision of higher education in a region and its role in social and economic development.
Science, technology and innovation	The General Council for Scientific Research, Technological Development and Innovation (*Consejo General de Investigación Científica y Desarrollo Tecnológico e Innovación*) makes strategic decisions related to science, technology and innovation and involves federal secretariats of education, internal affairs, finance, health, energy and economy under the auspices of the President of Mexico. Science and Technology Act (2009) (*Ley de Ciencia y Tecnología*) defines the roles and responsibilities of federal and state actors for science and technology. PECiTI, Special Programme for Science, Technology and Innovation (*Programa Especial de Ciencia, Tecnología e Innovación*) establishes national research priorities. CONACyT, the National Science and Technology Council (*Consejo Nacional de Ciencia y Tecnología*), has a wide range of targeted funding programmes for research and innovation for companies, postgraduate students and higher education institutions. Inter-sectoral Innovation Committee (*Comité Intersectorial para la Innovación*) promotes, designs and operates the national innovation policy to enhance the innovation culture. Mexican Innovation Observatory (*Observatorio Mexicano de Innovación*), funded by the Secretariat of the Economy, collects and publishes data on innovation activity in Mexico, compares it internationally and evaluates the impact of the main innovation policies. Science and technology parks have been created by federal and state governments in proximity to some higher education institutions and research centres.
Internationa-lisation	ProMexico, Mexico's internationalisation agency, co-ordinates internationalisation efforts at federal and state levels. There are currently little to no connections to higher education and higher education institutions.
Entrepreneur-ship	INADEM, National Institute of the Entrepreneur (*Instituto Nacional del Emprendedor*), supports entrepreneurs, micro, small and medium enterprises through the National Fund for Entrepreneurs. It also support the establishment and operations of incubators and accelerators in higher education institutions.

Policies outside the higher education domain that can affect labour market relevance and outcomes

Mexico has a range of policies outside the higher education domain that can affect the labour market relevance and outcomes of higher education, including: wider education policy; employment policy; regional policy; science, technology and innovation policy; entrepreneurship policy; and internationalisation policy (Table 6.1). The most relevant of these policies will be discussed in the remainder of this chapter.

Aligning higher education with the changing needs of the labour market

Raising awareness of the importance of the labour market relevance and outcomes of higher education

While there is some public debate on the need to enhance the labour market relevance and outcomes of higher education in Mexico, there is no strategic vision for higher education that highlights its importance and guides future policy development over the medium and long term. The sectoral programmes of the federal secretariats of education, labour and social welfare, and economy are designed independently, with little focus on the role of higher education for inclusive growth.

Mexico has no common legal framework that comprehensively regulates the higher education system. Existing legislation, the Higher Education Co-ordination Act (1978) (*Ley de Coordinación de la Educación Superior*) and the Education Act (1993) (*Ley General de Educación*), are high-level legal documents that, as discussed in Chapter 3, do not include any provisions related to the labour market relevance and outcomes of higher education. Stakeholders advised the OECD that the Higher Education Co-ordination Act of 1978 did not reflect the current situation in higher education in Mexico and lacked sufficient detail around the roles and responsibilities of governments, higher education institutions and other key actors (OECD, 2019[4]). In 2017 and 2018, ANUIES, with the support of a number of members of Congress, put forward a proposal for a new draft act (*Anteproyecto de Ley General de Educación Superior*) to modernise the 1978 legislation, clarifying the roles and responsibilities of different actors. However, the draft act has not been debated in Congress and has not progressed towards becoming legislation.

There are a number of government initiatives in place that could help improve the labour market relevance of higher education, but they are disjointed and poorly co-ordinated. Policies have been introduced over time, without any attempt to create a cohesive framework with a long-term vision. Some successful policies have been allowed to lapse, while others that appear not to be very effective continue to be implemented. Several higher education institutions have their own initiatives to help students develop labour market relevant skills, as discussed in Chapter 5. However, funding and quality in general are prioritised over aligning higher education with the labour market, which leaves initiatives focused on improving the labour market relevance of programmes and graduate outcomes fragmented in terms of reach and impact. Moreover, there are no effective mechanisms in place to monitor and evaluate the effectiveness and impact of existing policies and practices. Without change, policy initiatives and the activities of higher education institutions will remain the accumulation of short-term decisions.

A national strategy on enhancing the labour market relevance and outcomes of higher education would help highlight the importance of the issue and raise awareness among higher education institutions, students and employers. A strategy would provide a

cohesive framework for a suite of public policy initiatives to guide and complement the activities of higher education institutions, and ensure the effective co-ordination across levels of government, agencies and higher education stakeholders. The strategy should be anchored in a new federal legislation that specifies the respective roles and responsibilities of the federal government and agencies, as well as those of publicly funded institutions. The strategy should be developed in consultation with higher education institutions, students, graduates, employers and the broader community, and should involve the relevant secretariats across the federal and state governments.

Promising first steps in this direction have already been made with the creation of the inter-secretarial National Productivity Committee (CNP) in 2012, which recently developed a skills framework for Mexico (*Sistema de Formación de Habilidades*). This skills framework covers all levels of education and the skill needs of the strategic industries. CNP's co-ordinating role will be discussed in the last section of this chapter.

Strengthening the quality of higher education

Representative data on the skills of higher education graduates in Mexico is not available, however, programme-specific assessments of knowledge and skills at the end of bachelor's programmes (*Exámenes Generales para el Egreso de Licenciatura*, EGEL) suggest poor skills levels for many higher education graduates. This is supported by the views of employers and graduates themselves. Employers claim that study programmes do not deliver what the labour market needs in terms of discipline-specific knowledge and transversal skills. In discussions with the OECD review team, graduates who are currently employed raised concerns about the quality of their studies and the limited relevance for their current jobs (see Chapter 3).

Raising the quality of higher education has been a policy priority in Mexico for decades, and strengthening the quality and relevance of upper secondary and higher education is a key objective of the Sectoral Education Programme 2013-2018 (*Programa Sectorial de Educación 2013-2018*). Targeted funding is a key policy lever used to raise quality in higher education; however, it only reaches public higher education institutions, which account for 67% of student enrolment but only 30% of institutions.

Qualifications frameworks can help assess, develop and enhance quality. The Mexican National Qualifications Framework was released in 2014 and is currently under review by the Secretariat of Public Education (*Secretaría de Educación Pública*, SEP). It covers all levels of education and was expected to serve as a reference for the recognition of qualifications and learning outcomes, as well as for certification. The framework was also expected to help employers, workers, education institutions and the government to work together in setting agendas and making decisions in skills matters (UNESCO, 2014[6]). However, the framework has not yet reached visibility within the higher education system, and is not widely used among employers.

The quality assurance system

Most countries in the European Higher Education Area and beyond require higher education institutions to have policies for quality assurance, with full transparency imperative in some countries (De Lel et al., 2018[7]). In Europe, this is guided by the European Standards and Guidelines for Quality Assurance in Higher Education (ESG) (ENQA, 2015[8]). The ESG do not prescribe how quality assurance processes should be implemented, instead they provide generic standards and guidelines for institutions,

quality assurance agencies and governments in areas that are important for successful quality provision in higher education.

In Mexico, the quality assurance system is voluntary, complex and fragmented, it lacks transparency and coherence and is costly. The SEP has recognised multiple external quality assurance agencies that address different levels of higher education and fields of study. As discussed in Chapter 3, these have overlapping functions, apply different criteria, and use different review mechanisms. To enhance the co-ordination and harmonisation of the different approaches, in mid-2017 the SEP reactivated the Commission for the Co-ordination of the Higher Education Evaluation Agencies (*Comisión de Coordinación de los Organismos de Evaluación de la Educación Superior*, COCOEES). It is still too early to assess the effectiveness of this commission.

A long-term policy objective of most countries is to enhance the internal quality assurance capacity of higher education institutions with (self-developed) standards and guidelines for learning and teaching activities, staff development and ongoing monitoring and periodic (external) reviews of programmes, student admission and progression (ENQA, 2015[8]). In Mexico, there is not a strong culture of internal quality assurance across the higher education system, but there have been improvements in the public subsystems through targeted funding programmes.

The Mexican Constitution allows any person to establish a higher education institution offering education programmes. The only federal policy that regulates the quality of higher education is the Secretarial Agreement 17/11/17 for the Recognition of Official Validation of Studies (*Acuerdo Secretarial para el Reconocimiento de Validez Oficial de Estudios*, RVOE), which substituted the Secretarial Agreement 279. The RVOE establishes the basic requirements that programmes offered by private higher education institutions need to comply with. A RVOE is awarded indefinitely, although it can be removed in case of non-compliance. Repeated audits and evaluations are not systematic, and only two of over 20 000 RVOEs were removed in 2017. Although requisites have increased in this renewed agreement, a RVOE still does not guarantee minimum quality standards.

Programmes that do not have a RVOE are excluded from the higher education system, and there is no information about how many students are enrolled in these programmes. Graduates from these programmes do receive a professional license (*cédula professional*) upon graduation, which is mandatory for certain professions. There are cases where students enrolled in programmes without a RVOE have put pressure on the government to award a RVOE at a later stage.

Undergraduate programmes in public higher education institutions, and programmes with a RVOE in private institutions, can voluntarily apply for programme evaluation or accreditation by COPAES, the Higher Education Accreditation Council (*Consejo para la Acreditación de la Educación Superior*), and/or CIIES, the Inter-institutional Committees for Higher Education Assessment (*Comités Interinstitucionales para la Evaluación de la Educación Superior*). In addition, health programmes must apply for the approval of CIFRHS, the Inter-institutional Commission for the Education of Human Resources in the Health Sector (*Comisión Interinstitucional de Formación de Recursos Humanos en Salud*) (see Chapter 3).

For public higher education institutions, successful programme evaluation or accreditation as a "quality programme" is a requirement of targeted funding programmes; while for private institutions, the main incentive is reputation and increased attractiveness

for students. In 2017, only 17.3% of programmes that could apply to be accredited or assessed by COPAES and CIEES qualified as "quality programmes", which corresponds to 34.8% of programmes in public higher education institutions and 6.4% in private institutions.

Currently, less than half (43.1%) of total undergraduate enrolment is in evaluated or accredited programmes, corresponding with 55.5% of enrolment in public higher education institutions and 15.4% in private institutions. Almost 17% of higher education institutions have at least one "quality programme". Differences by state are also large: while in Nuevo León, 64.3% of undergraduates programmes are "quality programmes", Chiapas has less than half of that (30.2%) (ANUIES, 2017[5]). This shows the limited and unequal coverage of the quality assurance system.

CONACyT, in collaboration with the SEP, evaluates the quality of postgraduate programmes. Currently, 20% (2 297) of all postgraduate programmes offered are listed in the National Programme of Quality Postgraduate Studies (*Programa Nacional de Posgrados de Calidad*, PNPC). Around 11% of institutions and research centres have at least one postgraduate programme listed in the PNPC, but the distribution is unequal. Almost two-thirds of PNPC programmes are located either in a federal or state university, the two most research-oriented subsystems, while only 17 of the over 2 500 private higher education institutions have PNPC programmes.

