OECD Skills Studies

OECD Skills Strategy Tlaxcala (Mexico)

ASSESSMENT AND RECOMMENDATIONS

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BETTER POLICIES FOR BETTER LIVES

Please cite this publication as:
OECD (2021), *OECD Skills Strategy Tlaxcala (Mexico): Assessment and Recommendations*, OECD Skills Studies, OECD Publishing, Paris, *https://doi.org/10.1787/13925818-en*.

ISBN 978-92-64-44238-2 (print)
ISBN 978-92-64-89199-9 (pdf)

OECD Skills Studies
ISSN 2307-8723 (print)
ISSN 2307-8731 (online)

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Corrigenda to publications may be found on line at: *www.oecd.org/about/publishing/corrigenda.htm*.

Foreword

Developing relevant skills and using them effectively is crucial for Tlaxcala's ability to thrive in an increasingly interconnected and rapidly changing world.

In recent years, Tlaxcala has made significant progress in strengthening its skills system and improving its economic and social performance. However, successive waves of the COVID-19 (coronavirus) pandemic have the potential to reverse the years of progress achieved. With depressed demand for goods and services and reduced international mobility, the bedrock of Tlaxcala's economy has suffered: export volumes have shrunk and inflows of foreign direct investment (FDI) have dwindled. As a result, Tlaxcala's skills system has had to respond to significant challenges, including unemployment spikes and worsening inequalities.

With the COVID-19 disruption potentially set to further accelerate certain megatrends identified in this report, such as automation and digitalisation, the nature of many jobs of the future is likely to change, together with the skills required to undertake these jobs. In this context, a resilient and responsive skills system will have an essential role to play in Tlaxcala's post-pandemic recovery.

The pressure for Tlaxcala to swiftly recover from the adverse effects of the COVID-19 crisis is further magnified by the need to reap full benefits from the United States-Mexico Canada Agreement (USMCA), which has replaced the North American Free Trade Agreement (NAFTA). With stronger worker protection measures and a higher quota for automobile production originating in North America under the USMCA, Tlaxcala will need to ensure that it is developing and using the skills of its people as effectively and efficiently as possible in order to remain competitive.

In recent years, Tlaxcala has laid the foundations of a skills architecture capable of responding to the challenges and opportunities of today and tomorrow. The State Development Plan 2017-2021 (Plan Estatal de Desarollo 2017-2021) identifies key challenges for developing and using people's skills, and sets out a vision for addressing these challenges to foster the competitiveness of Tlaxcala's economy and the inclusiveness of its society. This report aims to further build on the basis established by the State Development Plan. The OECD worked collaboratively with Tlaxcala to identify targeted policy responses to support the state's efforts in responding to both long-standing and newly emerging skills challenges and needs. The process involved an in-depth analysis of Tlaxcala's skills system and widespread engagement with over 100 Tlaxcalan stakeholders, culminating in a set of tailored recommendations presented in this report.

The OECD stands ready to support Tlaxcala further as it seeks to implement effective skills policies, and continues its transition to a knowledge-based economy and society.

Acknowledgements

This report is part of a series of country projects within the OECD programme of work on Building Effective National Skills Strategies.

The OECD team wishes to thank the Governor of Tlaxcala, Marco Antonio Mena Rodríguez, for his commitment, participation and continuous support for the project. The OECD is especially grateful to the Tlaxcala Project Team for its invaluable guidance and input throughout the project, and for its help convening and organising the stakeholder workshops. We are particularly grateful to the Project Leader, Manuel Camacho Higareda, Secretary of Public Policy and Co-ordination of the State System for the Promotion of Employment of the State of Tlaxcala, for his strong leadership and co-ordination of the Project Team, which included: José Luis Bustos Villegas, President of the Co-ordination of the Supérate Tlaxcala Programme; Gustavo Eduardo Vargas Farías, Secretary of Agriculture and Livestock Development of the State of Tlaxcala; José Antonio Carvajal Sampedro, Secretary of Tourism of the State of Tlaxcala; and Roberto Lima Morales, Secretary of Education of the State of Tlaxcala.

Our warm thanks go to the many government and non-government representatives who generously shared their time and insights during workshops, group discussions and many other virtual meetings with the OECD team. Over 130 stakeholders participated in the various meetings that took place between July 2020 and March 2021. These stakeholders represented government departments, government agencies, education and training institutions, businesses and business associations, trade unions and community associations, academia, civil society, and other organisations.

Ricardo Espinoza (OECD Centre for Skills) was the Project Leader responsible for co-ordinating this OECD Skills Strategy project. The authors of this report were: Chapter 1. Key insights and recommendations for Tlaxcala (Najung Kim and Ricardo Espinoza, OECD Centre for Skills); Chapter 2. Strengthening the skills of youth (Andrea Cornejo, Paris School of Economics and Iván Bornacelly, OECD Centre for Skills); Chapter 3. Fostering greater participation in adult learning (Iván Bornacelly, OECD Centre for Skills); Chapter 4. Using people's skills more effectively to raise productivity (Ricardo Espinoza, OECD Centre for Skills; Michael Hall, Johns Hopkins University; and Laura Reznikova, OECD Centre for Skills); and Chapter 5. Strengthening the governance of the skills system (Najung Kim and Laura Reznikova, OECD Centre for Skills). While the report draws on data and analysis from the OECD, authorities in Mexico and Tlaxcala and other published sources, any errors or misinterpretations remain the responsibility of the OECD team.

As Head of the OECD National Skills Strategy Projects team, Andrew Bell provided oversight, analytical guidance, comments on chapters and supervision. Stefano Scarpetta, Director of the OECD Directorate for Employment, Labour and Social Affairs, and Mark Pearson, Deputy Director of the OECD Directorate for Employment, Labour and Social Affairs, both provided strategic oversight for the project, as well as comments.

Véronique Quénehen and Jennifer Cannon (OECD Centre for Skills) provided invaluable support for workshop organisation, report layout and design, and publication planning. Elizabeth Zachary provided proofreading and editorial support.

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Acronyms and abbreviations

The main abbreviations and acronyms used in the report are listed below.

Acronym	Full description
ACE	Training Support Initiative for Employability (Apoyo a la Capacitación para la Empleabilidad)
ASM	Susceptible Aspects for Improvement (Aspectos Susceptibles de Mejora)
CADEA	Care Agreement for the Demand for Adult Education (Convenio de Atención a la Demanda de Educación para Adultos)
CAI	Childcare centres (*centros de atención infantil*)
CDOE	Judging Committee of the Educational Supply (Comité Dictaminador de la Oferta Educativa)
CECATI	Training Centre for Industrial Work (Centro de Capacitación para el Trabajo Industrial)
CECyTE-EMSAD	School of Scientific and Technological Studies of the State of Tlaxcala and Distance Higher Education (Colegio de Estudios Científicos y Tecnológicos del estado de Tlaxcala y Centros de Educación Media Superior a Distancia)
CENDI	Child development centres (*Centros de desarrollo infantil*)
CENEVAL	National Centre of Evaluation for Higher Education (Centro Nacional de Evaluación para la Educación Superior)
CGUTyP	General Co-ordination of Technological and Polytechnic Universities (Coordinación General de Universidades Tecnológica y Politécnicas)
CID	Digital Inclusion Center (Centro de Inclusión Digital)
COBAT-TBC	System of Upper Secondary Schools and Community Tele-schools of Tlaxcala (Colegio de Bachilleres del Estado de Tlaxcala y Telebachillerato Comunitarios)
COEPES	State Commission for the Planning of Higher Education (Comisión Estatal para la Planeación de la Educación Superior)
COLTLAX	School of Tlaxcala (El Colegio de Tlaxcala)
CONALEP	National Upper Secondary School for Technical Professional Education (Colegio Nacional de Educación Profesional Técnica)
CONACyT	National Science and Technology Council (Consejo Nacional de Ciencia y Tecnología)
CONEVAL	National Council for the Evaluation of Social Development Policy (Consejo Nacional de Evaluación de la Política de Desarrollo Social)
CONOCER	National Council for Standardisation and Certification of Competences (Consejo Nacional de Normalización y Certificación de Competencia Laborales)
DEE	Directorate of Educational Evaluation (Dirección de Evaluación Educativa)
DEMSS	Directorate of Upper Secondary and Higher Education (Dirección de Educación Media Superior y Superior)
DGCFT	General Directorate of Work Training Centres (Dirección General de Centros de Formación para el Trabajo)
DGESPE	General Directorate of Higher Education for Education Professionals (Directorio General de Educación Superior para Profesionales de la Educación)
DTED	Technical Directorate of Performance Evaluation (Dirección Técnica de Evaluación del Desempeño)
ENAPROCE	National Survey on Productivity and Competitiveness of Micro, Small and Medium Enterprises (Encuesta Nacional sobre Productividad y Competitividad de las Micro, Pequeñas y Medianas Empresas)
ENIGH	National Survey of Household Income and Expenditure (Encuesta Nacional de Ingresos y Gastos de los Hogares)
ENOE	National Survey of Occupation and Employment (Encuesta Nacional de Ocupación y Empleo)
EXCALE	Exams for Quality of Educational Achievement (Exámenes para la Calidad y Logro Educativos)

Acronym	Full description
FAETA	Contribution Fund for Technological and Adult Education (Fondo de Aportaciones para la Educación Tecnológica y de Adultos)
FDI	Foreign direct investment
FOMTLAX	Macro Fund for the Internal Development of Tlaxcala (Fondo Macro para el Desarrollo Integral de Tlaxcala)
GDP	Gross domestic product
GER	Gross enrolment rate
GVA	Gross value added
HE	Higher education
HPWP	High-performance workplace practices
ICAT	Institutes for Job Training (Institutos de Capacitación para el Trabajo)
ICATLAX	Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado)
ICT	Information and communications technology
IEEA	State Institutes of Adult Education (Institutos Estatales de Educación para Adultos)
IMCO	Mexican Institute for Competitiveness (Instituto Mexicano para la Competitividad)
INEA	National Institute for Adult Education (Instituto Nacional para la Educación de los Adultos)
INEGI	National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía)
ITEA	Institute for Adult Learning of Tlaxcala (Instituto Tlaxcalteca para Educación de los Adultos)
ITJ	Tlaxcala Youth Institute (Instituto Tlaxcalteca de la Juventud)
ITM	Technological Institute of Monterrey (Instituto Tecnológico de Monterrey)
MEVyT	Education for Life and Work Model (Modelo Educación para la Vida y el Trabajo)
MMDT	Mexican Model of Dual TVET
MOOC	Massive open online courses
NGO	Non-governmental organisation
PAE	Annual Programme of Evaluation (Plan Annual de Evaluación)
PAL	Priorities for Adult Learning
PED	State Development Plan (Plan Estatal de Desarrollo)
PEEI	Programme to Expand Initial Education (Programa para Expansión de la Educación Inicial)
PIAAC	Programme for the International Assessment of Adult Competencies
PISA	Programme for International Student Assessment
PLANEA	National Plan for Evaluation for Learning (Plan Nacional de Evaluación de Aprendizaje)
PMD	Municipal development plan (Plan Municipal de Desarrollo)
PND	National Development Plan (Plan Nacional de Desarrollo)
RIA	Regulatory impact assessments
SAA	Skills assessment and anticipation
SARE	Rapid Business Opening System (El Sistema de Apertura Rápida de Empresas)
SE	Secretariat of Economy (Secretaría de Economía)
SECG	Evaluation and Management Control System (Sistema de Evaluación y Control de Gestión)
SEDECO	Secretariat of Economic Development (Secretaria de Desarrollo Económico)
SEP	Secretariat of Public Education (Secretaria de Educación Pública)
SEPUEDE	Co-ordination of the State System of Employment Promotion and Community Development (Coordinación del Sistema Estatal de Promoción de Empleo y Desarrollo Solidario)

Acronym	Full description
SIISNE	Integrated Information System of the National Employment Service (Sistema integral de información del Servicio Nacional del Empleo)
SINCO	National Occupational Classification System (Sistema Nacional de Clasificación de Ocupaciones)
SME	Small and medium-sized enterprises
SNE	National Employment Service (Servicio Nacional de Empleo)
SNET	National Employment Service of Tlaxcala (Servicio Nacional de Empleo de Tlaxcala)
SPF	Department of Planning and Finance (Secretaría de Planeación y Finanzas del Gobierno)
STPS	Secretariat of Labour and Social Welfare (Secretaría de Trabajo y Protección Social)
STyFE	Secretariat for Labour and Employment Promotion (Secretaría del Trabajo y Fomento al Empleo)
TALIS	Teaching and Learning International Survey
TecNM	National Technological Institute of Mexico (Tecnológico Nacional de México)
TecNM-DGES	Directorate of Decentralised Technological Institutes (Dirección de Institutos Tecnológicos Descentralizados)
UEMSTAyCM	Unit of Upper Secondary Education in Agricultural Technology and Marine Services (Educación Media Superior Tecnológica Agropecuaria y Ciencias del Mar)
UEMSTIS	Industrial Technology and Service Unit of Upper Secondary Education (Unidad de Educación Media Superior Tecnológica Industrial y de Servicios)
UNDP	United Nation Development Programme
UPN	National Pedagogic University (Universidad Pedagógica Nacional)
USMCA	United States-Mexico-Canada Agreement
USNE	National Employment Service Unit (Unidad del Servicio Nacional de Empleo)
VAT	Value-added tax
VET	Vocational education and training

Executive summary

OECD-Tlaxcala collaboration on the OECD Skills Strategy project

This OECD Skills Strategy project provides Tlaxcala (Mexico) with tailored findings and recommendations on its skills performance from an international perspective. The project was launched during a virtual Skills Strategy Seminar in July 2020, which was followed by two online workshops in October 2020 (the Assessment Workshop) and December 2020 (the Recommendations Workshop). During each of these workshops the OECD engaged with more than 100 governmental and non-governmental stakeholders. These discussions were complemented by further virtual bilateral and group meetings. This process and Tlaxcala's remarkable stakeholder engagement provided invaluable input that shaped the findings and recommendations in this report.