Institutional accreditation for private higher education institutions has existed since 2003. Accreditation is implemented by FIMPES, the Federation of Mexican Private Higher Education Institutions (*Federación de Instituciones Mexicanas Particulares de Educación Superior*). The 109 members account for over half of the enrolment in private higher education institutions.

The National Centre of Higher Education Evaluation (*Centro Nacional de Evaluación de la Educación Superior*, CENEVAL) developed an indicator to measure academic performance per programme (*Indicador de Desempeño Académico por Programa*, IDAP) based on the results of the EGEL test. Programmes are classified as level one, level two and without level. The SEP considers IDAP as one of the quality indicators to award targeted funding, but it is questionable as to how well the indictor measures quality, as only a minimum of ten graduates are required to perform the test.

Targeted funding to increase quality

The federal government provides targeted funding to support quality in higher education through three key programmes: the Programme for the Professional Development of Academic Staff (*Programa para el Desarrollo Profesional Docente*, PRODEP), the Programme to Strengthen the Quality of Education (*Programa Fortalecimiento de la Calidad Educativa*, PFCE), and the Programme to Support the Development of Higher Education (*Programa de Apoyo al Desarrollo de la Educación Superior*, PADES). While these programmes are directed at improving the quality of higher education, they include some aspects related to labour market relevance and outcomes.

Funding under PRODEP covers all levels of education, including 9 of the 11 public higher education subsystems. Funding for higher education institutions is focused on supporting full-time academic staff with the "desired profile", funding the activities of academic research groups (*cuerpos académicos*), and scholarships for full-time academic staff to gain postgraduate level qualifications. The desired profile for full-time academic staff includes a postgraduate level degree, full-time teaching and academic support

(*tutorías*), the transfer of knowledge (e.g. publications, conference presentations), and active participation in higher education institutional affairs and outreach activities (e.g. committees, organisation of events). The total funding for PRODEP in 2018 was approximately MXN 660 million (Mexican peso) (USD 34 million) and is distributed among 492 higher education institutions.

Among public higher education institutions, 70 are eligible for federal government funding under PFCE (Strengthening Education Quality Programme). The programme has a wide range of objectives, including quality, student access and retention. It gives priority to institutions that can demonstrate a certain level of quality, engagement with social partners and collaborative activities with industry. As a result, the programme supports good practices but does not improve quality or address quality issues. The funding for PFCE in 2018 was approximately MXN 1 billion (USD 52 million), which was allocated to 575 projects in 60 higher education institutions.

PADES provides strategic funding to higher education institutions for a period of nine months in order to: increase quality in higher education (including support for training full-time academic staff and to fulfil the criteria of accreditation agencies); embed "transversal content" into the curriculum (e.g. sustainability, gender equity and entrepreneurship); increase and strengthen the diversification of the education offer; and enhance innovation, internationalisation, and engagement with social partners. The funding for PADES in 2018 was approximately MXN 437 million (USD 22 million).

Stakeholders reported to the OECD review team that the length of the projects under each of these programmes is too short to have a tangible impact in the institutions. This is exacerbated by the one-off nature of the projects, which cannot be renewed, and guidelines that prevent institutions from applying for more funding. PFCE and PADES both support advanced practice instead of closing gaps by building capacity in institutions that lag behind.

Mexico needs to comprehensively address quality in higher education, not only by recognising existing strengths, but by building capacity in the subsystems and higher education institutions that are lagging behind. In line with the OECD's broader review of higher education (OECD, 2019[4]), the aim should be to improve the quality of higher education through strengthened institutional and programme accreditation, and to ensure that programme accreditation takes account of the National Qualification Framework.

Integrating labour market relevance into quality assurance mechanisms

Quality assurance mechanisms can be an effective regulatory policy lever to encourage higher education institutions to enhance the labour market relevance of their programme offer. However, caution should be taken to avoid programmes becoming too focused on short-term labour market needs, and it should be ensured that the curriculum is based on national and international standards and that students develop key transferable skills to help graduates in the long term.

For higher education institutions in the three technological subsystems, the legislative framework requires a series of practices that can enhance labour market relevance and outcomes, including engagement with employers in governance, as discussed in Chapter 5. The requirement of a feasibility study when proposing the creation of a new programme can also be a useful practice. These studies must include employers' perspectives and labour market data on the relevance of the proposed programmes. Institutions need to report on these practices to their co-ordinating agency within the SEP.

The institutional accreditation of private universities carried out by FIMPES does not include labour market relevance as criteria, but focuses on the number of programmes already accredited in the institution. The assessment criteria provided by COPAES and CIEES for undergraduate programme evaluation and accreditation includes several aspects related to labour market relevance and outcomes of higher education (Table 6.2).

Table 6.2. Criteria of evaluation and accreditation of programmes in Mexico

Higher Education Accreditation Council (COPAES)	Inter-institutional Committees for Higher Education Assessment (CIEES)
Academic staff	**Area 1. Fundamentals and operation**
Students	1. Aims of the programme
• Graduation rates	2. Reasons for the need of the programme
• Results of EGEL	3. General conditions for the operation of the programme
• Programmes to reduce drop-out rate and graduates without professional license	**Area 2. Curricula**
Study programme	1. Educational model and study plan
• Existence of studies that ensure the relevance of the programme for society and labour market	2. Information and communication technology (ICT) use in learning and teaching
• Development of transversal skills	3. Activities for integral education
• Flexibility (dual education, optional modules or lateral exits, participation of student in the curricula)	4. Courses or complementary activities for transversal education
• Periodicity of curricula update and consideration of societal needs and labour market for this update	5. Teaching of foreign languages
Assessment	6. Provision of external certifications for students
• Transversal education	**Area 3. Student pathways**
• Entrepreneurship programme	1. Entry to programme
• Extracurricular activities	2. Admission process and criteria
• Career services	3. Existence of programmes to support students who access with low skills
• Learning support services	4. Student trajectory
• Tutorials	5. Student mobility and exchange programmes
• Engagement (*vinculación*)	6. Tutorials
Work-based learning	7. Academic support
• Social service	8. Work-based learning opportunities
• Agreements with social partners	9. Graduation
• Graduate surveys	10. Implementation of the social service
• Student and staff mobility programmes	11. Links with alumni
• Registry of students seeking for a job or work-based learning opportunity (*bolsa de trabajo*)	12. Student results
Research	Results in graduation exams
• Infrastructure and equipment	Mastery of foreign languages
• Management and funding	Participation in extracurricular activities
	Graduate performance
	Employability / employers' opinion
	Fulfilment of the graduation profile
	Area 4. Academic staff, infrastructure and services
	1. Academic staff
	2. Academic infrastructure
	3. Physical infrastructure
	4. Support services
	Scholarship and student financial support
	Career service

Note: Only the second-level criteria related to labour market relevance of higher education are included.
Source: OECD compilation based on (COPAES, 2016[9]) (CIEES, 2008[10]).

Despite the existing criteria, stakeholders reported that its application is flawed because there are no specific guidelines for the accreditation and evaluation process or transparency regarding how the criteria is applied. Reporting requirements do not seem to be strict and the application of the criteria does not seem to be consistent among agencies. The voluntary nature of the accreditation further reduces its importance and impact.

At the postgraduate level, CONACyT establishes a set of criteria to recognise programmes listed in the PNPC in three categories: research, professional or industrial programmes. While the number of criteria related to labour market relevance outcomes is low for research programmes, it is higher for professional programmes. The 38 postgraduate programmes with industry (*programa de posgrados con industria*) are, by nature, designed and delivered in close collaboration with companies.

Going forward, the government should encourage quality assurance agencies to be more consistent in the application of criteria that reflect the labour market relevance and outcomes of higher education institutions and their engagement with social partners. The government should also encourage FIMPES to include the criteria in the voluntary institutional accreditation for private higher education institutions. Guidelines for self-evaluation reports will help, as will a greater emphasis on disseminating information on how to implement criteria in practice. The government should encourage quality assurance agencies to keep the accreditation process sufficiently flexible to respond timely to changing labour market needs.

Helping higher education institutions to engage more effectively with employers

Effective partnerships with employers allow students to transition quicker into the labour market, with potentially better labour market outcomes, and employers get primary access to highly skilled workers and can be involved in the design and delivery of programmes. Through these partnerships, academic staff learn about current applications of discipline-specific knowledge, and higher education institutions can strengthen their role as knowledge hubs in a specific industry or local economy (Wilson, 2012[11]). Organising effective partnerships requires motivated individuals and the institutional capacity to develop successful activities into sustainable institutional practice.

Mexican law requires engagement with social partners at an institutional level in some subsystems. In the technological subsystems, social partners are required to participate in advisory and governing boards, while participation in autonomous higher education institutions is only in advisory boards. Social partners can help ensure the delivery of programmes that meet labour market needs, but in Mexico this practice is not fully used for this purpose.

There are multiple ways of organising engagement with employers at the institutional level, and examples from the United States, Spain and Norway (see Box 6.1) show that there are different roles for public policy to steer and support engagement with employers.

Box 6.1. Encouraging engagement between higher education institutions and employers in the United States, Spain, and Norway.

Advisory boards are common practice in many higher education institutions in the **United States**. They have members of various industries who seek a purposeful relationship (talent, knowledge) between higher education and industry. Operating at an institutional,

and often also departmental, level these boards offer advice, contribute to institutional development, and play a role in fundraising and programme development. Departmental advisory boards often provide a structured and sustainable model for university-industry collaboration easy to understand for all partners. Advisory boards have been traditionally strong in engineering and ICT departments.

The social councils (*Consejos Sociales*) of public higher education institutions in **Spain** are interdisciplinary advisory boards that promote inter-institutional collaboration and include social partners as members. Social councils stimulate new approaches in education and teaching by taking greater account of the local socio-economic context, challenges facing society, and their global and local dimensions. In 2005, the presidents of six institutions created the National Association of Social Councils (*Conferencia de Consejos Sociales de las Universidades Españolas*), which today has 45 public and seven private universities as members. The association is a useful platform to share experiences and learn from good practice, particularly regarding strategic plans and programmes related to employability, national internship programmes and effective community links.

A key policy lever in **Norway** to help higher education institutions work better together with employers is the mandated co-operation between higher education institutions and social partners through the councils for co-operation with working life (RSAs). The RSAs were created in 2011 by the Norwegian government in all state-owned institutions to facilitate a more structured and binding collaboration between higher education and the world of work, to strengthen the labour market relevance of degree programmes and continuing education, and to share information. Evaluations of RSAs have identified areas for improvement: they could be further linked to degree programmes, for example by establishing sub-committees at the operational level to better support programme design and delivery; and a mechanism could be developed to allow RSA committees to share experiences and good practices that can be replicated across the system.