Skills matter for Tlaxcala

Skills are vital for countries and individuals to adapt to and thrive in an increasingly complex, interconnected and rapidly changing world. As megatrends and the COVID-19 (coronavirus) pandemic reshape societies and economies, getting skills policies right becomes even more crucial for increasing productivity and promoting inclusive and sustainable growth.

Tlaxcala's economy has experienced robust growth since 2011, driven largely by growing economic output in the manufacturing, construction, mining and automotive industries, as well as inflows of foreign direct investment. However, Tlaxcala's sustained growth has been radically interrupted by COVID-19, which has arrived amid uncertainties related to the impact of the United States-Mexico-Canada Agreement (USMCA) on trade.

Tlaxcala will need to provide its youth with high-quality opportunities to develop relevant skills that will support their smooth transition into the labour market, as well as foster a culture of adult learning that can facilitate youths' adaptability to changes in the economy. At the same time, Tlaxcala will need to foster greater participation in adult learning to help adults upskill and reskill in response to changing labour market needs, and thus boost their employability. In order to raise productivity and swiftly recover from the COVID-19 crisis, Tlaxcala will need to support its people to use their skills more effectively. Robust governance arrangements, underpinned by a whole-of-government approach, active stakeholder engagement and high-quality information on changing skills demands, will be more important than ever in helping Tlaxcala successfully navigate the rapidly changing skills environment.

The key findings and recommendations in each of these areas are summarised below and elaborated in subsequent chapters, which also have detailed policy recommendations.

Strengthening the skills of youth

Foundations for success in skills development and learning are laid during childhood and youth. Providing youth with opportunities to develop relevant skills, therefore, contributes to a strong basis for economic growth, social cohesion and well-being. Skills development during early childhood is linked to higher

graduation and completion rates across all levels of compulsory education. It also supports smooth transition into the labour market and fosters a culture of adult learning that can facilitate adaptability to changes in the economy. In order to strengthen the skills of youth, Tlaxcala should boost access and quality in pre-primary education, build a strong teaching workforce, and strengthen the responsiveness of secondary vocational and education training (VET) and tertiary education institutions to labour market needs.

The main recommendations are:

- Gather and centralise the recently acquired pedagogical knowledge and lessons learned from in-service pre-primary teachers on how to effectively engage with students and parents during the pandemic.
- Identify the key aspects of high-quality initial teacher training, and standardise these aspects across all initial teacher training institutes.
- Harmonise and simplify the process for opening, closing or adjusting VET and higher education programmes and specialisations.

Fostering greater participation in adult learning

Participation in adult learning of all forms can help adults upskill and reskill in response to changing labour market needs, and thus boost their employability. Adults' continuous engagement in learning activities will therefore be of paramount importance in the years to come, especially as digitalisation, globalisation and population ageing, compounded by the effects of the COVID-19 pandemic, continue to rapidly reshape the quantity and quality of existing jobs, as well as the type of skills required to perform these jobs. To foster greater participation in adult learning, Tlaxcala should increase adults' motivation to participate in remedial education and provide incentives for adults to participate in training that responds to labour market needs.

The main recommendations are:

- Provide vocational and combined streams in upper secondary remedial education to help adults earn a formal VET qualification.
- Expand the information and guidance provided by the National Employment Service of Tlaxcala's (Servicio Nacional de Empleo de Tlaxcala, SNET) career guidance services.
- Allow informal workers to benefit from the training provided by SNET's Employability Support Programme (Programa de Apoyo al Empleo, ACE) and by the Supérate programme.

Using people's skills more effectively to raise productivity

Skills development policies will only achieve desired productivity gains if they are accompanied by simultaneous actions to boost the effective use of skills. Effective skills use raises the return on the initial investment in the development of skills, and limits the depreciation and obsolescence of acquired but unused skills. When skills are effectively put to use, workers, employers and the broader economy all benefit. In order to use people's skills more effectively to raise productivity, Tlaxcala should foster entrepreneurship and support small and medium-sized enterprises (SMEs), as well as promote the adoption of high-performance workplace practices (HPWP).

The main recommendations are:

- Create industry-specific channels for communication to help female entrepreneurs create business networks and integrate with existing supply chains.
- Expand the geographic coverage of the Secretariat of Economic Development (Secretaria de Desarrollo Económico, SEDECO) to alleviate connectivity issues and extend SME support to rural or marginalised municipalities.
- Strengthen the provision of managerial skills training to support the adoption of HPWP.

Strengthening the governance of the skills system

The success of skills policies typically depends on the responses and actions of a wide range of actors (e.g. government, educators, workers, employers) that have to effectively work together in a constantly shifting environment characterised by significant uncertainty. Therefore, well-functioning governance arrangements are essential to support Tlaxcala's performance in developing and using people's skills. To strengthen the governance of the skills system, Tlaxcala should increase co-ordination in adult learning across the whole of government, and maximise the potential of skills data to foster responsive policy making.

The main recommendations are:

- Foster better alignment between the State Development Plan (Plan Estatal de Desarrollo*,* PED) and municipal development plans (*plan de desarrollo municipal,* PMD).
- Expand the implementation of impact evaluation for adult learning programmes.
- Introduce Tlaxcala's own Skills Needs Survey to regularly survey employer's needs.

1 Key insights and recommendations for Tlaxcala, Mexico

This chapter summarises the key insights and policy recommendations of the OECD Skills Strategy project in the Mexican state of Tlaxcala. It applies the OECD Skills Strategy framework to assess the characteristics and performance of the Tlaxcalan skills system, and summarises the key findings and recommendations for each of the four priority areas for action: 1) strengthening the skills of youth; 2) fostering greater participation in adult learning; 3) using people's skills more effectively to raise productivity; and 4) strengthening the governance of skills policies. The subsequent chapters examine each of the four priority areas in greater detail.

Skills matter for Tlaxcala

Skills are vital to help countries and individuals adapt to and thrive in an increasingly complex, interconnected and rapidly changing world. Countries become more productive and innovative and enjoy higher levels of trust, health and a higher quality of life when people develop relevant skills, and use their skills effectively at work and in society. As megatrends and the COVID-19 pandemic reshape societies and economies, getting skills policies right becomes even more crucial for increasing productivity and promoting inclusive and sustainable growth.

In recent years, Mexico has made sustained progress in strengthening its economic performance. Moderate growth over the past two decades has been supported by oil wealth, growth of the working-age population, and open trade and investment policies. Integration into global value chains has driven robust export growth while a recovery in real wages, stable flows of remittances and credit growth have supported consumption. Nevertheless, moderate economic growth has not yet translated into improved relative living standards, and pervasive inequality remains a challenge.

Tlaxcala's economy has experienced robust growth since 2011, driven largely by growing economic output in the manufacturing, construction, mining and automotive industries, as well as foreign direct investment. (SEDECO, 2021[1]). In 2019, for example, Tlaxcala's economy grew 6.5%, the highest growth rate among Mexican states. Tlaxcala has been an attractive destination for foreign direct investment, particularly in the automotive and manufacturing industries, owing to its strategic and geographical location, safety, and young population. However, this sustained growth has been radically interrupted by the COVID-19 pandemic and uncertainties related to the impact of the United States-Mexico-Canada Agreement (USMCA) on trade.

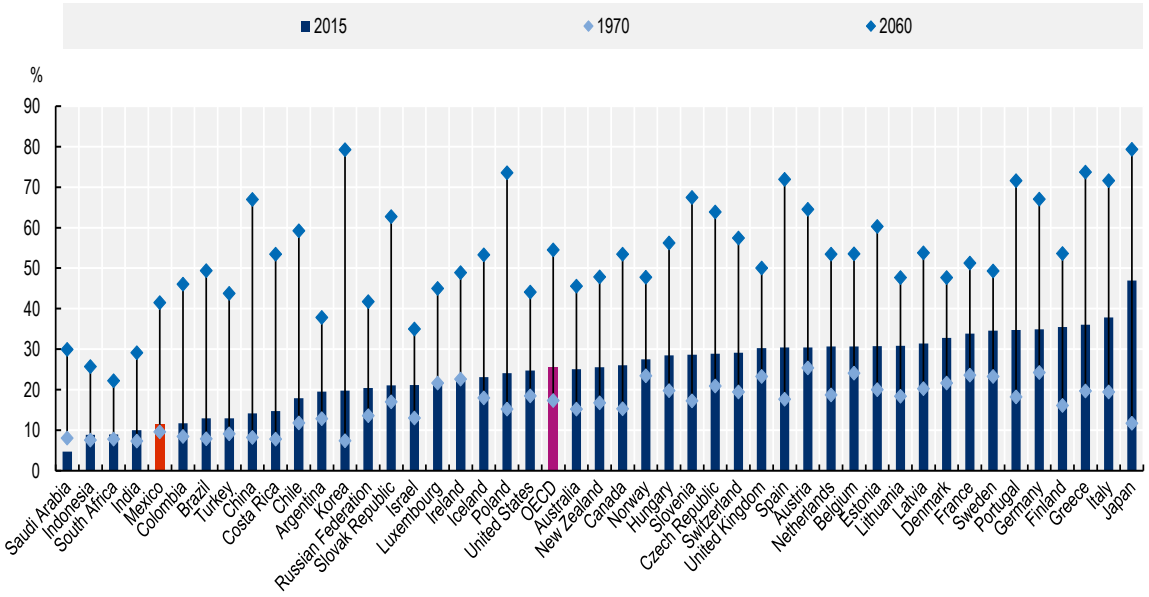
Therefore, developing relevant skills and using them effectively will be crucial to help Tlaxcala improve its productivity and competitiveness in key sectors, as well as to create an enabling environment for more inclusive and sustainable economic growth in the long term.

Demographic changes and digitalisation pose challenges to Mexico's prosperity

In Mexico, the population aged 65 years and older is projected to grow by almost 300% from 8.2 million in 2015 to over 30 million by 2050 (AARP & FP Analytics, 2017[2]). Population ageing implies a shrinking share of the working-age population and an increasing old-age dependency ratio – the number of people of retirement age (65+) per 100 people of working-age (20-64). Although Mexico had the lowest old-age dependency ratio among OECD countries in 2015, the ratio is projected to almost quadruple by 2060, showing the sharpest increase across OECD countries, alongside Turkey and Korea (Figure 1.1). The shrinking working-age population will likely decrease the labour force participation rate, compromising the contribution of labour utilisation to economic growth and making productivity an even more crucial determinant of Mexico's economic development.

Figure 1.1. The old-age dependency ratio will increase fourfold by 2060 in Mexico

Number of people of retirement age (65+) per 100 people of working-age (20-64), in 1970, 2015 and 2060 predictions



Source: OECD (2016[3]), *Society at a Glance: OECD Social Indicators*, https://doi.org/10.1787/9789264261488-en.