Source: (Mandviwalla et al., 2015[12])for Advisory Boards in the United States; (National Association of Social Councils of Spain,(n.d.)[13]) for the Social Councils in Spain, and (OECD, 2018[14])for the RSA in Norway.

Although most higher education institutions in Mexico include the concept of engagement with social partners in their mission, concrete collaboration with employers is only weakly developed and occurs primarily with large, foreign companies. Overall, there is no tradition of academic staff interacting with employers. Temporary staff mobility from higher education to industry is regulated for tenured academic staff in public universities. However, most (71%) academic staff in Mexican higher education institutions are casual staff (*profesor de asignatura*) and cannot benefit from this arrangement.

Many higher education institutions do not have enough resources to effectively organise engagement with employers and co-ordinate efforts across the institution. The engagement offices established by some institutions to address this are understaffed and underfunded. Key success factors in organising engagement offices include: a clear and simple mission statement; clear value propositions for each member and their role in monitoring and assessing the work of the engagement structure; committed members; regular meetings with interesting topics and opportunities to socialise; transparency in the generation and use of board generated funding; regular communication to stakeholders inside and outside the higher education institution; and engaging students (Zellner, 2012[15]).

There has been no specifically targeted funding programme to support engagement offices in higher education, although funding through PADES can be used to establish or further develop these functions. CONACyT provided funding over three years through the GeT-In programme to train staff in engagement and technology transfer offices, but the programme had limited coverage and ceased in 2016.

CONACyT provides funding for higher education institutions to undertake research in collaboration with companies. The Innovation Stimuli Programme (*Programa de Estímulos a la Innovación*, PEI), for example, has three funding strands: technological innovation for micro firms and small and medium-sized enterprises (SMEs) (INNOVAPYME); technological innovation in large companies (INNOVATEC); and innovation networks of companies and at least two higher education institutions (PROINNOVA). PEI helps to establish research partnerships, which often are a precursor to collaboration in education (e.g. joint design and delivery of programmes or work-based learning).

An evaluation of existing engagement offices is necessary to determine their effectiveness. This process could help identify good practices that could be spread more broadly across the higher education system. Targeted funding could be used to help build organisational capacity through training for staff working in engagement offices and to strengthen peer learning across the higher education system through the establishment of a national network.

Ensuring a diverse offer of programmes

A diverse offering of study programmes by field and level of study across the higher education system and the country helps align higher education with current labour market needs. It can also shape future developments by enabling or encouraging certain kinds of economic activity. However, the Mexican higher education system currently lacks such diversity.

Over one-third of the enrolment in bachelor's and postgraduate programmes is concentrated in one field of study: law and business administration (OECD, 2018[16]). The high and constant demand to enrol in these programmes reflects the preferences of students and their families, even when over-qualification in the labour market for these graduates is high (56%) (INEGI-ENOE, 2017[17]). However, students and their families may not have the necessary information to make an informed choice when selecting these programmes as there are significant information gaps on the labour market outcomes of study programmes in Mexico. Higher education institutions have responded to this demand by expanding the delivery of these study programmes. This expansion is further stimulated by the low cost of provision for these programmes.

Emerging labour market needs, particularly in some of Mexico's strategic industries (energy, automobile and aerospace), are demanding more graduates from short-cycle tertiary education programmes with technical aptitude and practice orientation, as well as more specialised knowledge and skills delivered through master's programmes.

In general, short-cycle tertiary education programmes are practically based and occupationally specific programmes designed to provide students with professional knowledge, skills and competencies. Prospective students in Mexico, and their families, generally consider these programmes to be inferior to and less prestigious than bachelor's programmes. This view is currently supported by the poorer labour market outcomes of short-cycle tertiary education programmes that have a lower chance of leading to

employment (OECD, 2018[16]) and much higher rates of informal employment and over-qualification compared to bachelor's degree programmes (INEGI-ENOE, 2017[17]) (see Chapter 4).

Labour market outcomes for short-cycle tertiary education programmes may, however, improve due to the increasing demand by Mexican employers for these graduates. According to a recent survey, seven of the top ten positions most difficult to fill by employers in Mexico are offered as short-cycle tertiary education programmes (Manpower Group, 2017[18]). There are already signs of a supply side response to this, with the share of first-time graduates from short-cycle tertiary education programmes increasing from 6.7% in 2005 to 8.1% in 2016 (OECD, 2018[16]).

Enrolment in postgraduate programmes is still low in Mexico. In 2016-17, around 6% of students were enrolled in master's programmes and 1% in doctoral programmes (SEP, 2017[19]). Postgraduate enrolment is concentrated in business administration and law (37.8%), with only 8.1% in engineering programmes and 4.5% in natural sciences, mathematics and statistics (OECD, 2018[16]). Although, as employers commented to the OECD review team, graduates from business administration and law can be hired for a wide range of occupations, the current enrolment pattern by field of study is not well aligned with the need for specialised knowledge and skills in the strategic sectors of Mexico's economy, which will require more advanced level skills in certain STEM (science, technology, mathematics, engineering) fields of study.

To facilitate labour market entry for young researchers, and to improve the innovation activity and competitiveness of firms, CONACyT offers scholarships for recent graduates from postgraduate programmes to work in a company. Over a period of 12 months, graduates receive a monthly allowance of MXN 10 000 (USD 500) as a master's graduate, and MXN 15 000 (USD 750) as a doctoral degree holder. The hiring firm needs to match the scholarship amount to complement the graduate's salary. Micro and small firms contribute half the amount of the scholarship towards the salary of the employed graduates.

A key barrier to a greater diversity of study programmes in Mexico is the nature of public funding for higher education. The government provides a block grant to public higher education institutions to support the delivery of programmes based on student numbers and historical trends. Unlike many other countries, Mexico does not make use of formula-based funding with weightings for different fields and levels of study. This greatly limits the steering role of public policy. Therefore, higher education institutions in Mexico tend to deliver programmes that are likely to attract high enrolments and that are less costly to deliver in terms of staff and infrastructure. As a result, close to half (47%) of all offered programmes are in social sciences, administration and law, and over 70% are at the undergraduate level (ANUIES, 2018[20]).

The funding model also restricts the government's ability to ensure that a diverse range of programmes by level of study is delivered in public higher education institutions. The vast majority (97.5%) of students in short-cycle tertiary education programmes are in public institutions. By contrast, the proportion of students in public higher education institutions undertaking master's (39.7%) or doctoral (59.1%) programmes is lower and rapidly decreasing (OECD, 2018[16]). The increasing concentration of postgraduate programmes in private higher education institutions, and the potentially high fees for these programmes, could discourage qualified candidates from pursuing postgraduate studies. This could be addressed by changing the funding allocation model to encourage more enrolments at the master's and doctoral level in public higher education institutions.

Greater alignment between programmes and labour market needs in the private subsystems could be achieved through a stronger and more consistent anchoring of labour market relevance and outcomes in programme accreditation, as discussed above.

CONACyT supports postgraduate programmes in public and private institutions listed in the PNPC through scholarships, and 6% of postgraduate students (around 23 000) receive a CONACyT scholarship. Around two-thirds of the programmes listed in the PNPC are in STEM fields of study, some of which have associated labour market shortages. The scholarships increase the attractiveness of these programmes and the number of applicants, which allow institutions to choose from a wider pool of candidates. This, in turn, increases the quality of students accepted. Currently, 36 postgraduate programmes listed in the PNPC are organised in closed collaboration with industry (*Programa de Posgrados con la Industria*). All of these programmes are in engineering, with the exception of one in journalism.

Scholarship-based funding mechanisms could also work in the case of short-cycle tertiary education programmes. However, the status of these programmes needs to be raised first, for example through an information campaign to make them more attractive to students, higher education institutions and employers. Nevertheless, the government should closely monitor the labour market outcomes from these programmes and ensure that they are delivering the skills needed in the labour market.

To increase the diversity of fields and levels of study, the government could introduce a new allocative mechanism for block grants for public higher education institutions using funding formulas and weightings to steer the delivery of programmes better aligned with the labour market.

Changing labour markets also require graduates who bring skills from different disciplines and can make connections between ideas and concepts across fields of study. However, interdisciplinary programmes in Mexico are very difficult to accredit under current arrangements. Despite recent efforts by institutions to introduce more interdisciplinary programmes, accreditation agencies are discipline specific, and the programmes require accreditation from multiple agencies, which increases the regulatory burden and delivery costs. In addition, the higher education system and the labour market heavily rely on occupations and related professional licenses, meaning that students are trained for specific jobs. Currently, there are no professional licenses to recognise the mix of two or more disciplines, so the government will need to remove barriers related to the accreditation of these programmes and the award of professional licenses.

Helping students succeed in higher education and the labour market

Fostering innovative learning and teaching practices in higher education

Mexican higher education institutions rely heavily on lecture-based teaching, and innovative student-centred methods are uncommon. The government made a first step to change this by introducing a competency-based approach in the three technological subsystems (Lozano Rosales, Castillo Santos and Cerecedo Mercado, 2012[21]). This, and other innovative approaches to learning and teaching, could be developed further and expanded across all subsystems if the following three barriers, currently inherent to all subsystems, are effectively addressed.

First, the quality and impact of teaching is not encouraged, recognised or rewarded. The National System of Researchers (*Sistema Nacional de Investigadores*, SNI), established

in 1984, classify academic staff in public and private higher education institutions in three levels and award supplementary remuneration to those in the highest one, according to their performance in three areas: research quality, knowledge transfer and commercialisation of research results, and contribution to education. Contribution to education is measured via quantity rather than quality. Performance in teaching is measured by the overall number of teaching hours, and the hours of teaching in bachelor's programmes by members in the top two SNI levels. The latter indicator is commendable, as it connects research with learning, exposes students to academic excellence and encourages some to pursue a career as a researcher. However, it does not encourage the development of high-quality teaching skills and the use of innovative teaching methods, which calls for different indicators to encourage and measure the quality of teaching in higher education.

Second, there is no systematic professional development and teacher training in higher education. As in many countries, academic staff are hired as experts in their field without prior instruction in pedagogy. PRODEP (previously called PROMEP) has financed projects to improve the quality of teaching since 1996, but the emphasis has been on funding postgraduate studies for full-time academic staff to raise their qualification levels. An evaluation of the funding period 1996-2013 showed that the programme improved the qualification of full-time academic staff in public state universities, and to a certain extent academic performance. Nonetheless, the programme did not meet its goals as the government lacked sufficient control on how funding was applied, and some institutions spent the funding on different purposes (Guzmán-Acuña and Martínez-Arcos, 2015[22]). Moreover, 71% of academic staff are employed on a casual basis and do not benefit from PRODEP funding, even though they can teach up to 40 hours a week. The one-year financial planning horizon for public higher education institutions is a key trigger for these staffing arrangements. As a result, it is difficult to ensure the quality of education at the system level, which undermines the potential reach of this policy lever.