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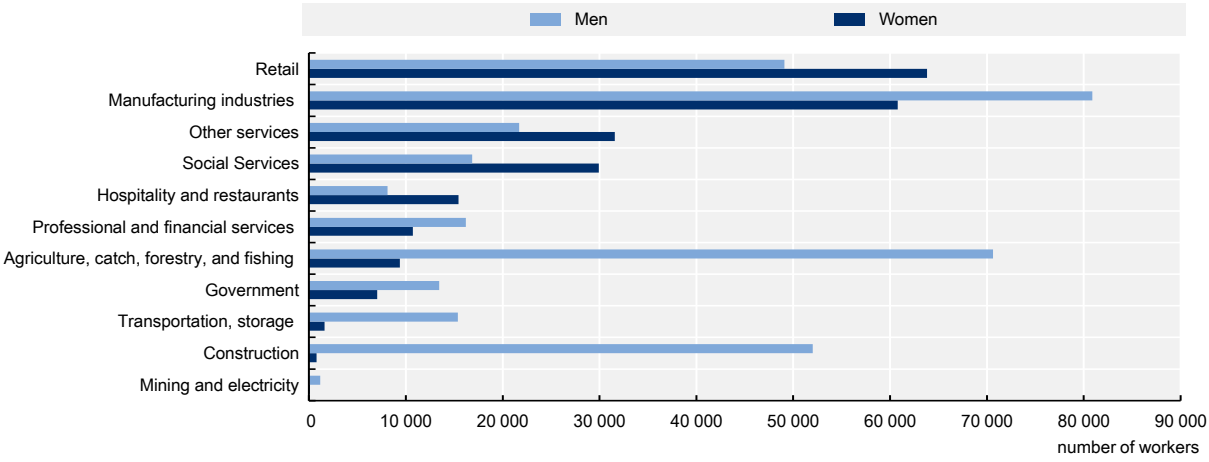
Another challenge facing Tlaxcala's skills system is job automation. The digital transformation, driven by advances in technology including machine learning, big data and artificial intelligence (AI), is changing the nature of certain jobs, and reshaping how certain tasks are performed. Tlaxcala is particularly exposed to these changes as employment is highly concentrated in the manufacturing sector (Figure 1.2). The OECD Programme for the International Assessment of Adult Competencies (PIAAC) suggests that in Mexico, about 25% of workers face a high risk of seeing their job automated, and another 36% face significant changes in their job tasks due to automation (Figure 1.3) (Nedelkoska and Quintini, 2018[4]).

Figure 1.2. Tlaxcala's economy is concentrated in a handful of sectors

Total female and male employment in Tlaxcala, by economic sector



Note: "Others" includes: scientific, technical and professional services; real estate services; cultural and recreational services; construction; financial services; generation, transmission and distribution of energy; agriculture, catch, forestry and fishing; mass media; and mining and corporate services.
Source: INEGI (2021[5]), *Data*, https://en.www.inegi.org.mx/datos/.

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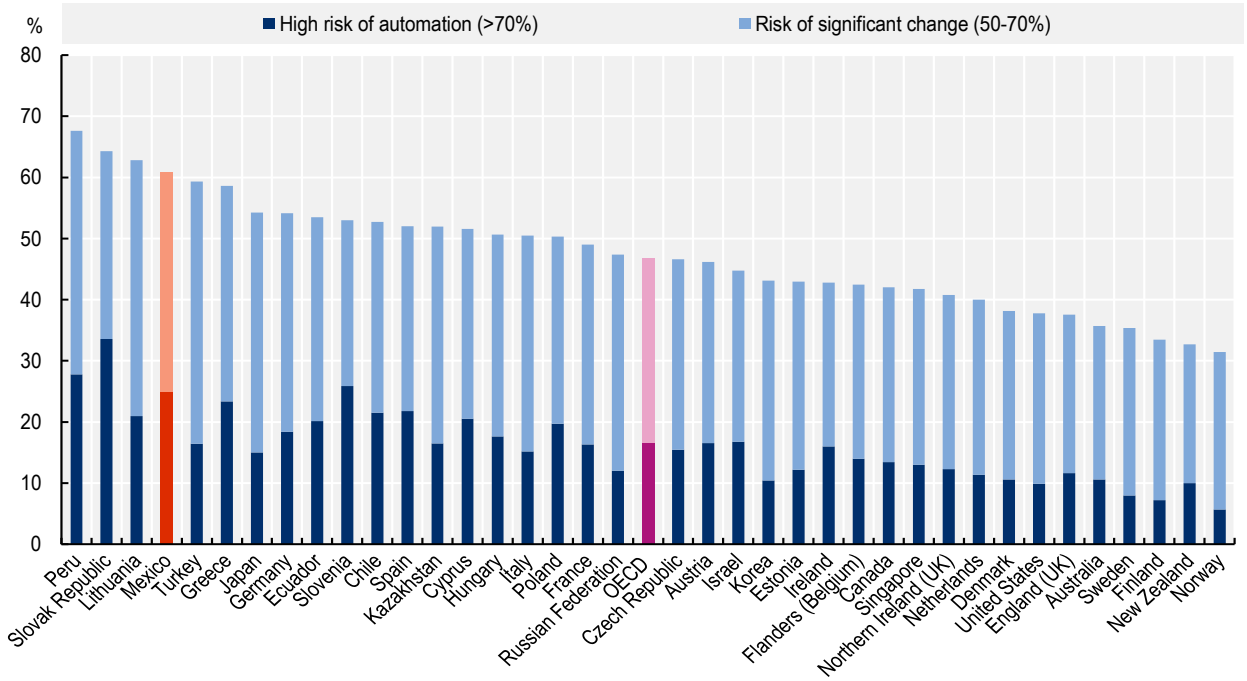
Figure 1.3. Job automation and percentage of jobs at risk of significant change

Percentage of jobs at high and significant likelihood of automation



Source: Nedelkoska and Quintini (2018[4]), *Automation, skills use and training*, http://dx.doi.org/10.1787/2e2f4eea-en.
Notes: Jobs are at high risk of automation if their likelihood to be automated is at least 70%. Jobs at risk of significant change are those with the likelihood of being automated estimated at between 50 and 70%. The values for "OECD" are simple averages. The sample for the Russian Federation does not include the population of the Moscow municipal area. The data for the United States are from 2017.

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Low productivity and low female labour force participation dampens potential well-being improvements

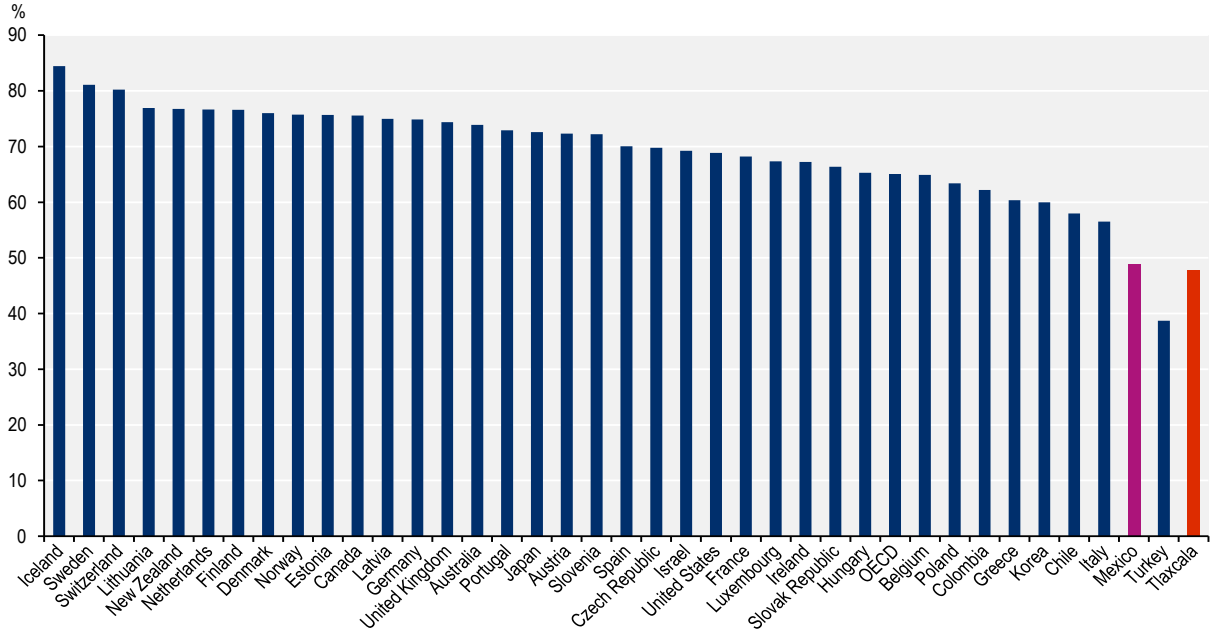
Despite sustained moderate economic growth, Mexico's productivity growth is weak (OECD, 2019[6]). Among all states, Tlaxcala recorded the lowest productivity growth between 2010 and 2016, at -1% per year (OECD, 2018[7]). Tlaxcala's gross domestic product (GDP) per capita is among the lowest in Mexico, implying low firm productivity. The low productivity of Tlaxcalan workers, demonstrated by Tlaxcala's low gross value added per worker, is another challenge as it can lead to the reduced marginal return on labour for firms, creating a vicious cycle of lost productivity gains.

The weak productivity of Mexican labour is brought about largely by poor educational attainment and low skills achievement, weak rule of law, obstacles to competition, and widespread job informality (OECD, 2019[6]). Only 48% of Mexican adults aged 25-34 complete secondary education, considerably lower than the OECD average of 84%, and only 23% possess tertiary education degrees, significantly below the OECD average of 43%. Mexico is falling behind the OECD average in developing people's skills and using them effectively (Figure 1.9).

Tlaxcala, like most states in Mexico, faces challenges in fostering a dynamic and inclusive domestic economy, despite geographical and infrastructural advantages. These challenges are reflected in both low female labour force participation and high rates of informality. Despite a continual rise throughout the last decade, female labour force participation in Mexico remains below the OECD average of 64% (Figure 1.4). Among women aged 20-64, 46.7% are active in the labour force, compared to 81.8% of their male counterparts.

Figure 1.4. Women's skills could contribute more to Tlaxcala's local economy and productivity

Female labour force participation rate, 2019



Source: OECD (2021[8]), *Labour force participation rate (indicator)*, https://data.oecd.org/emp/labour-force-participation-rate.htm; INEGI (2020[9]), *Methodological scope of the national occupation and employment survey: ENOEN*, https://www.inegi.org.mx/contenidos/programas/enoe/15ymas/doc/enoe_n_nota_tecnica_0820.pdf.

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The new trade agreement poses uncertainties for skills needs and development

Globalisation has led to the emergence of global value chains (GVCs) that allow different parts of production processes to be performed in different geographical locations, which has important skills implications. GVC participation has facilitated the flow of investment into Tlaxcala, in particular to the manufacturing and automotive sectors. Nonetheless, participation in GVCs can also increase uncertainties due to the changing dynamics of international trade. In particular the USMCA, which replaced the North American Free Trade Agreement (NAFTA) in July 2020, will likely bring about significant changes in labour market demand and supply. The USMCA maintains most of NAFTA's 22 chapters, making notable revisions in the areas of automotive and agricultural products, investment, intellectual property rights, labour rights and the environment. The USMCA makes three significant changes pertaining to the automotive sector. First, under new regulations for the regional value content, vehicles must have 75% North American content, as opposed to 62.5% under NAFTA. Second, the new laws for the labour value content call for 40-45% of auto content to be made by workers who earn at least USD 16 per hour. Third, at least 70% of the annual steel and aluminium purchases of a producer must originate in North America (Garsten, 2020[10]; Congressional Research Service, 2021[11]).

The changes adopted in the new trade deal will potentially reshape the competitiveness and success of different economic sectors, affecting the supply of jobs and demand for skills in the labour market (OECD, 2019[6]). Lower bilateral tariffs under the USMCA are projected to increase production in labour-intensive sectors in Mexico, increasing demand for both low-skilled and skilled workers. Increased labour demand in Mexico is likely to put upward pressure on Mexican wages, incentivise low-skilled Mexican workers to remain in Mexico instead of migrating to the United States, and potentially attract emigrant workers back to Mexico. These potential skills implications increase the need for Mexican states to build strong skills systems that can adapt and respond swiftly to the impact of the new agreement in order to benefit fully from its incentives.