Third, there is not sufficient awareness of the fundamental role good teaching plays in helping students to develop labour market relevant skills in Mexico. Research and outcome assessments on effective learning and teaching practices and innovative ways of learning is predominantly undertaken by a small number of individual researchers, and there are no effective mechanisms in place to disseminate this information across the system. ANUIES and FIMPES encourage high-quality teaching among their member institutions with best practice awards, but their reach is limited to less than 8% of higher education institutions in Mexico.

The lack of information on the student experience in higher education, and how it relates to their labour market outcomes, also contributes to the limited awareness of the importance of learning and teaching in higher education.

The reach of policy levers to encourage the practice of innovative learning and teaching is limited. Targeted funding programmes, such as PRODEP, do not reach private higher education institutions and only a small share of academic staff in public institutions. SNI, which includes full-time academic staff in both public and private higher education institutions, is one of the few policy levers that can potentially reach all subsystems. Quality assurance mechanisms, which have a wider but not complete reach across the system, do not measure or assess the quality and impact of teaching.

The government should encourage higher education associations and institutions to offer teacher training and ongoing professional development to all academic staff, including casual academic staff. The use of digital technology could facilitate the reach of these

initiatives across all subsystems, for example with an online course on pedagogy and innovative teaching methods that complement in-person training. While the proportion of academic staff with postgraduate qualifications needs to increase to ensure the delivery of more advanced skills in higher education, more emphasis is needed on encouraging and supporting a strong culture of excellence in learning and teaching.

The increased attention on the importance of good teaching for the development of labour market relevant skills is likely to spur more research on effective learning and teaching practices and to develop the evidence base that could facilitate the evaluation of current practices in Mexico. More research will also help raise attention of the issue. An online platform could facilitate the collection and dissemination of good practices nationally and internationally and become a source of knowledge and experience that academic staff can draw on and apply in their practice. It is important that current research, which is carried out by only a few individuals, is brought to the next level by facilitating peer exchange and policy learning. This could be aided by a national teaching excellence award programme.

An effective mechanism to encourage a culture of excellence in learning and teaching is to establish a Centre for Excellence in Learning and Teaching with outreach across all subsystems and states. The centre could undertake some of the actions mentioned in this section and provide support for higher education institutions to implement the initiatives and share good practices. Two examples of national approaches from Australia and Ireland are presented in Box 6.2.

Box 6.2. National approaches to enhance excellence in learning and teaching in Australia and Ireland

The **Australian** government promotes and supports the enhancement of learning and teaching in eligible higher education institutions through the Australian Awards for University Teaching. This builds on more than two decades of successful Australian government initiatives to support the enhancement of learning and teaching in Australian universities by creating a culture of collaboration and engagement. From 2011 to 2016, the Office for Learning and Teaching (OLT) supported collaboration and good practice sharing, professional development for academic staff, grants for research projects and fellowships to reward excellence in teaching. Since 2016, the Awards for University Teaching continued under the administration of the federal Department of Education and Training. From 2018, the awards are being led by Universities Australia, the main body representing the country's university sector.

The five annual award categories that recognise teaching excellence and outstanding contributions to student learning are: 1) awards for programmes that enhance learning; 2) awards for teaching excellence; 3) award for the Australian University Teacher of the Year; 4) career achievement award; and 5) citations for outstanding contributions to student learning.

Success in the Awards for University Teaching and in OLT (and its successors) grants and initiatives has become a hiring and promotion criteria in Australian universities. Initiatives that have gained awards and grants have been replicated widely across universities. For instance, research on the first year experience in higher education and the identification of good practice has been translated into initiatives on reducing attrition across the higher education system.

All learning and teaching material from government-funded programmes is documented in an online platform, the Teaching and Learning Repository, which is available to the public (https://ltr.edu.au/) and supported by Universities Australia.

In **Ireland,** the National Forum for the Enhancement of Teaching and Learning was launched in 2012 with the aim of enhancing teaching and learning for all students in higher education. The forum serves as a platform to mobilise expertise and share best practice across the higher education system in Ireland. It plays a key role in the National Strategy for Higher Education 2030. The forum is funded by the Higher Education Authority, which is the public agency responsible for higher education funding, strategic planning and policy development.

The National Forum concentrates its work in five main areas: 1) professional development; 2) learning impact awards; 3) research in teaching and learning; 4) building digital capacity; and 5) partnership and collaboration. The National Forum created the Digital Roadmap to inform and guide senior managers of higher education institutions to enhance teaching and learning by building digital capacity. In 2017, a review of the programme evaluated the relevance, efficiency, effectiveness, impact and sustainability of the National Forum, with an overall positive assessment. The review recommended the conversion of the forum from a programme into a permanent organisation with clear objectives and streamlined activities to achieve a system-wide impact and to set the bar for excellence in higher education teaching and learning. The National Forum has an online repository, which is fully available to the public on its website (www.teachingandlearning.ie/).

Source: For the Australian Awards for University Teaching (Australian Government, 2018[23]), for the Office for Learning and Teaching (Gardner, 2016[24]), and for the National Forum for the Enhancement of Teaching and Learning (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2018[25])and (Henan, 2017[26]).

The integration of experienced industry professionals, whose primary job is in a discipline-related occupation, as full academic staff by awarding the title of "professors of practice" could be an effective way of embedding real-world experience into the classroom, particularly in the technological subsystems. The Netherlands introduced this approach around 15 years ago in their professional higher education institutions (*hoger beroepsonderwijs* institutions, formerly *hogescholen*) by introducing "lectors" who work part-time in the institution and part-time in industry. The role of lectors is to increase the applied research activities of professional higher education institutions and to ensure the labour market relevance of education activities. The government funds approximately 70% of the lector's salary via the institution's core budget, with the rest funded by external partners. It is important that lectors are properly integrated into the department and that they receive training to ensure and raise the quality of teaching (OECD/EU, 2018[27]).

International experiences and an internationalisation of the curriculum allow students to develop a specific set of knowledge and skills that are highly relevant for future careers in Mexico and abroad. As discussed in Chapter 5, outward and inward student mobility is currently very low, the majority of programmes are not internationally oriented, and very few institutions offer programmes taught in English. Mobility within the country could have a similar effect on student skills due to the richness of Mexico in terms of culture, resources and industrial specialisation, but this is also low.

Unlike many other OECD countries, the federal government does not have an international education strategy for higher education, or a dedicated agency. This leaves higher education at a system level largely disconnected from international developments in student mobility. The small role of government in promoting internationalisation activities in higher education is confined to a number of governmental bilateral and multilateral agreements that facilitate institutional level partnerships, and participation in international programmes, such as the Erasmus+ programme (European Commission, 2018[28]). Therefore, the internationalisation activities of institutions are largely based on bilateral agreements with partner institutions abroad.

Internationalisation in higher education is also disconnected from other internationalisation initiatives that aim to strengthen the country's position in global value chains. For instance, the Mexican internationalisation agency, ProMexico, appears to operate without connections with higher education institutions. This is a missed opportunity to use highly skilled human capital to attract foreign investment in high-tech industries and increase the sophistication of exports.

The National Co-ordination of Higher Education Scholarships (*Coordinación Nacional de Becas de Educación Superior*, CNBES) provides scholarships to support the mobility of undergraduate students nationally and internationally. For postgraduate students, CONACyT provides almost 3 000 scholarships annually to study abroad (*becas para el extranjero*), prioritising studies in the areas of PECiTI (the Special Programme of Science, Technology and Innovation), particularly STEM. Students in other fields have fewer opportunities to study abroad. Scholarships cover a monthly allowance, insurance and programme tuition fees for 12 months (*especialidad*), 24 months (master's) or 36 months (doctoral studies). Stakeholders reported to the OECD review team that a key barrier to a wider take up of these scholarships is that students lack information, and scholarships are often insufficient to cover all costs, meaning that students who wish to study abroad need to have a substantial amount of additional sources of financing.

Further efforts to support student and staff mobility and to internationalise the curriculum would greatly benefit from a national strategy to improve and promote internationalisation in higher education. This would facilitate greater collaboration across the system and help to build synergies at the institutional level between internationalisation, initiatives to enhance labour market relevance and outcomes, and other (competing) priorities. A strategy would also help to target funding and scholarships to increase the inward and outward mobility of students and staff. Activities to internationalise the curriculum should be considered an integral part of innovative learning and teaching.

Integrating work-based learning into the curriculum

Work-based learning can be one of the most effective ways for students to develop work-relevant technical and professional skills, including transversal skills. As discussed in Chapter 5, the extent to which students are exposed to work-based learning, and the quality of activities, varies across subsystems, and the lack of professional experience is one of the most cited reasons why Mexican employers do not hire young graduates. Work-based learning in Mexico is undertaken mostly through internships, the social service, dual education programmes and postgraduate programmes with industry.

The organisation of internships is likely to be challenging and resource intensive for many higher education institutions given the overall economic context in the country and major regional differences. In light of this, it is commendable that internships are

compulsory in over half of higher education institutions (ANUIES, 2017[5]), including all institutions in the three technological subsystems. CNBES offers scholarships to undertake internships for students during their last two years of a bachelor's programme or during the last two semesters of a short-cycle tertiary education programme.

Some higher education institutions, particularly larger institutions, have career offices (*oficinas de prácticas*) to co-ordinate student participation in internships and social service. However, these offices are often understaffed and not well connected with companies and organisations potentially hosting internships, which makes it difficult to provide comprehensive preparation and guidance for students and host organisations.

In many countries, students undertaking an internship are under some form of labour regulation, which gives them some of the rights and protections that employees have, such as health and safety protections covering insurance against work-related injuries (Stewart et al., 2018[29]). However, as noted in Chapter 5, internships in Mexico are not regulated by the labour law. There is no specific form of contract used for internships or the social service, and it is not clear if students have adequate insurance while on internships. This leaves students, their families, employers and higher education institutions in a highly unclear situation concerning responsibilities and liability.

ANUIES drove the creation of the Higher Education-Industry Foundation (*Fundación Educación Superior-Empresa*, FESE) to facilitate the placement of students in companies and to standardise processes. FESE introduced a standard contract and insurance policy for internships. Students could access more companies, and companies were more willing to take students for internships. Stakeholders advised the OECD review team that FESE was very effective, particularly for students in smaller higher education institutions that lack internal resources. The SEP funded FESE's operations as a central platform from 2008 to 2014. A reactivation of the role of FESE as a central platform would help to ensure that more students across all subsystems and states can benefit from effectively and efficiently organised work-based learning.

Mexico is one of the few countries[3] worldwide where every student enrolled in higher education is required to complete a period of 480 hours social service (*servicio social*), which is intended to allow students to give back to society (Canton, 2011[30]). By working in non-government organisations, public education institutions, government and companies with a corporate social responsibility programme, students are expected to apply the discipline-specific knowledge and skills they have developed in their programmes, thereby further developing a broad range of transversal skills. Completing social service is mandatory to receiving the professional license.

Legislation concerning the social service is unclear, fragmented and contradictory, leading to overregulation, confusion and contradictions. This causes tensions among higher education institutions and state and federal governments, as well as with the Secretariat of Health (*Secretaría de Salud*) for health programmes. It also hinders the effectiveness of the social service and limits the extent to which it benefits society (José and Ramírez, 2012[31]).

The Constitution of Mexico (1917, Article 5) gives state governments the power to determine which professions require a professional licence, the conditions for obtaining

[3] Colombia, Venezuela and Peru adopted the Mexican practice in 1958 (Canton, 2011[30]).

the licence, and the issuing authorities in each state. Based on this, each state is expected to create an act based on Constitutional Article 5 (*Ley Reglamentaria del Artículo 5º Constitucional*) that details the licensing and practice of professions. In addition, the Education Act (1993, Article 24) establishes that the social service is a compulsory prerequisite for the professional license and that it should be executed according to the provisions of that law. However, these provisions have never been created.

State acts regarding the professional licence should include the conditions of the social service. However, few states have created this act, there is no consistency among the acts, and some do not provide sufficient information on the social service. The state acts are often outdated and several have been repealed. Some contradict laws of higher rank, for example, by stating that social service cannot be paid. The state act for Mexico City was designed to be applied across the whole country, in contradiction with the Constitution. The Mexico City Act also established the role of the General Directorate of Professions and professional associations. This arrangement foresees that graduates should provide a report on their professional experience every three years to a professional association.

The case for the social services in health programmes is even more complex. In 1982, the Secretariat of Health issued its own regulation (Health Code and Regulation of Social Service for Higher Education Students) that established a National Social Service Programme for Health Professionals and enforced its application in all national higher education institutions that use the Secretariat of Health to host the social service of their health students. The Health General Act (1984) also stipulates that health authorities must establish the conditions in which the social service should be performed and co-ordinating mechanisms with education authorities to increase efficacy.

In addition, the SEP has designed the social service regulation for each of the direct-provision subsystems and private higher education institutions and autonomous universities have created their own internal regulations for the social service.

Social service is a commendable practice to engage students to build social responsibility. It helps to develop a wide range of transversal skills, but it needs strengthening. The first task will be to harmonise current conflicting regulations and to develop common guidelines for all fields of study that connect the discipline-specific skills that students bring with them and the transversal skills that they will gain during social service. The provisions of the Education Act regarding the social service must be created, integrated and systematised in a single document. This will require a consensus of the different levels of government that currently regulate this topic, as well as a commitment to co-ordinate, promote, structure and monitor the execution of the social service to ensure that it is based on uniform, equitable and fair principles, and ultimately benefit society.

Furthermore, closer collaboration and improved communication are needed between higher education institutions and professional associations on work-based learning in general, and social service in particular. Students and employers need more clarity about the benefits of social service and its positive effects for the development of transversal skills. Higher education institutions need to give greater recognition to social service as a potentially very effective form of innovative learning and teaching (Canton, 2011[30]).

Dual education programmes have been recently introduced in some Mexican higher education institutions, mainly in the technological subsystems (see Chapter 5). However, there is still little awareness among higher education institutions, students and companies of the existing dual education programmes and their potential benefits. Building awareness and raising interest will take time and requires the use of policy levers, as a

recent OECD/EU report on Hungary shows (OECD/EU, 2017[32]). The Hungarian Ministry of Education organised a large-scale information campaign and provided funding to start dual education programmes at bachelor's level in 19 institutions. The dual programmes include 20-24 weeks work-based learning in a company per academic year. Students have a higher workload compared to their peers who follow a standard programme in the same field. Students apply for a dual programme through the central entrance exam or based on their final exam points in secondary school. They have to apply with one of the programme partner companies, who generally use several recruitment channels, such as roadshows, exhibitions, or secondary school visits. Companies select students according to their own requirements based on a personal interview.

Since the scarcity of resources and the lack of long-term planning in many Mexican companies is reported to be a barrier to dual education, it will be important for the government to undertake a thorough evaluation of the effectiveness, enabling factors and obstacles of the current dual education programmes and to communicate the findings widely among companies, higher education institutions and the wider public. FESE and CONOCER, the National Council for Normalisation and Certification of Labour Skills (*Consejo Nacional de Normalización y Certificación de Competencias Laborales*), are currently developing a proposal commissioned by the SEP to implement dual education programmes in the technological subsystems.

At the postgraduate level, CONACyT provides scholarships for industrial postgraduate programmes. However, demand for these programmes has been low so far. From 2013 to 2017, 1 481 students were enrolled in these programmes, of which approximately one-third (409) were already working in the company when they enrolled. As with dual education programmes, the government needs to raise awareness, which requires evaluating existing programmes.

Strengthening entrepreneurship support in higher education

High-technology entrepreneurship could move the Mexican economy upwards in global value chains and help to address social needs. In the current situation, a share of highly qualified graduates have difficulty finding jobs that are adequate for their level of qualification. For these young people, who are not making full use of the knowledge and skills acquired in higher education, starting a business can be a viable career option.

Higher education can play an important role in supporting students and graduates to become successful entrepreneurs (OECD, 2017[33]). The focus of higher education in Mexico is on educating for specific professions, while supporting entrepreneurship is not widespread practice. Nevertheless, there are some good examples of entrepreneurship support in higher education institutions across subsystems (see Chapter 5).

Entrepreneurship among young higher education graduates is growing. The fields of study with the highest rates of entrepreneurs are arts and humanities, agriculture, and engineering (INEGI-ENOE, 2017[17]), which may reflect the difficulties some of these graduates have in finding a suitable job (UVM, 2018[34]). A key barrier for these entrepreneurs and their start-up companies is that entrepreneurship support in higher education institutions is not well connected with other business support organisations, and start-up companies are often not connected with each other. This is a missed opportunity, as a well-developed start-up environment can help new companies to grow and participate in global value chains (OECD, 2017[35]).

Public policy can help to better connect entrepreneurship support offered by higher education institutions with the emerging knowledge-based start-up environment in Mexico. INADEM, the National Institute for Entrepreneurship, was created in 2013 as a decentralised public agency of the Secretariat of Economy (*Secretaría de Economía*, SE)to design and implement support programmes for entrepreneurs and micro- and SMEs, including start-ups established within higher education institutions. INADEM also supports higher education institutions directly by funding incubators (basic and high-tech) and accelerators. It also awards prizes for entrepreneurial students and entrepreneurial education institutions at all levels.

Although there is some collaboration with higher education institutions, current links need to be strengthened. The Netherlands provides an interesting example of how to co-ordinate efforts in a very dense system. This could be particularly relevant for Mexico City, Jalisco and Nuevo León, where more than 60% of incubators are located (Box 6.3).

Box 6.3. StartupDelta in the Netherlands

StartupDelta is an independent public-private partnership that brings together all ecosystems in the Netherlands to one single hub to help start-ups grow. It is supported by the Ministry of Economic Affairs and the Ministry of Education Culture and Science.

The aim of the partnership is to break down barriers and improve access to talent, capital, networks, knowledge and markets. Key activities of StartupDelta focus on opening up public procurement to start-ups by establishing a coalition of government departments and municipalities, collaborating in a testlab, and experimenting with new business models.

StartupDelta also attracts and supports foreign start-ups to the Netherlands through the Orange Carpet programme, which outlines seven simple steps for foreign start-ups to ensure a smooth start in the Netherlands. It also provides a single point of entry and a support portal for foreign start-ups.

StartupDelta regularly organises visits for people providing start-up support to global hubs and network events, such as WebSummit, Slush, SouthbySouthWest, Hannover Messe, and globally known ecosystems, such as Silicon Valley, Tel Aviv, Berlin, London, and promising destinations for Dutch start-ups in China and South Korea.

Efforts are underway to create a community of proactive "start-up diplomats" at embassies and consulates in priority countries to raise the profile of StartupDelta in the global embassy network of the Netherlands.

Source: (OECD/EU, 2018[27]).

The government can support entrepreneurship by helping higher education institutions connect with INADEM and other actors in the local, regional and entrepreneurship ecosystems. Encouraging higher education institutions to integrate entrepreneurship education into the curriculum across a wider range of programmes would help students interested in entrepreneurship to develop the knowledge and skills they need to start and successfully run a business. This could be done through the recommended Centre for Excellence in Learning and Teaching.

Ensuring better pathways into and across the higher education system

Effective pathways are needed into and across higher education to ensure that Mexico maximises the talents of its people. The current higher education system has restricted options for entry to higher education and prevents mobility between levels of study and between institutions and programmes.

The structure of upper secondary education is a key barrier to higher education as students from the vocational strand are not able to access higher education and there is no post-secondary non-tertiary education (ISCED 4), which can act as a bridge between upper secondary and higher education. The lack of alternative pathways prevents these graduates from entering higher education at a later stage in their life.

The current system prevents pathways between short-cycle tertiary education programmes (ISCED 5) to bachelor's programmes (ISCED 6). Short-cycle tertiary education programmes can be an important building block for a bachelor's degree. Some students may feel that pursuing a four or five year bachelor's degree is not the right path for them at a certain point in time, but they may feel ready after a period of study or time in the labour market. Enabling the articulation of programmes and the seamless transfer of credits can reduce the time needed to achieve a bachelor's qualification and increase the skill levels of graduates.

Pathways and credit transfers have been important ways of raising higher education attainment in the United States. Short-cycle tertiary education programmes had entry rates of 37% in 2016, the third highest rate across OECD countries after Chile and Turkey, and close to three times the OECD average (OECD, 2018[16]). Flexible pathways exist because credit accumulation and transfer between institutions is a common established practice. Students who start a two-year programme at a local college or community college and gain an associate degree or equivalent credits can then transfer to a university for a bachelor's degree. On average, around half of graduates from bachelor's programmes had previously enrolled in a two-year degree programme (Simone, 2014[36]). To increase success rates of transfer students, more efforts have recently been put into partnerships between colleges and universities (Xu et al., 2017[37]).

Prospective students in Mexico face difficulties in having prior learning outside higher education and qualifications gained abroad recognised for entry to higher education. The Secretarial Agreement 286 regulates the recognition of prior learning, and a number of higher education institutions are authorised to act as assessment agencies. These institutions can impose examinations to assess the knowledge and skills previously acquired. Procedures for the recognition of prior learning used to be complex and slow as applications were dealt with on a case-by-case basis. Some improvements were made in 2017, and it will be important for the government to evaluate these recent reforms and identify how the recognition of prior learning can be further improved.

The current system also prevents pathways between the two master's programmes (ISCED 7), the master's one-year specialisation programme (*especialización*) and the two-year master's (*maestría*). One-year specialisation programmes are generally more practice-oriented, whereas two-year master's programmes are more research-oriented. Students who graduate from a specialisation programme and are interested in pursuing a research career should be able to undertake research-oriented courses and continue in the two-year master's programme, and eventually perhaps a doctoral programme.