The COVID-19 pandemic poses unprecedented economic and social challenges to Mexico

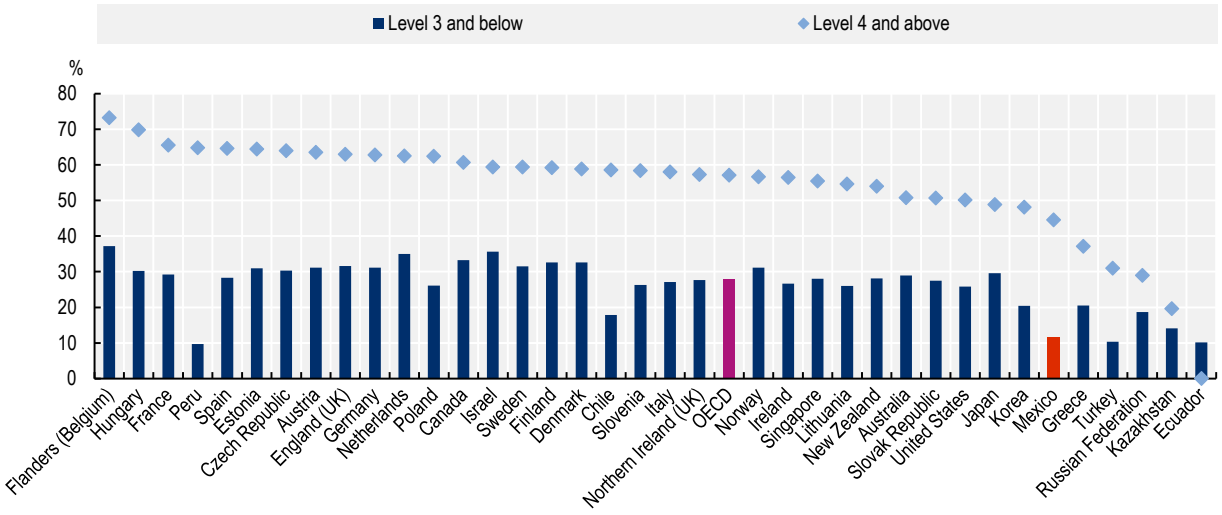
The COVID-19 pandemic and subsequent national lockdowns and restrictive measures are upsetting existing supply chains and halting production, as well as reducing demand by causing a steep drop in consumption. While Tlaxcala has put in place measures to contain the pandemic (including closures of schools, public offices and most public spaces) and limit the impact on public health, COVID-19 has had an enormous impact on society and the economy that will be felt for years to come.

Due to COVID-19, the modality of teaching has experienced a tremendous transition to distance learning due to prolonged restrictive measures. The mass adoption of distance learning has challenged teachers' preparedness to adequately use technology and has increased the role of stakeholders, including parents, teachers and school principals, in supporting the quality of learning.

COVID-19 has also led to the increased incidence of teleworking; however, there is a wide variation in the share of jobs compatible with teleworking across OECD countries. The feasibility of teleworking, and by extension the capacity to sustain countries' economic activity even during a pandemic, is correlated with the levels of skills that people possess. In Mexico, only 12% of workers with relatively low literacy skills have jobs compatible with teleworking (compared to an OECD average of 28%), while 45% of workers with relatively high literacy skills can telework (OECD average 57%) (Figure 1.5). This implies that efforts to equip the population with relevant skills through continued upskilling and reskilling will help Mexico improve resilience in the face of large-scale disruptions such as COVID-19.

Figure 1.5. Feasibility of teleworking by level of literacy skills

Percentage of workers whose jobs are compatible with teleworking, by level of PIAAC literacy proficiency



Source: Espinoza and Reznikova (2020[12]), *Who can log in? The importance of skills for the feasibility of teleworking arrangements across OECD countries*, https://dx.doi.org/10.1787/3f115a10-en.

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Adults will need to upskill and reskill more regularly in the context of rapidly changing labour market demands

In the context of changing labour market demands due to COVID-19 and increasing uncertainties posed by the USMCA, Tlaxcalan adults need to upskill and reskill more often now than in the past. Training opportunities should become more accessible and affordable in Tlaxcala to help adults perform new tasks in their existing jobs, or acquire new skills for newly created jobs. More tailored support should be provided to low-educated, low-income and low-skilled adults who show particularly low participation in training.

Skills should be at the core of the policy responses to build a resilient economy and society

Skills are key to the capacity of countries and individuals to thrive in an interconnected and rapidly changing world. Building effective skills entails the mobilisation of knowledge, competencies, attitudes and values to meet complex demands. A wide variety of skills are important for enabling individuals and countries to be adaptable and resilient to changing skills demands (Box 1.1).

Box 1.1. Definitions of the types of skills needed to succeed in work and society

The OECD Skills Strategy 2019 identifies a wide range of skills that can foster the economic and social performance of countries and individuals, including:

- **Foundational skills** include literacy, numeracy and digital literacy skills that need to be mastered at a high level for people to adapt to changes in their jobs and in society. If equipped with strong foundational skills people will be better positioned to acquire new knowledge and develop other skills such as analytical, social and emotional skills, and will be prepared to continue learning throughout life.
- **Transversal cognitive and meta-cognitive skills** such as critical thinking, complex problem solving, creative thinking, learning to learn and self-regulation are needed not only to respond to the challenges of the future, but also to reshape the future for the better.
- **Social and emotional skills** such as conscientiousness, responsibility, empathy, self-efficacy and collaboration help make kinder, gentler and more tolerant societies.
- **Professional, technical and specialised knowledge and skills** are needed to meet the demands of specific occupations, but must have sufficient transfer potential to be applicable in new and yet unknown fields.

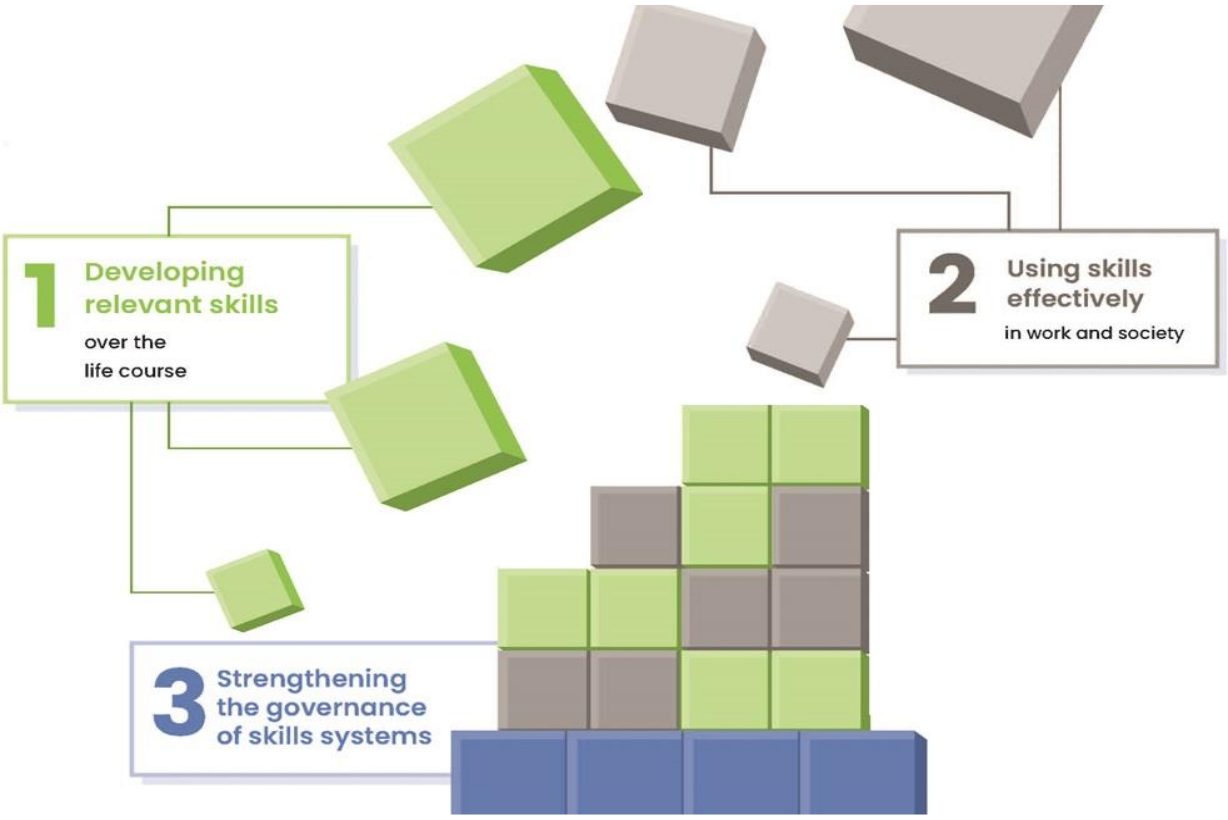
Source: OECD (2019[13]), *OECD Skills Strategy 2019: Skills to Shape a Better Future*, https://dx.doi.org/10.1787/9789264313835-en.

The OECD Skills Strategy project in Tlaxcala

OECD Skills Strategy projects provide a strategic and comprehensive approach to assess countries' skills challenges and opportunities, and to build more effective skills systems. The OECD works collaboratively with countries and regions to develop policy responses tailored to their specific skills challenges and needs. The foundation of this approach is the OECD Skills Strategy Framework (Figure 1.6), the components of which are:

- **Developing relevant skills over the life course**: To ensure that countries and regions are able to adapt and thrive in a rapidly changing world, all people need access to opportunities to develop and maintain strong proficiency in a broad set of skills. This process is lifelong, starting in childhood and youth and continuing throughout adulthood. It is also "life-wide", occurring formally in schools and higher education, as well as non-formally and informally in the home, community and workplaces.
- **Using skills effectively in work and society**: To ensure that countries and people gain the full economic and social value from investments in developing skills, people need opportunities, encouragement and incentives to use their skills fully and effectively at work and in society.
- **Strengthening the governance of skills systems**: Success in developing and using relevant skills requires strong governance arrangements to promote co-ordination, co-operation and collaboration across the whole of government; engage stakeholders throughout the policy cycle; build integrated information systems; and align and co-ordinate financing arrangements.

Figure 1.6. The OECD Skills Strategy Framework



Source: OECD (2019[13]), *OECD Skills Strategy 2019: Skills to Shape a Better Future*, https://dx.doi.org/10.1787/9789264313835-en.

The OECD Skills Strategy project in Tlaxcala supports this method by forming an inter-ministerial project team to support a whole-of-government approach to skills policies, and by engaging a large number of stakeholders in workshops and small group and bilateral meetings. All workshops and meetings were held virtually given the restrictive measures and travel restrictions due to COVID-19.

The project officially started with a seminar held on 7 July 2020 with the presence of the Governor of the State of Tlaxcala, high-level representatives from five secretaries of the Government of Tlaxcala, and the Ambassador and First Secretary of the Permanent Delegation of Mexico to the OECD.

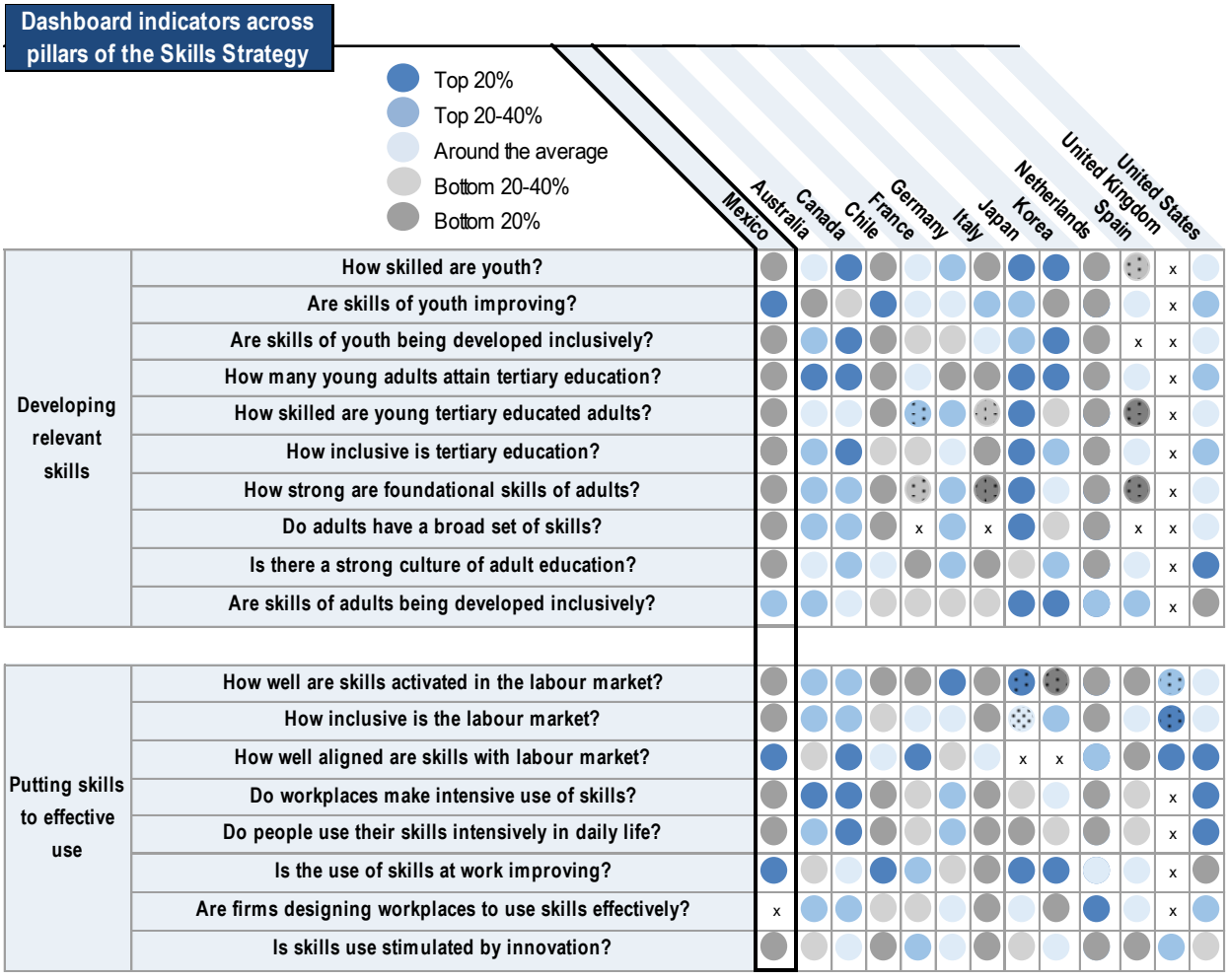
Following this seminar, two workshops (assessment and recommendations workshops) were held. The assessment workshop was held on 19-20 October 2020 to collect insights on Tlaxcala's performance and initiatives in the four identified priority areas, refine the topics to be developed within each area, generate stakeholder support for the project, and raise awareness of the project's objectives. The plenary session (19 October 2020) gathered approximately 130 participants, including the Governor of the State of Tlaxcala, and the Ambassador and the First Secretary of the Permanent Delegation of Mexico to the OECD.