The poor uptake of the Mexican National Qualifications Framework and the lack of a common credit recognition scheme hinder flexibility and effective pathways. As in many

countries, students must make requests to change between study programmes or higher education institutions directly to the institutions, and their applications are assessed on a case-by-case basis. However, in the absence of an effective national qualifications framework or established credit recognition scheme, decisions by academic staff are hampered by the lack of understanding regarding how credits obtained in another programme or institution relate to the programmes in their institution. To facilitate student mobility within and between the subsystems, the government introduced a common credit system (*espacio superior de education tecnológica*) in three technological subsystems in 2009. Although this brought some improvement, implementation has been difficult and incomplete because of incompatibility of curricula, work-based learning and other requirements.

Migration to the United States for higher education is common. To support Mexican higher education students who return to Mexico before graduation, the SEP, in collaboration with ANUIES, introduced PUENTES, the National Emergent University Programme to Finish Higher Education (*Programa Universitario Emergente Nacional para la terminación de estudios superiores*), in 2017. PUENTES offers the possibility to complete studies in around 400 Mexican higher education institutions, but only 35 students participated in 2017.

The lack of a common credit recognition scheme also limits options for students in bachelor's programme who would prefer to change to a short-cycle tertiary education programme in the same field of study. Some of these students may be struggling with the requirements of a bachelor's programme and could be at risk of dropping out of higher education without a qualification. However, they cannot use the credits gained through the bachelor's programme in a short-cycle tertiary education programme. Stakeholders informed the OECD review team that this could affect up to half of the cohort in certain bachelor's programmes.

The government should ensure that the National Qualifications Framework is used more effectively to facilitate pathways into and within higher education, including through the recognition of prior learning. This will require the establishment of a comprehensive credit recognition scheme aligned with the National Qualifications Framework. In addition, the government could enable pathways between levels of study by recognising the completion of short-cycle programmes as a potential entry path for bachelor's programmes, and by recognising the completion of the master's specialisation programme (*especialización*) as a potential entry path for the master's programme (*maestría*).

Fostering the role of higher education institutions in lifelong learning

Higher education has an important role to play in lifelong learning by providing flexible learning environments for adults throughout their working lives. With over 45 million people (83% of the Mexican workforce) who have only completed upper secondary or lower levels of education, there is an urgent need for training to upskill and reskill the labour force. However, lifelong learning is poorly developed in Mexico, and there is no strategy to encourage its provision in higher education institutions or boost participation.

Higher education institutions do not provide the flexibility that allows students to exit and return to higher education at a later stage in life to either complete or continue studies at an advanced level. The provision of higher education is largely tailored for the young, full-time student on campus, making it difficult for people to combine studies with work. Data on part-time study programmes is not available for Mexico, but across OECD countries, on average 20% of enrolment in higher education in 2016 was part-time

(OECD, 2018[16]). Higher education institutions need to be encouraged and supported to deliver more flexible study programmes, including part-time provision.

Distance and online education can help to address these issues, and there are currently around 15% of students enrolled in distance or online education. In 2012, the SEP established the Open University of Distance and Online Education (*Universidad Abierta y a Distancia de Mexico*, UNaDM) to expand the provision of higher education through distance and online learning. However, quality assurance agencies have been slow in adapting to the increase in this form of learning and teaching and need to develop clear evaluation processes and criteria to assess the quality of, and accredit, online programmes.

As noted in Chapter 5, continuing education can provide the broader public with an opportunity to access higher education without enrolling in a full degree programme. These short courses can provide important training for current skills needs or prepare students for higher education, and therefore provide alternative pathways for entry to study programmes. Over 110 higher education institutions, particularly in the three technological subsystems, deliver continuing education activities in collaboration with CONOCER. These higher education institutions act as authorised certifiers for CONOCER and deliver short courses to prepare people with any level of education to take an exam that certifies their occupation-specific knowledge and skills, or transversal skills. In 2017, 41% of certifications were awarded to higher education graduates, and 70% were for ICT skills. The government should encourage ongoing collaboration between higher education institutions and CONOCER.

However, neither graduates nor companies consider higher education institutions for further training. Mexican companies do not have a culture of training; large companies provide more training than smaller ones, but they only employ 11% of the workforce (INEGI-ENAPROCE, 2015[38]). Firms that are active in upskilling their workforce prefer to offer training internally or to collaborate with private training providers (World Economic Forum, 2018[39]), which limits the role of higher education institutions. With an average graduation age from a bachelor's programme of 25 years, and low enrolment rates in postgraduate programmes, there is no tradition of continuing higher education during later stages of a professional career. Unlike in other OECD countries, there are no policy levers to encourage the participation of older learners in higher education. The importance of continuing education and training needs to be highlighted as part of the strategy to enhance the labour market relevance and outcomes of higher education in Mexico.

Working together effectively to enhance labour market relevance and outcomes

The governance structure of higher education in Mexico is complex, with federal and state governments and multiple agencies involved in various functions (see Chapter 3). Independent agencies with specific functions can provide focused attention on some specific aspects, but the creation of too many agencies can lead to co-ordination problems, overlapping roles and responsibilities, additional administrative resources, and institutional rivalries.

Improving and better co-ordinating information on higher education and the labour market

The availability of up-to-date, representative and system-wide data and information on higher education and the labour market outcomes of graduates is limited in Mexico. Several secretariats and agencies collect this information, but there is no co-ordination between organisations, reducing the comparability, effectiveness and accessibility of the information.

The National Statistics Agency (INEGI) produces a quarterly well-developed national labour force survey (*Encuesta Nacional de Ocupación y Empleo*, ENOE) to provide comprehensive and timely labour market information. Data is publicly available, but specific information on the labour market outcomes of higher education graduates is not published on the INEGI website or in publications. In 2012, The Secretariat of Labour and Social Welfare (*Secretaría del Trabajo y Previsión Social*, STPS) launched the labour market observatory (*Observatorio Laboral*), which is the only initiative that currently provides information on the labour market outcomes of higher education graduates. Data is published on the website and in an annual publication. There is no foresight work that provides projections that forecast labour market needs in Mexico to help governments, institutions, students and employers plan ahead.

There is a range of data and information available on higher education, but most is basic statistical data with no information on the student experience of higher education or their outcomes in further study or the labour market (Table 6.3).

Articles 70 and 75 of the Transparency and Public Governmental Information Access Act (*Ley de Transparencia y Acceso a la Información Pública Gubernamental*, 2015) require autonomous universities to report periodically to the federal and state governments, and the community more broadly, on their study programmes, administrative procedures, scholarships, vacancies, academic staff salaries and assessment results.

In addition, the SEP asks all higher education institutions to provide basic institutional and enrolment data to ANUIES. Higher education institutions in direct-provision subsystems are required to provide data to their co-ordinating agencies within the SEP. However, requirements do not include reporting data on labour market outcomes.

The provision of basic and up-to-date information to the SEP is a condition for public higher education institutions to receive funding through targeted funding programmes. Some programmes require additional information, for example, institutions applying for funding under the Programme to Strengthen the Quality of Education (*Programa Fortalecimiento de la Calidad Educativa,* PFCE) need to report additional information, such as:

- The proportion of programmes assessed as level one programmes by CIIES or accredited by COPAES.
- The proportion of programmes developed on the basis of feasibility studies.
- The share of programmes with competency-based learning.
- The share of programmes with mandatory internships.
- The results of the indicator to measure the academic performance per programme (*Indicador Desempeño Academico por Programa*, IDAP) based on the result of the EGEL test (if available).

The federal government publishes statistics and information on enrolment in each programme within higher education institutions, it differentiates enrolment in programmes that have a recognition of quality (e.g. RVOE, evaluation by CIEES, accreditation by COPAES, recognition by CONACyT). In addition, CNBES and CONACyT provide information about opportunities for student scholarships on their websites. The federal government also maintains a searchable registry of graduates with professional licenses, and there are several government platforms that connect students or graduates with higher education institutions and companies in different ways.

The SEP funds the TalentOS website, where students can create a personal profile with a portfolio of knowledge, skills and experiences that employers can access to search for suitable candidates. TalentOS is a commendable practice that could be further developed and strengthened in relation to transversal skills development. This would address the current difficulties that students and graduates have in communicating to employers the range of activities undertaken as part of, or in addition to, their study programmes. A comprehensive statement of all activities and certificates helps employers better understand all the skills that students and graduates bring with them.

Despite these sources of information, there are significant challenges regarding higher education and labour market information in Mexico. There are significant gaps in the information collected, for example, there is no national student experience or engagement survey that collects information on students' experiences in higher education, including their behaviour and approaches to learning, the learning and teaching practices experienced, and the support provided by institutions (OECD, 2018[14]).

In addition, there is no national graduate survey that provides detailed information on graduate outcomes by field of study and type of institution. Although some higher education institutions make individual efforts and carry out their own surveys, they use different survey instruments and methodologies so the results cannot be aggregated or compared across the system. There is no regular national survey of employers to gather their views on the skills levels of graduates and the types of skills they are looking for in graduates.

The diverse nature of the Mexican higher education system, economy and the labour market require more granularity than current data collections deliver. The lack of co-ordination between different agencies involved in higher education and labour market data is one of the underlying reasons for the current use of different methodologies, and also affects the priority setting for data analysis. The labour market relevance and outcomes of higher education have not been a priority. This is exacerbated by the fact that information is fragmented and spread across over a dozen websites and various publications, some of which are not well publicised or user-friendly.

Table 6.3. Websites with information about higher education and the labour market in Mexico

Website/portal	Information	Secretariat/agency
Key Figures of the National Education System (Principales Cifras del Sistema Nacional Educativo)	Annual publication and website with information on the Mexican education system, including higher education.	SEP
National Census of Higher Education Institutions (Directorio Nacional de Instituciones de Educación Superior)	Searchable website with information on higher education institutions, campuses, schools, research centres, programmes, tenured academics and main administrative staff.	ANUIES
Annual Higher Education Statistics (Anuarios Estadísticos de Educación Superior)	Searchable website with information on higher education enrolment and graduation figures by higher education institution, programme, level, gender, state.	ANUIES
Register of programmes with a RVOE (Consulta programas educativos con RVOE)	List of programmes in private higher education institutions that have a RVOE.	SEP
Census of Quality Higher Education Programmes (Padrón Nacional de Programas Educativos de Calidad de la Educación Superior)	List of undergraduate programmes evaluated as "quality programmes" (level 1 by CIEES) or accredited by a COPAES agency.	SEP
Census of the National Programme of Quality Postgraduate Programmes (Padrón del Programa Nacional de Posgrados de Calidad)	List of postgraduate programmes recognised by CONACyT and SEP.	CONACyT
Web portal "A place for you" (Portal 'Un lugar para ti')	Information on the admission options to 300 public and private higher education institutions in Mexico City and surrounding states to students who undertook exams to access UNAM, IPN and UAM but were not admitted.	SEP, and others
Higher Education Scholarships (Becas Educación Superior)	Information about the key scholarships for higher education students.	SEP
Engage yourself (Vincúlate)	Information provided by the government on various activities, programmes and priority areas related to the connection between higher education, industry and the world of work activities (*vinculación*).	SEP
National Registry of Higher Education Graduates with Professional Licences (Registro Nacional de Profesionistas)	Searchable register of professional licence holders (*cédula profesional*) with information about name, university, field of study, degree and graduation year.	SEP
Mexican Labour Market Observatory (Observatorio Laboral)	Annual publication and website that provides information about the labour market outcomes of higher education graduates based on data from the Mexican Labour Force Survey (ENOE).	STPS
Talents (TalentOS)	Searchable website in which students create their personal profile and companies can search for potential job candidates and contact students directly. The website also publishes information about workshops, conferences, other events and scholarships.	SEP
Labour Market Link (Enlace Laboral)	Searchable website for CONACyT scholarship holders (current and past) that lists job vacancies for which scholarship holders can apply.	CONACyT