The recommendations workshop was held 14-15 December 2020 (with more than 130 participants) to discuss and refine a draft set of identified recommendations, identify key considerations for implementation, and discuss good practices in the state and elsewhere. During the course of the two workshops, a series of bilateral and multilateral meetings and focus group meetings were held with key stakeholders to collect information to better understand the skills priorities in Tlaxcala.

The performance of Tlaxcala's skills system

The OECD Skills Strategy Dashboard (Figure 1.7) provides an overview of the relative performance of countries across the dimensions of the OECD Skills Strategy (as presented in Figure 1.6). For each dimension of the strategy there are a number of indicators, many of which are composite indicators made up of a number of other indicators. These provide a snapshot of each country's performance (see Annex 1.A for indicators and method).

Figure 1.7. The OECD Skills Strategy Dashboard: Mexico and selected OECD countries



Note: These summary indicators are calculated as a simple average of a range of underlying indicators (see Annex 1.A for indicators). All underlying indicators have been normalised in a way that implies that a higher value and being among the "top 20%" reflects better performance. The "x" indicates insufficient or no available data, and dotted circles indicate missing data for at least one underlying indicator.

Developing relevant skills

Access to quality pre-primary education is low in Tlaxcala

Although pre-primary education for children aged 3-5 became compulsory in 2012, the gross enrolment rate in preschools in Tlaxcala is 57.2% for three-year-olds, 99.6% for four-year-olds and 70.3% for five-year-olds, (see Chapter 2). Ensuring increased access to early childhood development (ECD) is important, as basic foundation skills, including motor skills, cognitive and socio-emotional abilities, are

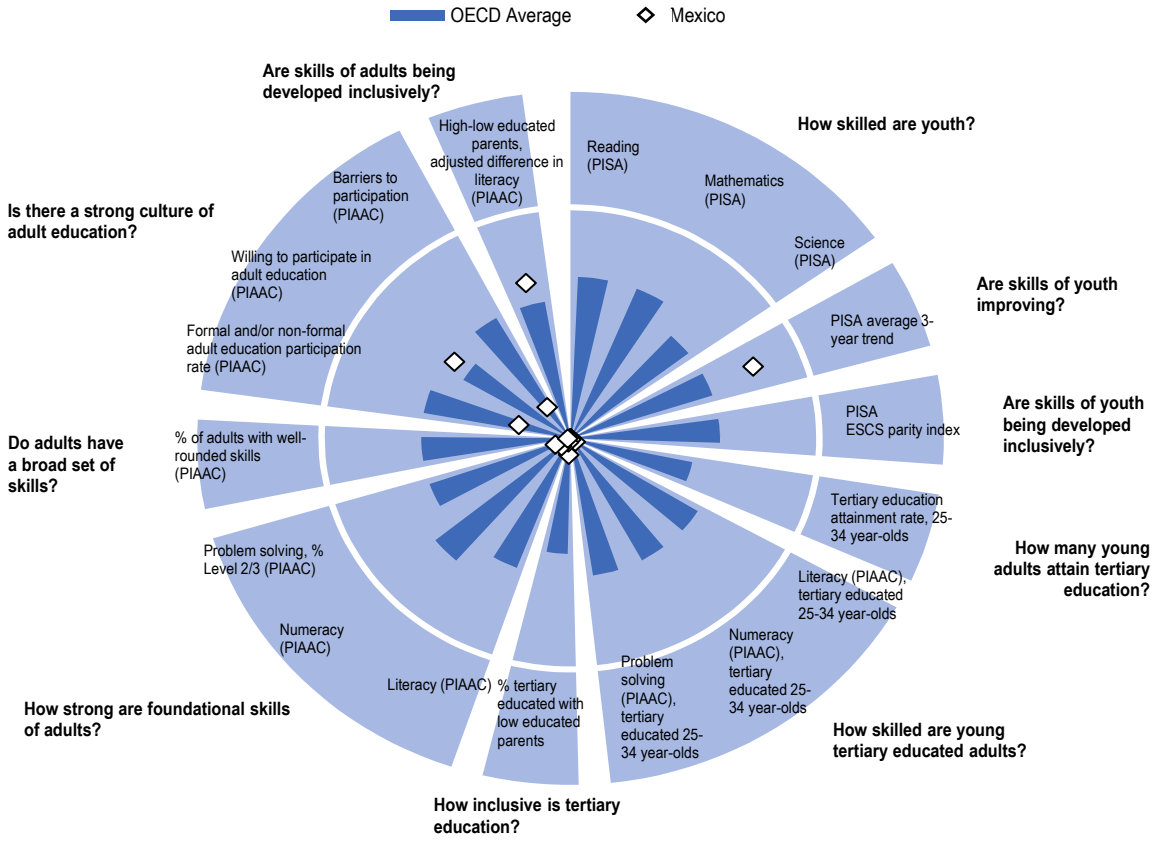
developed during early years. In Tlaxcala, immediate challenges include increasing access and securing more investment, while ensuring the quality of initial education during the planned phase of expansion of early childhood education.

The level of skills among youth is relatively low in Mexico

There are significant opportunities to improve the skills of youth in Mexico, as demonstrated by performance in the OECD's Programme for International Student Assessment (PISA) (Figure 1.8). Although Mexican students show moderate improvement in reading and science scores (see Chapter 2), their overall performance in PISA was in the bottom 20% among OECD countries in both 2015 and 2018. Skills of youth in Mexico are also not being developed inclusively (Figure 1.8), with large disparities in science performance due to students' economic, social and cultural status (ESCS). Furthermore, compared to the OECD average, Mexico has a much smaller share of top performers (Level 5 or 6) in at least one subject. More specifically, only 1% of Mexican students score at Level 5 or higher in mathematics, significantly lower than the OECD average of 11% (OECD, 2020[14]).

Figure 1.8. Key indicators for developing relevant skills, Mexico and OECD average

Relative position in country ranking (based on normalised scores), where higher value reflects better performance



Note: The scores indicate relative performance across OECD countries: being further away from the core of the chart indicates better performance. For example, "PISA ESCS parity index" has a low score, which indicates large inequalities in PISA performance compared to other OECD countries. The OECD average (when using PIAAC data) is based on the sample of OECD countries/regions assessed in the Survey of Adult Skills (PIAAC).
Source: See Annex 1.A for an explanation of sources and methodology.

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Tertiary education enrolment rate in Tlaxcala is relatively low compared to the Mexico average

The percentage of adults holding a tertiary education degree in Mexico (23%) is notably lower than the OECD average (33%). In Tlaxcala, the enrolment rate in higher education, excluding graduate programmes (28%), is 7 percentage points below the national average (35%). Lower attainment in tertiary education has significant repercussions for the performance of individuals in the labour market. Across OECD countries, adults with higher levels of education show better employment outcomes (see Chapter 2). On average across OECD countries, those with higher levels of education have better employment outcomes: 84% of tertiary educated younger adults are employed, compared with only 78% of those with upper secondary or post-secondary non-tertiary education, and 60% of those without upper secondary education. Individuals with lower income and from rural areas in Tlaxcala are less likely to reach tertiary level education, making them even more vulnerable to poor employment outcomes (OECD, 2019[15]).

Adults need to participate more in education and training

Digitalisation, globalisation and population ageing, as well as the recent outbreak of COVID-19, are having a profound impact on the type and quality of jobs available, and the types of skills required to perform these jobs (OECD, 2016[16]). In order to take advantage of these changes, adult learning and training in specific skills have a key role. The need for upskilling and reskilling is imperative to meet new labour market needs, especially for low-educated workers. Supporting participation in training programmes for work is even more significant in the case of Tlaxcala, where a high proportion of adults are experiencing deteriorating labour market prospects, with over 80% working in a job at high risk of automation. Most of these workers have low levels of education (72%) (see Chapter 3). This proportion is 6 percentage points higher than the national average (66%).

Using skills effectively

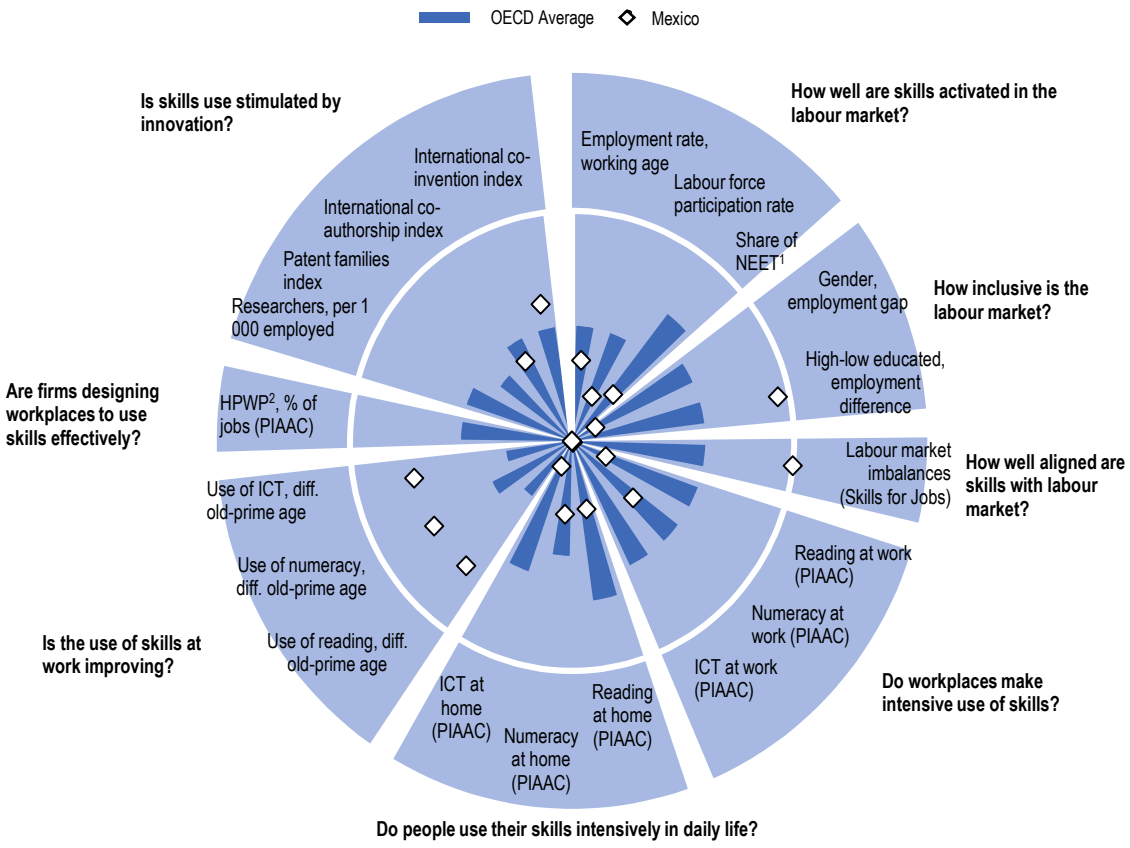
Women participate less in the labour market

Overall, there is ample room to improve the effective use of skills in Mexico and Tlaxcala in terms labour participation, use of skills both at home and work, and stimulation of skills through innovation (Figure 1.9). In particular, the labour force participation of Mexican women aged 20-64 (47%) remains well below the OECD average (64%) (see Chapter 4). This stands in stark contrast to their male counterparts, 82% of whom participate in the labour market. When in the workforce, women in Tlaxcala are most likely to work in retail or manufacturing industries, which account for 27% and 26% of total female employment, respectively. “Other services” employ 13% and social services 12% of women in Tlaxcala. Some sectors do not necessarily employ a large percentage of the total female workforce in Tlaxcala, but are highly reliant on female labour: health and social assistance services (83%), education (70%), food and beverage (55%), and financial services (52%) all have a greater share of female employees than male. Mexican women also show a tendency to be employed by small firms, with most (54%) currently employed in firms with fewer than 10 employees.

Possible factors behind low female labour market participation include the gender wage gap (16%), lower marginal returns on education, high crime rates and stagnation in female entrepreneurship (see paragraph below), all of which calls for tailored and targeted support to empower more women to enter the labour market.

Figure 1.9. Key indicators for using skills effectively, Mexico and OECD average

Relative position in country ranking (based on normalised scores), where higher value reflects better performance



Note: [1]NEET refers to youth not in employment education or training. [2]HPWP refers to high-performance workplace practices. The normalised scores indicate the relative performance across OECD countries: being further away from the core of the chart indicates better performance. For example, indicator "Use of reading, difference young-old (PIAAC)" indicates performance above OECD average, i.e. a comparatively large difference in the use of reading skills between younger and older generations, which demonstrates relatively strong improvements in the use of these skills. The OECD average (when using PIAAC data) is based on the sample of OECD countries/regions assessed in the Survey of Adult Skills (PIAAC).
Source: See Annex 1.A for an explanation of sources and methodology.

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Female entrepreneurship could be further supported

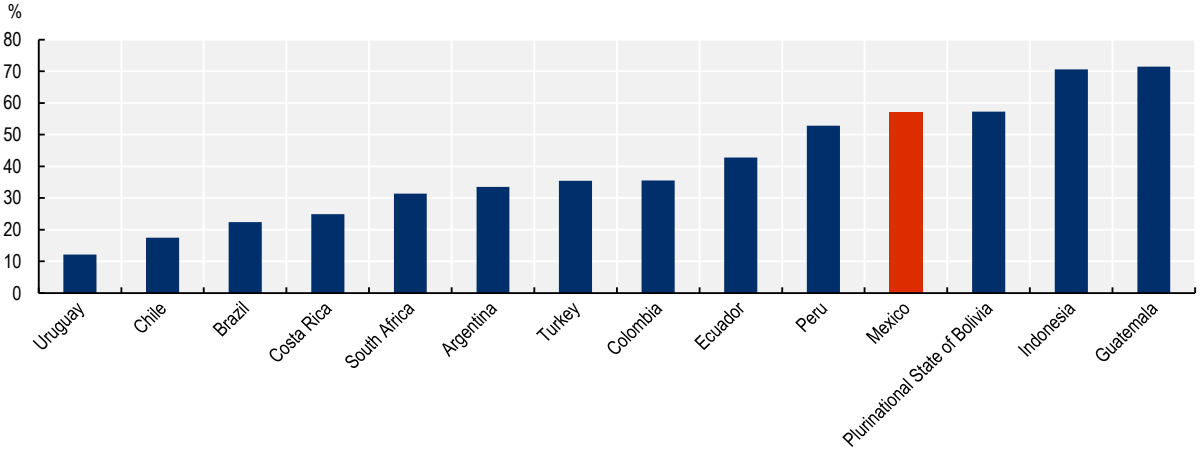
Fostering entrepreneurship can be an effective way of Tlaxcala advancing female economic empowerment, as the flexible time schedules of entrepreneurship can be a viable work option for many women otherwise unable to work due to domestic responsibilities. Having more female entrepreneurs will also generate greater social benefits, as female entrepreneurs are known to often allocate 70% of their earnings towards community and family development (Outhand Consulting, 2019[17]) (see Chapter 4). However, female entrepreneurship has stagnated due to several challenges including a lack of experience, confidence, opportunities, collateral and credit history, as well as cultural norms. Consequently, only 11.2% of women in Mexico start their own business, which is lower than in Latin American peer countries such as Peru, where 29% of women are involved in entrepreneurship.

Informality is hampering productivity gains

Across Mexican states, about 60% of workers are employed in the informal economy, which represents almost one quarter of Mexico's GDP (Figure 1.10). Informality is particularly high among low-skilled, part-time and older workers. Inter-state disparities are also pronounced, varying from 30% in northern states to almost 90% in the south. This high level of informality hampers worker mobility, resource allocation to enhance productivity, and workers' access to quality jobs.

Figure 1.10. Informality is high in Mexico by international standards

Percentage of informal workers, 2017 or latest available year



Source: OECD (2019[6]), OECD Economic Surveys: Mexico 2019, https://doi.org/10.1787/a536d00e-en.

StatLink https://stat.link/jg4dak

Strengthening the governance of skills systems

Robust governance arrangements are key to allow policy makers to effectively and flexibly design and implement policies for developing and using skills. Improving governance arrangements across policy areas and levels of government, as well as with stakeholders, is therefore essential to improving sustainable skills outcomes.

Tlaxcala could do more to improve co-ordination across the whole of government in adult learning

Co-ordinating the planning and implementation of adult learning policies has become more complex in Mexico in recent years. With the increasing decentralisation of Mexico's adult learning policies, states and municipalities have been given more control over programme design and implementation. In Tlaxcala, the co-ordination of adult learning policies is made even more complex by the state's relatively large number of municipalities. Despite being the smallest state in Mexico, Tlaxcala is administratively divided into 60 municipalities. There is evidence that Tlaxcala's vertical co-ordination mechanisms fall short of adequately supporting decentralised adult learning provision across the state's many municipalities.

More could be done to foster a co-ordinated long-term vision for Tlaxcala's adult learning system. Tlaxcala currently lacks robust *ex post* impact evaluation mechanisms of adult learning programmes. However, such evaluation is key for assessing the cost-effectiveness of adult learning programmes and sustaining momentum for supporting strongly performing programmes across electoral cycles.

The potential of skills data should be maximised to strengthen skills assessment and anticipation exercises

Tlaxcala is not fully using the skills data at its disposal to generate information on its current and future skills needs, and certain skills data are not being gathered at all. On the one hand, as in all countries with a federal system of government, Tlaxcala's (state) skills assessment and anticipation (SAA) exercises are partially reliant on Mexico's (federal) data, which poses co-ordination challenges. On the other hand, the assessment of current skills needs based on Tlaxcala's own state-level data is hampered by the lack of technical expertise and commitment to systematic data collection and analysis on the part of public officials from relevant state entities. Moreover, Tlaxcala does not systematically assess employers' needs, and no projections of future skills needs are undertaken in the state. The effective dissemination of key SAA findings to Tlaxcala's public is similarly underdeveloped.

There is no long-standing tradition of systematically involving stakeholders in SAA exercises in Tlaxcala, which is why the state is currently not benefitting from stakeholders' valuable contributions in the consolidation, validation and analysis of key SAA findings.

Policy context in Tlaxcala

Tlaxcala has already implemented a wide range of policies and reforms to address many of the challenges identified in this chapter. These efforts are steps in the right direction and have the potential to generate the policy outcomes that Tlaxcala needs to strengthen its skills system.

Tlaxcala has several programmes in place to improve access to pre-primary education. Supérate, Tlaxcala's social policy flagship programme launched in 2017, provides support to poor families to help them access early childhood development for their children aged 0 to 5. More specifically, Supérate provides training in basic nutrition, childcare and stimulation to "promotors", who pay periodical home visits to poor families to monitor the growth and health of children. In addition, childcare centres (*centros de atención infantil*, CAIs) and child development centres (*centros de desarrollo infantil,* CENDIs) offer non-formal initial education to children of working parents. To improve the quality of teachers in pre-primary education during the pandemic, Tlaxcala organised regular informal conversations with teachers to identify the challenges of distance learning. Teachers are also encouraged to generate their own teaching content using different modalities, in co-ordination with parents.

The Government of Tlaxcala has tried to increase participation in adult learning in various ways. First, diverse media channels are used to disseminate information on adult learning opportunities. The Institute for Adult Learning (Instituto Tlaxcalteca para Educación de los Adultos, ITEA) also leads campaigns through media outlets to publicise remedial education programmes. Further awareness-raising programmes exist in the form of online platforms where individuals can acquire information on adult learning opportunities. ITEA also operates a website and mobile application (TLX ITEA) through which adults can access training modules and materials.

Efforts to identify and remove barriers to participation in adult education require tailored approaches. ITEA currently has an alliance and partnerships with firms to encourage their employees to participate in remedial education. In collaboration with the National Institute for Adult Education (Instituto Nacional para la Educación de los Adultos, INEA), ITEA also provides a wide range of learning options including basic skills development, and training on diverse subjects such as business and environment, language and communication, mathematics, natural and social sciences, and citizenship. Open Schooling for Upper Secondary Education provides remedial distance education for upper secondary education. Schools under this modality provide education focused more on general knowledge to pursue higher education, rather than technical or vocational skills.

Some programmes in Tlaxcala aim to promote the effective use of skills in workplaces. Supérate provides a two-year aid programme to foster female entrepreneurship. In the first session of the training programme, a representative from ICATLAX offers a course on basic financing (e.g. keeping revenue streams separate, developing savings habits). To promote entrepreneurship in general, Supérate operates a census that collects a wide range of data, which could be used to match small and medium-sized enterprises (SMEs) with potential funding.

In recognition of the challenges Tlaxcala faces in terms of lagging business innovation, the State Development Plan 2017-2021 (Plan Estatal de Desarrollo 2017-2021, PED) aims to promote economic and social development. The PED includes a sub-chapter on "Competitiveness and promotion of entrepreneurship" (*Competitividad y fomento al emprendedurismo*), which identifies innovation as one of Tlaxcala's key weaknesses. In particular, Objective 1.5 of the PED aims to promote scientific and technological advances, innovation, and skills development within firms.

There are several efforts underway to improve the governance of adult learning in Tlaxcala. In particular, vertical co-ordination between the state of Tlaxcala and its municipalities is promoted through strengthening the alignment between the PED and municipal development plans (plan municipal de desarrollo, PDM), both of which have objectives related to adult education and training. Tlaxcala also executes the Annual Programme of Evaluation (Programma Annual de Evaluacion, PAE), which promotes vertical co-ordination by verifying whether federally funded adult learning programmes have produced intended results at lower levels of government. PAE includes an evaluation of three budget programmes that cover adult learning – Contribution Fund for Technological and Adult Education (Fondo de Aportaciones para la Educación Tecnológica y de Adultos, FAETA), Care Agreement for the Demand for Adult Education (Convenio de Atención a la Demanda de Educación para Adultos, CADEA) and Supérate.

Tlaxcala has taken concrete steps to strengthen its SAA exercises. To address the challenges involved in using federal data sources, e.g. the Integrated Information System of the National Employment Service (Sistema integral de información del Servicio Nacional del Empleo, SIISNE), Tlaxcala's National Employment Service (Servicio Nacional de Empleo Tlaxcala, SNET) constructed its own internal inventory of vacancy data. With this new initiative, SNET now has access to updated and disaggregated data on flows of jobseekers whenever such data are needed. ICATLAX also interacts with firms and business leaders during regular job fairs organised by SNET, monitoring the training needs of participating firms to inform its training offer.

The abovementioned strategies and programmes provide only a sample of the most recent initiatives directly related to improving the development and use of skills in Tlaxcala, and show that the Tlaxcalan Government has worked to address skills challenges. The following section provides more detailed information on how these strategies and programmes are related to the four priority areas.

Priority areas and recommendations

Based on the assessment of the overall performance of the state of Tlaxcala and the feedback from the state government, four priority areas were identified for the Skills Strategy project in the state of Tlaxcala, Mexico:

1. Strengthening the skills of youth (Chapter 2).
2. Fostering greater participation in adult learning (Chapter 3).
3. Using people's skills more effectively to raise productivity (Chapter 4).
4. Strengthening the governance of the skills system (Chapter 5).

Based on in-depth desk analysis, and several virtual stakeholder workshops and discussion groups, the OECD has selected opportunities and developed recommendations in each of the four priority areas. The

summaries below highlight the key findings and recommendations for each priority area, and the specific chapters that follow present the complete findings and describe the recommendations in more detail.

Priority 1: Strengthening the skills of youth

For countries to adapt and thrive in a rapidly changing world, all individuals need access to opportunities to develop and maintain proficiency in a broad set of skills across the life course. However, the foundations for success in skills development and learning are laid during childhood and youth. Providing youth with opportunities to develop relevant skills contributes to a strong basis for economic growth, social cohesion and well-being. Skills development during early childhood is linked to higher graduation and completion rates across all levels of compulsory education, supports smooth transition into the labour market, and fosters a culture of adult learning that can facilitate the adaptability of adults to changes in the economy. Therefore, equipping Tlaxcalan youth with the right skills is important to achieve the state's social and economic goals.