Note: Universidad Nacional Autónoma de México (UNAM), Instituto Politécnico Nacional (IPN), Universidad Autónoma Metropolitana (UAM), Asociacion Nacional de Universidades e Instituciones de Educación Superior (ANUIES), Secretaría de Educación Pública (SEP), Secretaría del Trabajo y Previsión Social (STPS), Consejo Nacional de Ciencia y Tecnología (CONACyT)

There is not a strong culture of evaluating programmes and projects that receive targeted funding. This prevents the collection of useful information about their effectiveness and outcomes. The General Directorate of Policy Evaluation within the SEP and the National

Council for the Evaluation of Welfare Policy (*Consejo Nacional de Evaluación de la Política de Desarrollo Social,* CONEVAL) evaluate some federal government targeted funding programmes. CONEVAL uses external independent evaluators and focuses on the design of projects and outputs, but not the outcomes. CONEVAL has criticised higher education institutions for not reporting on the use of funding or providing the report in a wrong format, and suggested that the indicators established by the SEP to measure impact are not suitable. However, there are no guidelines that would help higher education institutions monitor and assess the impact of projects.

As a consequence, higher education stakeholders are often not aware of what information is available and how to access and use it for decision making. Neither higher education institutions nor employers seem to be using the information available for decision making around curriculum design, programme offer or partnerships. Students and their families do not make full use of information when choosing a programme or a higher education institution. Linking existing websites in a unique higher education and labour market portal could help to address the fragmentation of information available to (prospective) students and their families and employers.

Robust and effectively disseminated higher education and labour market information can complement and boost nearly all other policy levers that governments can use to enhance the labour market relevance and outcomes of higher education. It appears that the government is not making full use of the available information and needs to develop additional instruments to collect data that can help stakeholders improve the labour market relevance and outcomes of higher education.

More information is needed to guide student choice. Many countries use a regular national graduate survey to provide information on graduate outcomes following completion of programmes, including employment, field of employment and further education (Box 6.5). Mexico could develop a similar instrument based on the experience of the National Survey of Labour Market Outcomes for Upper Secondary Education Graduates (*Encuesta Nacional de Inserción Laboral de los Egresados de la Educación Media Superior, ENILEMS*) undertaken by INEGI. For quantitative data on graduate outcomes, it will be important to link the graduate's unique professional licence number (*número de cédula profesional*) with existing labour market data, similar to the LMI for All initiative in the UK (Box 6.6). In Mexico, this will require co-ordination with the National Institute of Transparency, Access to Information and Personal Data Protection (*Instituto Nacional de Transparencia, Acceso a la Información y Protección de Datos Personales*, INAI).

In addition, the implementation of a regular national student experience survey will help the government and higher education stakeholders to better understand student choices and their experiences in higher education, including learning and teaching practices and other factors that help them develop labour market relevant skills (Box 6.4).

Box 6.4. Student academic experience surveys in Austria and the United Kingdom

In **Austria**, the Student Social Survey (*Studierenden-Sozialerhebung*) has collected information about student academic experience on a regular basis (every 4-5 years) since the 1970s. It surveys all students at public and private higher education institutions, including universities, universities of applied sciences and university colleges of teacher

education. In 2015, 47 000 students were surveyed. Topics include their views on the admissions process, reasons for studying, financial support, healthcare and childcare, satisfaction and difficulties with programmes, future plans, internship experiences, international mobility, and language skills.

The survey is funded by the Austrian government and administered by an Austrian research institute. The most recent survey in 2015 was administered by the Institute for Advanced Studies Vienna. The advisory board for the Student Social Survey includes representatives from the Universities Austria Association, the Association of Universities of Applied Sciences in Austria, the Rectors' Conference of Austrian Universities of Education, the Conference of Austrian Private Universities, the Austrian Union of Students, the Agency for Quality Assurance and Accreditation Austria and the Austrian Science Board.

The survey provides an overview of the academic experience and living conditions of different groups of students, e.g. first-year students, students in postgraduate programmes, working students, students with children, older students, students with health impairments or foreign students. Survey results are published in the "Report on the Social Situation of Students", which is a set of topical reports and a data report. Survey results are an important source of information for higher education policy. For example, the amount of scholarships and student loans are regularly assessed based on the results of the Student Social Survey. Results are also used in the guidance service for final-year secondary school students.

The Student Academic Experience Survey (SAES) in **the United Kingdom** is conducted annually with around 15 000 full-time undergraduate students. The 2018 survey included questions related to teaching quality, feedback and learning, workload and well-being, accommodation, and students' perceptions of value for money.

The survey was designed and developed by the Higher Education Policy Institute and Advance HE, and launched in 2006. Survey respondents are drawn from the YouthSight student panel, which has over 80 000 undergraduate students (about one in twenty current UK undergraduates). Students are primarily recruited through the Universities and Colleges Admissions Services (UCAS), which invites a large number of new first-year students to join the panel every year. Data is published in an annual report, and multi-year weighted tables are freely downloadable from the website.

Source: Student Social Survey website (Institute for Advanced Studies, 2015[40]); Student Academic Experience Survey report on results of the 2018 survey (Advance HE, 2018[41]).

In Mexico, a regular national survey of employers to understand their views on the skills levels of graduates will help close the current information gap regarding the types of skills employers require. It will allow the government to tailor measures to address specific skills shortages, and stimulate higher education institutions to engage more with employers in the design and delivery of programmes. Since 2016, Australia has implemented a survey that links the experiences of graduates to the views of their employers. The Employer Satisfaction Survey is conducted on an annual basis and surveys over 4 000 employers. It is large enough to provide comparisons by broad fields of education, employment characteristics, occupation, demographic group and institution (QUILT Australia, 2018[42]).

Box 6.5. National graduate surveys in Italy, Canada and the Netherlands

Italy has a long tradition of student and graduate surveys. The national Quality Assurance Agency (ANVUR) implements a biennial national student survey across the entire higher education system. The National Agency for Statistics (ISTAT) conducts research every three years that surveys graduates three years after graduation. Since 1998, this has been complemented by AlmaLaurea, a national university consortium that monitors the employment outcomes of graduates from its member universities one, three and five years after graduation. AlmaLaurea currently has 75 members and represents about 90% of students. Response rates for its most recent survey were 82% for the group that graduated one year earlier, 73% for the group that graduated three years earlier, and 69% for the group that graduated five years earlier. The total sample was 270 000 graduates. The experience of AlmaLaurea led to the creation of AlmaDiploma, which aims to link secondary schools with universities and the job market, and AlmaOrièntati, which provides orientation to students in upper secondary school about the choice of higher education programmes. In addition to the surveys, AlmaLaurea is a matchmaking platform for jobs and hosts the resumes of around 2.5 million graduates.

In **Canada**, the National Graduates Survey (NGS) has been surveying the labour market outcomes of graduates three years after graduation since 1976. Statistics Canada implements the survey every five years. The 2018 edition offers, for the first time, the option of completing the survey over the telephone, assisted by a Statistics Canada interviewer. The NGS collects data about the type of employment obtained and qualification requirements, under-employment and unemployment rates of graduates, and the relationship between study programme and employment outcome and job satisfaction. The questionnaire, available in English and French, was recently simplified (completion takes 30-45 minutes) and new questions on work-based learning and entrepreneurship were added. The data is used to better understand the experiences and outcomes of graduates and to improve government programmes. The data is made available for higher education stakeholders at national, provincial and territorial levels, and researchers.

In **the Netherlands**, the Association of Universities of Applied Sciences has conducted annual surveys of recent graduates since the 1990s using the HBO Monitor. The survey data is integrated into a common Labour Market Information System (AIS), which allows users to extrapolate labour market outcomes for specific training courses, occupational groups, business types and regions for a four-year-period. The HBO Monitor is implemented by the Research Centre for Education and the Labour Market (ROA) at Maastricht University. Close to 90% of all universities of applied sciences in the Netherlands participate in the survey.

Source: AlmaLaurea website and survey reports (AlmaLaurea, 2017[43]); Statistics Canada website and survey methodology (Statistics Canada,(n.d.)[44]); and HBO-Monitor website (HBO-Monitor,(n.d.)[45]).

The provision of data from a range of sources requires a comprehensive and harmonised approach across federal and state levels, and the involvement of the entire higher education system. The Mexican government will need to build on the emerging co-ordination efforts between different secretariats and agencies to standardise approaches, data collection and presentation. The establishment of a working group that brings together all of the agencies that collect information on higher education and the labour market will help to standardise data collection and analysis and create better oversight

and co-ordination that helps ensure robust, relevant, and easily accessible information. This will need a greater whole-of-government approach to higher education and labour market outcomes. An example of a co-ordinated approach is "LMI for All", a government initiative in United Kingdom to provide open access to labour market information (Box 6.6).

Box 6.6. Labour Market Information for All, LMI for All (United Kingdom)

LMI for All is a comprehensive labour market information database that aims to optimise access to, and use of, core national data sources that can be used by developers to create websites and applications to help individuals make better decisions about learning and work. During the development phase (2012-2017), various sources of labour market information were identified and tested for their ability to inform the decisions people make about learning and work. These sources were brought together in an automated, single, accessible location to be used by developers to create websites and applications for career guidance purposes. At least 12 organisations or consortia have developed a website or web interface, and three organisations have developed mobile applications. Initial funding was provided by the United Kingdom Commission for Employment and Skills; the portal is now funded by the Department of Education.

Future development of LMI for All include adding a way of linking vacancies to four-digit coded occupation, data which are not yet collected, and to provide more detailed geographical information on the current and projected structure of employment for which official data sources are limited by creating synthetic data (e.g. using microsimulation techniques).

Several case studies on the use of the LMI for All service were published to document the process of designing, developing and implementing a web interface or an application and to demonstrate the broad potential of the LMI for All service in practice.

Source: For general information about LMI for All (LMI For All, 2018[46]) and (Bimrose et al., 2018[47]) and for the case studies (LMI For All, 2018[48]).

It will be important to develop evaluation mechanisms that include ex-ante and ex-post evaluations of programmes that seek to strengthen the labour market relevance and outcomes of higher education in order to capture information on their effectiveness and implementation on the ground.