Opportunity 1: Boosting access and quality in pre-primary education

High-quality early childhood and pre-primary education and care (ECEC) is crucial for the development of strong cognitive and socio-emotional skills. In Mexico, the proportion of 15-year-old students who were low performers in PISA 2015 was almost double for those with 0-1 years of ECEC than for those with 2-3 years (OECD, 2018[18]). In Tlaxcala, cultural and informational barriers hamper access to early childhood education, while stakeholders indicate that some parents may not fully understand its benefits, leading to lower demand. Many Tlaxcalan childcare and child development centres lack sufficiently trained staff to operate at satisfactory quality standards. At the same time, the initial training of pre-primary education teachers in Tlaxcala faces several challenges, evidenced by the fact that many were not adequately prepared to maintain effective education services when the COVID-19 pandemic arrived, and struggled with issues around the use of online platforms and information resources and technologies.

Table 1.1. Opportunity 1: Boosting access and quality in pre-primary education

Policy directions	Recommendations	Responsible parties
Strengthening early childhood education programmes	2.1. Increase demand for early childhood education by targeting informational gaps on the educational benefits.	Tlaxcala
	2.2. Establish minimum quality standards to safeguard the quality of education throughout and after the expansion of early childhood education for children under the age of 3.	SEP Tlaxcala
Strengthening initial training of pre-primary teachers	2.3. Gather and centralise the recently acquired pedagogical knowledge and lessons learned from in-service teachers on how to effectively engage with students and parents during the pandemic.	SEP Tlaxcala
	2.4. Provide teachers with opportunities for specialised in-service teacher training on how to develop students' socio-emotional skills.	SEP Tlaxcala ICATLAX
	2.5. Improve communication and co-ordination between teachers and parents by establishing standard practices, such as initial meetings to set expectations and social-norm-oriented practices for parents.	SEP Tlaxcala

Note: SEP TLAXCALA is the Secretariat of Public Education of Tlaxcala (Secretaría de Educación Pública de Tlaxcala); ICATLAX is the Institute for Job Training of Tlaxcala.

Opportunity 2: Building a strong teaching workforce

Teacher preparedness is a key factor in school learning (Glewwe and Muralidharan, 2016[19]). Due to the COVID-19 pandemic, however, access to teacher training has been negatively impacted. In Mexico, approximately 2.1 million teachers were affected by schooling disruptions (Juntos por el Aprendizaje,

2020[20]), and in Tlaxcala, both initial and in-service teacher training were severely affected. Institutions offering initial teaching training, such as normal schools, as well as all in-person in-service teacher training courses were forced to close. This has created challenges for Tlaxcala, where the level of teacher preparedness varies significantly. According to SEP Tlaxcala's annual evaluation of teachers, fewer than 10% of teachers obtained an excellent level of performance in 2016. The gaps in the preparedness of Tlaxcala's teachers partially reflect an in-service teacher training system that has several limitations. Stakeholders indicate that there are insufficient resources for teachers to maintain and improve their skills. At the same time, school directors and zone supervisors in Tlaxcala could benefit from additional resources, as well as technological and socio-emotional support, to perform their duties more effectively.

Table 1.2. Opportunity 2: Building a strong teaching workforce

Policy directions	Recommendations	Responsible parties
Strengthening initial and in-service teacher education and training	2.6. Increase teacher participation in periodic needs-based training by creating positive incentives.	SEP Tlaxcala
	2.7. Promote the informal exchange of knowledge and know-how between teachers through organised mentoring and learning group initiatives.	SEP Tlaxcala
	2.8. Foster stronger links between in-service and initial teacher training in the first years of a teacher's career by providing individualised assessment-based guidance and support.	SEP Tlaxcala
	2.9. Identify the key aspects of high-quality initial teacher training, and standardise these aspects across all initial teacher training institutes.	SEP Tlaxcala National Pedagogical University Normal schools
Improving the management skills of school principals and leaders	2.10. Provide ongoing assessment and training to officials across all levels of educational leadership to increase effective support for teachers.	SEP Tlaxcala
	2.11. Provide regular training opportunities to new educational leaders to strengthen their preparedness.	SEP Tlaxcala

Note: SEP TLAXCALA is the Secretariat of Public Education of Tlaxcala (Secretaría de Educación Pública de Tlaxcala).

Opportunity 3: Strengthening the responsiveness of secondary vocational education and training (VET) and tertiary education institutions to labour market needs

Making education systems responsive to labour market needs allows students to develop a set of skills that supports employability (OECD, 2015[21]). A weak connection between the education system and the needs of the labour market leads to skill imbalances, which are costly for individuals, employers and society as they lower job satisfaction and earnings (OECD, 2016[16]). Data from the Survey of Adults Skills (PIAAC) show that Mexico has the highest proportion of workers with a qualification mismatch (51%) among participant countries, underlining the need for a responsive VET and tertiary education system. However, Tlaxcala struggles to effectively align the VET and tertiary education offer with labour market needs. The process of adjusting the supply of VET and tertiary education programmes in Tlaxcala is cumbersome, time consuming and without clear guidelines. At the same time, the employer-led provision of work-based learning (WBL) is underdeveloped, with many employers (especially SMEs) lacking the resources and support needed to provide WBL. There is also ample room to improve career guidance services in upper secondary education institutions, and increase students' exposure to employers. Tlaxcala could more effectively target financial incentives for tertiary education students to encourage enrolment in in-demand fields of study, while fostering the more proportionate distribution of financial aid across student income groups.

Table 1.3. Opportunity 3: Strengthening the responsiveness of secondary VET and tertiary education institutions to labour market needs

Policy directions	Recommendations	Responsible parties
Improving the alignment between education offer and labour market demand	2.12. Harmonise and simplify the process for opening, closing or adjusting VET and higher education programmes and specialisations.	SEP Tlaxcala CONEVAL CECyTE TecNM-DGEST COEPES
	2.13. Develop clear guidelines to support the process of opening, closing and adjusting VET and higher education programmes and specialisations.	SEP Tlaxcala COEPES
Encouraging greater employer provision of work-based learning	2.14. Strengthening awareness-raising campaigns about the benefits of, and requirements for, implementing dual education training among SMEs.	SEP Tlaxcala SEDECO
	2.15. Provide technical assistance to firms, especially SMEs, to increase the provision of work-based learning opportunities, as well as financial support to SMEs to foster participation in the MMFD (Mexican Model of Dual TVET) programme.	SEP Tlaxcala SEDECO
Improving students' career choices by strengthening career guidance	2.16. Provide high-quality career guidance services in upper secondary education.	SEP Tlaxcala
	2.17. Involve employers and SNET in the provision of career counselling services in upper secondary education.	SNET
Designing financial incentives to increase participation in higher education and to help align study choices with labour market demand	2.18. Provide targeted financial incentives to encourage young individuals to undertake studies in higher education programmes that are in high demand.	SEP Tlaxcala
	2.19. Expand financial aid to reach middle-income students.	SEP Tlaxcala

Note: SEP TLAXCALA is the Secretariat of Public Education of Tlaxcala (Secretaría de Educación Pública de Tlaxcala) ; CONEVAL is the National Council for the Evaluation of Social Development Policy (Consejo Nacional de Evaluación de la Politica de Desarrollo Social); CECyYTE is the School of Scientific and Technological Studies of the State of Tlaxcala (Colegio de Estudios Científicos y Tecnológicos del estado de Tlaxcala); TecNM-DGEST is the Directorate of Decentralised Technological Institutes (Dirección de Institutos Tecnológicos Descentralizados); COEPES is the State Commission for the Planning of Higher Education (Comisión Estatal para la Planeación de la Educación Superior); SEDECO is the Secretariat of Economic Development (Secretaría de Desarrollo Económico); SNET is the National Employment Service of Tlaxcala (Servicio Nacional de Empleo de Tlaxcala).

Priority 2: Fostering greater participation in adult learning

Participation in adult learning of all forms can help adults to upskill and reskill in response to changing labour market needs, and boost their employability. Digitalisation, globalisation and population ageing, compounded by the effects of the COVID-19 pandemic, are having a profound impact on the quantity and quality of jobs, as well as the type of skills required to perform these jobs (OECD, 2019[22]). Tlaxcala is not an exception to this trend: as a result of COVID-19, Tlaxcala is the fourth most vulnerable state in Mexico in terms of job loss (Bank of Mexico, 2020[23]). Adults' continuous engagement in learning activities that support their (re)insertion into the rapidly changing labour market will thus be of paramount importance for Tlaxcala in the years to come. However, adult participation in training programmes for employability is relatively low, particularly in non-formal education. Compared to the OECD average, adult participation in non-formal education is ten times lower in Tlaxcala (4%) than the average for OECD countries (42%). Common barriers to participation include a lack of employer-sponsored training (only 1 in 6 firms provide training to its employees), a lack of access to training opportunities, a lack of targeted financial incentives, insufficient time, irrelevant training content, and the absence of enabling legal mechanisms such as training leave to increase the take-up of learning of working adults.

Opportunity 1: Increasing adults' motivation to participate in remedial education

A large percentage of adults in Tlaxcala lack basic skills and education. Despite this, the participation rate of adults in remedial education is one the lowest among Mexican states. Many adults are not aware of the benefits offered by remedial education, and Tlaxcala's awareness-raising campaigns that aim to disseminate such information are not fully effective, and merely inform the public about the current offer of remedial education programmes and registration processes. These campaigns do not clearly spell out the programmes' benefits, which could encourage higher participation. The campaigns also mainly target adults aged 65+, which poses challenges given that almost half of Tlaxcala's low-qualified individuals are aged 45-64. At the same time, stakeholders in Tlaxcala note that remedial education provided in the state could be made more relevant for adults. The content of existing remedial education programmes is often not able to effectively boost adults' employability prospects, which may explain the low motivation to engage in such programmes. Efforts to involve social partners in the design of the remedial education offer, which could significantly improve its relevance for adults, are largely underdeveloped.

Table 1.4. Opportunity 1: Increasing adults' motivation to participate in remedial education

Policy directions	Recommendations	Responsible parties
Raising awareness of the importance of remedial education	3.1 Strengthen existing awareness-raising campaigns to promote the benefits of remedial education.	ITEA Municipal authorities Social partners (unions, chambers of commerce, etc.)
	3.2 Involve social partners in awareness-raising events to promote the benefits of remedial education.	ITEA Municipal authorities Social partners (unions, chambers of commerce, etc.)
Making remedial education more relevant for low-skilled adults	3.3 Establish partnerships to offer technical and practical training programmes to adults in remedial education.	ITEA ICATLAX CECATI
	3.4 Provide vocational and combined streams in upper secondary remedial education to help adults earn a formal VET qualification.	SEP Tlaxcala Open Schooling for Upper Secondary Education schools Upper secondary schools VET

Note: ITEA is the Institute for Adult Learning of Tlaxcala (Instituto Tlaxcalteca para Educación de los Adultos); ICATLAX is the Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado); CECATI is the Training Centre for Industrial Work (Centro de Capacitación para el Trabajo Industrial); SEP TLAXCALA is the Secretariat of Public Education of Tlaxcala (Secretaría de Educación Pública de Tlaxcala).

Opportunity 2: Providing incentives for adults to participate in training that responds to labour market needs

A high proportion of adults in Tlaxcala are facing deteriorating labour market prospects, with a high share of jobs threatened by automation. This magnifies the need for adults to participate in relevant learning activities. However, Tlaxcala lacks effective channels for steering adults towards labour market relevant training. Tlaxcala's career guidance services for adults are limited. The National Employment Service of Tlaxcala (SNET) provides career guidance to jobseekers only, which prevents informal workers, who dominate Tlaxcala's economy, from accessing any form of counselling. Moreover, the services provided by SNET are limited in scope, and its employment advisors receive only little on-the-job-training. At the same time, informal workers receive little support to participate in training, despite facing significant financial barriers to participation. The existing offer of state-sponsored training for informal workers has narrowed in recent years, and it has not done enough to steer informal workers towards training that is relevant for the labour market.

Table 1.5. Opportunity 2: Providing incentives for adults to participate in training that responds to labour market needs

Policy directions	Recommendations	Responsible parties
Strengthening career guidance to increase adults' participation in training that responds to labour market needs	3.5 Expand the information and guidance provided by SNET career guidance services.	SNET ICATLAX CECATI
	3.6 Improve the training provided to employment advisors.	SNET ICATLAX
Strengthening support for informal workers to participate in training	3.7 Allow informal workers to benefit from the training provided by SNET's ACE (mixed training) programme.	SNET
	3.8 Support informal workers' participation in training sponsored by Supérate.	Supérate ICATLAX

Note: SNET is the National Employment Service of Tlaxcala (Servicio Nacional de Empleo de Tlaxcala); ICATLAX is the Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado); CECATI is the Training Centre for Industrial Work (Centro de Capacitación para el Trabajo Industrical).