Fostering collaboration across secretariats, government agencies and between levels of governments

The Mexican higher education system, with its 13 subsystems, is highly complex and lacks co-ordination. This complexity, coupled with a federal system of government and regional diversity, make steering the system difficult, resource intensive and prone to inefficiencies.

Although the labour market relevance and outcomes of higher education have not been a priority overall, during 2013-2015, a special committee was created in Parliament on Strengthening Higher Education and Training to Promote Development and Competitiveness (CEFESCDC), and discussions resulted in a document with a series of recommendations to improve progress in this area.

Federal and state governments share responsibility for the governance, regulation and co-ordination of higher education, although the federal government plays the most important role and contributes over three-quarters of the funding (OECD, 2017[49]). The Higher Education Co-ordination Act (1978) sets some guidelines on co-ordination between levels of government and institutions, but it lacks clarity. The National Council of Education Authorities (*Consejo Nacional de Autoridades Educativas*, CONAEDU) brings together the 32 state secretariats for education and the federal secretary for education. CONAEDU's higher education chapter is not active and no meetings have occurred in the last six years. Consequently, there is currently no mechanism to co-ordinate higher education between the federal and state governments.

There have been various attempts to facilitate planning between federal and state governments. The State Commissions for Higher Education Planning (*Comisión Estatal para la Planeación de la Educación Superior*, COEPES) were created as advisory intermediary bodies that act as a forum for members to express their views without decision making power. Public funding for COEPES was discontinued and commissions currently only operate in some states. Where commissions still exist they include higher education institutions that are members of ANUIES and other institutions, representatives of industry and professional organisations. Some targeted funding programmes require the preliminary approval of the proposal by the state COEPES, if one exists.

The National Productivity Committee (CNP) was created in 2013 as a mechanism to co-ordinate across government. The CNP is a consulting committee of the federal government which brings together several federal secretariats (education, economy, finance and labour and social welfare), the President's office, CONACyT, business associations, chambers of commerce, trade unions and four higher education institutions. The CNP has a subcommittee on human capital (*Subcomité de Capacitación y Certificación de Competencias Laborales*), which aims to enhance the contribution of human capital to the productivity and competitiveness of the Mexican economy. ANUIES and FIMPES are currently not members of the CNP, which limits the representation of a highly complex system of close to 3 800 institutions to only four higher education institutions.

In 2018, the CNP developed a skills framework for Mexico (*Sistema de Formación de Habilidades*), which builds on the recommendations of the OECD's Skills Strategy of Mexico in 2017. The CNP provides a useful forum to raise awareness of the labour market relevance and outcomes of higher education across governments. However, its impact will be limited if the sectoral programmes of the federal secretariats of education, labour and social welfare and economy continued to be designed in a silo approach. Although the CNP was designed to have committees at the state level, few states have active committees.

The regional diversity of Mexico's economy offers rich potential, and maintaining a good geographic distribution of higher education institutions has been a policy priority for several decades. This has resulted in the creation of new higher education institutions in smaller towns and rural areas, which has increased the opportunities for young people in these locations to access higher education. However, some state governments have not been able to fulfil their financial commitments for higher education, and the federal government has had to increase its share.

As discussed in Chapter 3, the delivery of high-quality education in these areas is proving challenging as it is difficult to obtain sufficient funding and high-quality academic staff. The absence of an effective planning mechanism has created tensions at the institutional

level regarding the allocation of funding (OECD, 2019[4]). Most funding from states also originally comes from the federal level in the form of block grants and transfers, as states have limited tax-raising powers.

The variety of higher education institutions across the 13 subsystems and 32 states constitute a complex, but potentially very rich and diverse, higher education system. However, the higher education offer at the state level or regional level is not necessarily well aligned with local labour market needs. For example, in the state of Veracruz, 2 500 engineers graduate annually, but there is not a developed manufacturing industry in the state. This misalignment, along with the low geographic mobility of graduates, results in graduates who remain in their state working in unrelated fields or in lower level occupations. This suggests that greater planning and co-ordination capacity is needed at a local level within states to ensure a diverse offer of programmes and to improve pathways for students. Ireland has made commendable progress in this direction with regional collaborative initiatives (Box 6.7).

Box 6.7. Regional collaborative initiatives involving higher education institutions in Ireland

To aid the implementation of Ireland's National Strategy for Higher Education to 2030, regional collaborative initiatives of higher education institutions help to achieve the core objectives of a high-quality, sustainable and competitive higher education system.

Regional collaborative initiatives are the building blocks of the 21st century higher education system in Ireland and an important stage for the development of knowledge and innovation regions across the country. Their governance is kept light and flexible in order to maintain the accountability or autonomy of the higher education institutions. The strategic objectives of regional initiatives are clear, simple and well prioritised, and focus, in the first instance, on shared academic planning and improved student pathways.

The Shannon Consortium in Limerick, a city with around 100 000 inhabitants in the Mid-West Region, is an example of such regional initiatives. This Consortium was founded with the leadership of the Limerick Institute of Technology and the University of Limerick and their joint commitment to their region and efforts to boost the regional economy. The 2006 joint bid (together with other regional partners) to the Strategic Innovation Fund, an Irish government initiative, to establish a Shannon Consortium arose directly as a result of the close personal working relationship between the presidents of the institutions.

The collaboration between the higher education institutions has led to a growing number of innovative joint activities in education and research. Examples include a combined graduate school and doctoral programme accreditation and collaboration in lifelong learning courses, as well as applied research activities and new, effective ways to enhance engagement with employers. "Limerick for IT" is an information technology skills partnership launched in 2014 that combines the strengths of the two institutions in partnership with key industry partners, such as General Motors, Johnson & Johnson, Kerry Group, Limerick City Council and Limerick County Council and Ireland's inward investment promotion agency. The initiative has facilitated attracting foreign direct investment and job creation, which has also led to new forms of collaboration between higher education and industry (e.g. the Johnson and Johnson Development Centre).

A future phase in regional initiatives will need to focus on enhancing the involvement of industry and business representatives and sharing good practices among all regional

initiatives through a "learning from each other" platform that involves the governing bodies of the higher education institutions.

Source: OECD (2017), *Supporting Entrepreneurship and Innovation in Higher Education in Ireland*, (OECD/EU, 2017[50]).

The links between science and technology policy and higher education policy have weakened over time. CONACyT is responsible for science and technology policy and used to be part of the SEP; however, it currently reports directly to the President of Mexico. CONACyT is the main provider of public competitive research funding. It maintains 27 research centres and has an important role in postgraduate education through the recognition of high-quality postgraduate programmes, some of which are organised in collaboration with industry, and by providing scholarships to students enrolled in these programmes. The weakened relationship between CONACyT and the SEP has affected the alignment between undergraduate and postgraduate programmes, and limits connections between education and research in higher education.

The establishment of a national body to co-ordinate higher education across levels of government will improve the responsiveness of higher education to regional and local needs. This body could build on the experience of COEPES. The CNP should be strengthened as a mechanism to co-ordinate the work of different secretariats and their agencies at the federal and state levels. The human capital subcommittee could play a leading role in the development of a national strategy to enhance the labour market relevance and outcomes of higher education. The human capital subcommittee should include university associations as members, in addition to individual members, to ensure the widest possible representation of the higher education system.

Attention will need to be paid to gaining and maintaining a government-wide focus on the labour market relevance and outcomes of higher education in light of proposed changes to the SEP. The elimination of the sub-secretariat of higher education could increase co-ordination challenges, which need to be addressed to ensure that higher education in Mexico helps students develop labour market relevant skills and go on to experience good labour market outcomes.

Implications for the labour market relevance and outcomes of the higher education system

There is not enough recognition of the importance of higher education in developing labour market relevant skills. This is reflected in the absence of a national strategy that could provide a framework for government initiatives. The role of the government in steering the higher education system is limited to direct-provision higher education institutions (28% of enrolment). The government has little influence over private higher education institutions (33% enrolment) and has a limited role steering autonomous institutions (39% enrolment).

While there are pockets of high-quality higher education, quality assurance mechanisms need to be strengthened to ensure the quality of the system as a whole. Improvements in this area will ensure that students develop the knowledge and skills they need to succeed in the labour market.

There is not sufficient engagement between higher education institutions and employers or across the system, particularly given the vocational nature of Mexican higher

education. Current engagement practices are weak and unevenly developed across subsystems and programmes. This needs to be more systematically applied over the higher education system to ensure the delivery of programmes that meet the needs of the labour market and the development of labour market relevant skills that will help graduates get high-quality jobs.

Dominant teaching practices in higher education institutions do not foster the development of strong labour market relevant skills. Mexican higher education needs to develop a strong culture of excellence in learning and teaching. Currently, excellence in teaching is not rewarded or recognised in higher education. In addition, there is little use of innovative teaching practices, which can help develop strong transversal skills, as well as discipline-specific knowledge. Effective work-based learning is limited due to organisational capacity and social service, which although a commendable practice, needs to be more embedded in the programmes as a form of service learning. Its regulations should be harmonised and streamlined.

Some students are locked out of further studies by the inflexibility of higher education. The current entry requirements into higher education and the recognition of prior learning are limited. In addition, there are difficulties in moving across levels of study and between institutions. The higher education system largely caters to the traditional young student studying full-time on campus, which hinders effective lifelong learning.

Information on the labour market relevance and outcomes of higher education is limited. There are significant gaps, such as a national graduate survey that shows labour market outcomes or further study undertaken, surveys of students on their learning experiences, or employer surveys on the skills of graduates. Existing labour market information is poorly connected to higher education and graduate outcomes. All of this information needs to be co-ordinated and presented in a single, user-friendly way to maximise its usefulness and help students and their families, higher education institutions, employers, and governments make informed decisions.

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(91 2018 20 1 P) ISBN 978-92-64-30940-1 – 2019

Higher Education

Higher Education in Mexico

LABOUR MARKET RELEVANCE AND OUTCOMES

Half a million higher education graduates enter the labour market every year in Mexico. While their labour market outcomes are considerably better on average than those of upper secondary education graduates, some higher education graduates face periods of inactivity and unemployment. Many graduates who find work end up being over-qualified or working in the informal sector. This report finds that the Mexican higher education system needs to be better aligned with the labour market to help students develop the skills employers seek. Students need better support to succeed in their higher education studies and develop labour market relevant skills, which will help facilitate their achievement of good outcomes in the workforce. This calls for a comprehensive whole-of-government approach and the involvement of all higher education stakeholders. The report proposes a set of policy recommendations to address these issues and help Mexican higher education graduates achieve better outcomes in the labour market.

The report was developed as part of the *OECD Enhancing Higher Education System Performance* project and is a companion to the OECD report, *The Future of Mexican Higher Education: Promoting Quality and Equity,* which focuses on broader issues in higher education, including governance, funding, quality and equity, as well as two key sectors of higher education: teacher education colleges and professional and technical institutions.

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ISBN 978-92-64-30940-1
91 2018 20 1 P