Priority 3: Using people's skills more effectively to raise productivity

Skills development policies will only achieve the desired productivity gains if they are accompanied by simultaneous actions to boost the effective use of skills (OECD, 2019[13]). When skills are effectively put to use, workers, employers and the broader economy all benefit. Making use of people's skills both in the labour market and in workplaces, therefore, has been identified as one of the pillars of the OECD Skills Strategy Framework (OECD, 2019[13]). Using people's skills more effectively will be key in helping close the productivity gap between Tlaxcala and OECD member countries, especially as the state's SME-dominated economy grapples with high rates of informality, low female labour force participation, and an underdeveloped culture of innovation among businesses and in workplaces.

Opportunity 1: Fostering entrepreneurship and supporting SMEs

Tlaxcala is currently foregoing significant productivity gains by not making full use of the skills of its population. With women overburdened by unpaid housework and low female labour force participation, there is significant untapped potential in Tlaxcala's female pool of skills. Many activities that females engage in within the household could be scaled into business opportunities; however, Tlaxcala's prospective female entrepreneurs face barriers related to lack of experience, confidence and little leveraging power when seeking financing. Supérate, Tlaxcala's key programme for supporting gender equality in the labour market and fostering female entrepreneurship, lacks effective oversight of the funding it provides and does not leverage the data it collects to systematically monitor the main obstacles encountered by Tlaxcala's female entrepreneurs. It also does not provide support for creating business networks, which would benefit female entrepreneurs.

Although SMEs dominate Tlaxcala's economy and employ the majority of Tlaxcala's workers, they are not adequately supported. Insufficient financing, high bureaucratic burdens, and weak support institutions and institutional frameworks constitute barriers to the development and modernisation of Tlaxcalan SMEs. Business support programmes provided by SEDECO, a state government organisation that serves as the conduit between Tlaxcala's government and local entrepreeurs, are restricted to SMEs working in innovation and technology. SEDECO has only one physical presence (in the state's capital), and its entrepreneur support network reaches only 4 of the state's 60 municipalities.

Table 1.6. Opportunity 1: Fostering entrepreneurship and supporting SMEs

Policy directions	Recommendations	Responsible parties
Supporting female entrepreneurship	4.1 Expand the oversight of Supérate and the frequency of its guidance through increased communication between programme officials and beneficiaries.	Supérate ICATLAX
	4.2 Utilise the existing census to collect better information on entrepreneurism in Tlaxcala, and identify where obstacles for female entrepreneurs tend to arise.	Supérate ICATLAX
	4.3 Create industry-specific channels for communication to help female entrepreneurs create business networks and integrate with existing supply chains.	Supérate ICATLAX
Enabling full utilisation of skills through strengthened support to SMEs	4.4 Broaden the scope of SEDECO's business support programmes to include SMEs from more sectors, and offer support for the development of managerial skills and high-performance workplace practices.	SEDECO Higher education institutions
	4.5 Expand the geographic coverage of SEDECO to alleviate connectivity issues and extend SME support to rural or marginalised municipalities.	SEDECO Municipalities

Note: ICATLAX is the Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado); SEDECO is the Secretariat of Economic Development (Secretaria de Desarrollo Económico).

Opportunity 2: Promoting the adoption of high-performance workplace practices (HPWP)

Tlaxcalan businesses, especially SMEs, could better organise their workplaces to use the skills of their employees more effectively. The uptake of HPWP and innovative organisational and management practices that positively affect the performance of employees and businesses lags behind the OECD average in Tlaxcala and in Mexico as a whole. To a certain extent, the low uptake of HPWP can reflect a lack awareness about innovative workplace solutions that help to foster effective skills use. In Tlaxcala, there is limited awareness of HPWP and their benefits among employers and policy makers, which is connected to a lack of a more general "culture of innovation". While it is essential that employers and entrepreneurs in Tlaxcala become more aware of HPWP and their benefits, it is equally important that individuals responsible for workplace organisation are equipped with the right skills to implement HPWP effectively and efficiently. However, interviewed stakeholders in Tlaxcala suggest that low levels of managerial skills among Tlaxcalan managers and entrepreneurs were a significant barrier to the successful implementation of HPWP in Tlaxcalan workplaces. Moreover, Tlaxcala's offer of courses, provided by ICATLAX and CECATI, that could help managers develop stronger managerial skills, is limited, the geographical coverage of training is uneven, and the needs of managers in large firms and SMEs are not specifically accounted for in the training offer.

Table 1.7. Opportunity 2: Promoting the adoption of high-performance workplace practices (HPWP)

Policy directions	Recommendations	Responsible parties
Raising awareness of the benefits of high-performance workplace practices	4.6 Disseminate information on the benefits of HPWP through strategies, targeted campaigns and public recognition awards.	SNET ICATLAX Selected employer associations
	4.7 Centralise information on HPWP in Tlaxcala's new Skills Needs Portal.	SEP and STPS (Tlaxcala) departments with strong technical and ICT expertise
Fostering the effective implementation of high-performance workplace practices by managers	4.8 Strengthen the provision of managerial skills training to support the adoption of HPWP.	ICATLAX CECATI SEDECO
	4.9 Support managers of SMEs and large firms to participate in training that takes into account their specific needs.	ICATLAX CECATI SEDECO

Note: SNET is the National Employment Service of Tlaxcala (Servicio Nacional de Empleo de Tlaxcala); ICATLAX is the Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado); SEP is the Secretariat of Public Education (Secretaría de Educación Pública); STPS is the Secretariat for Labour and Employment Promotion (Secretaría del Trabajo y Fomento al Empleo); CECATI is the Training Centre for Industrial Work (Centro de Capacitación para el Trabajo Industrical); SEDECO is the Secretariat of Economic Development (Secretaria de Desarrollo Económico).

Priority 4: Strengthening the governance of the skills system

The success of skills policies typically depends on the responses and actions of a wide range of actors that have to effectively work together in a constantly shifting context characterised by significant uncertainty. Strong governance arrangements are therefore essential to devise and implement effective policies for developing and using skills. In the context of the structural changes induced by the COVID-19 pandemic and the ratification of the USMCA, a whole-of-government approach, active stakeholder engagement and high-quality information on changing skills demands will be more important than ever to help Tlaxcala successfully navigate the rapidly changing skills environment.

Opportunity 1: Increasing co-ordination in adult learning across the whole of government

Tlaxcala faces challenges related to underdeveloped state-municipal co-ordination in adult learning. The lack of alignment between Tlaxcala's main adult learning co-ordination mechanisms, the PED and the PDM, weakens municipalities' understanding of adult learning priorities set out at the state level, and diminishes the state's understanding of municipalities' policy implementation challenges. While alignment between the State Development Plan (PED) and municipal development plans (PDMs) is supported by several co-ordinating bodies, which run a number of training units at the municipal level (e.g. ICATLAX, ITEA), they only exist in a limited number of Tlaxcala's municipalities.

The evaluation of adult learning programmes in Tlaxcala could be significantly improved, especially in terms of coverage, scope and follow-up actions. Currently, Tlaxcala's Annual Programme of Evaluation (PAE) does not conduct a comprehensive evaluation of all adult learning programmes provided in the state, resulting in the absence of evaluations of any adult learning programmes provided by ICATLAX. PAE evaluations assess programme design and process, specific performance, and programme consistency and results, but there is no impact evaluation conducted. Although PAE provides a set of recommendations based on the evaluations' results, it does not provide a clear set of procedures to facilitate the follow-up on the identified recommendations.

Table 1.8. Opportunity 1: Increasing co-ordination in adult learning across the whole of government

Policy directions	Recommendations	Responsible parties
Promoting vertical co-ordination in adult learning between the state and municipalities	5.1. Foster better alignment between the State Development Plan (PED) and municipal development plans (PMD).	State government entities (SEP Tlaxcala, Senior Government Office, Higher Inspection Body) Municipalities
	5.2. Establish designated focal points in each municipality to co-ordinate the activities of the state and municipalities in the area of adult learning.	State government entities (SEP Tlaxcala, Senior Government Office, Higher Inspection Body, and departments with municipal-level presence) ICATLAX ITEA Municipalities
Strengthening adult learning evaluation mechanisms	5.3. Expand the implementation of impact evaluation for adult learning programmes.	State government entities (SEP Tlaxcala, SPF) ICATLAX ITEA Supérate
	5.4. Utilise the results of the evaluations of adult learning programmes to inform evidence-based policy making process.	State government entities (SEP Tlaxcala, SPF) ICATLAX ITEA

Note: SEP is the Secretariat of Public Education (Secretaría de Educación Pública); ICATLAX is the Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado); ITEA is the Institute for Adult Learning of Tlaxcala (Instituto Tlaxcalteca para Educación de los Adultos).

Opportunity 2: Maximising the potential of skills data to strengthen skills assessment and anticipation exercises

Tlaxcala currently lacks strong SAA mechanisms for generating relevant information about present and future skills needs. Such mechanisms are necessary to make the skills system more responsive to changing labour market demands.

Tlaxcala does not have any mechanisms for anticipating future skills needs, and to analyse current skills needs it partially relies on federal sources, which complicates SAA efforts. Certain federal sources of skills data lack state-level disaggregation or cannot be readily accessed from the state level. Tlaxcala started gathering its own skills data (e.g. the inventory of vacancy data), but challenges with data collection, processing, analysis and linking with other data sources remain. Systematic, state-wide employer surveys, which could significantly enrich Tlaxcala's skills data and strengthen the state's SAA efforts, are currently not in place. Furthermore, Tlaxcala's public does not have at their disposal a one-stop shop platform with information on the changing labour market trends and/or study and job opportunities in the state.

Although stakeholders are uniquely positioned to play a valuable role in SAA exercises given their "on-the-ground" sector-specific and/or region-specific expertise, Tlaxcala still has ample room for improvement with respect to engaging stakeholders. There is currently no formal, inter-institutional mechanism to convene key governmental and non-governmental stakeholders to consolidate, analyse and validate the findings from SAA exercises, and advise Tlaxcala's government on the basis of such work. Internal regulations delineating the mandates of Tlaxcala's individual public entities often do not foresee this type of inter-institutional co-operation, and do not provide a formal basis for it to take place.

Table 1.9. Opportunity 2: Maximising the potential of skills data to strengthen skills assessment and anticipation exercises

Policy directions	Recommendations	Responsible parties
Bolstering the analytical foundations and results dissemination of skills assessment and anticipation exercises	5.5. Support SNET's efforts to strengthen its internal vacancy inventory.	STPS Tlaxcala SNET
	5.6. Introduce Tlaxcala's own Skills Needs Survey to regularly survey employer's needs.	SNET ICATLAX
	5.7. Design an online one-stop shop skills needs portal, that provides information on Tlaxcala's skills needs, labour market trends and study opportunities.	SEP and STPS (Tlaxcala) departments with strong technical and ICT expertise
Strengthening stakeholder engagement in consolidating, analysing and validating the findings from skills assessment and anticipation exercises, and advising policy makers	5.8. Establish Tlaxcala's own Skills Needs Committee to consolidate, analyse and validate SAA findings, and advise Tlaxcala's government on skills needs.	Federal government entities (STPS, SEP) State government entities (STPS, SEP) Municipalities
	5.9. Disseminate key outputs from Tlaxcala's Skills Needs Committee to policy makers and the public.	Relevant SEP and STPS (Tlaxcala) departments SNET ICATLAX

Note: STPS is the Secretariat for Labour and Employment Promotion (Secretaría del Trabajo y Fomento al Empleo); SNET is the National Employment Service of Tlaxcala (Servicio Nacional de Empleo de Tlaxcala); ICATLAX is the Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado); CECATI is the Training Centre for Industrial Work (Centro de Capacitación para el Trabajo Industrical); SEP is the Secretariat of Public Education (Secretaría de Educación Pública).

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Annex 1.A. OECD Skills Strategy Dashboard: Mexico

This annex addresses the OECD Skills Strategy Dashboard for Mexico. The objective of this Dashboard is to present an overview of the performance of skills systems in OECD countries. It is the starting point for analysis in the diagnostic phase of national Skills Strategy projects and allows the OECD and the National Project Team to identify the priority skills policy themes to be covered in greater detail in the report. Presenting the relative position of countries on key skills outcomes, the Dashboard provides a general overview of the Mexican skills system's strengths and weaknesses. This annex describes the characteristics, presents the indicators and describes the underlying methods for calculating indicators.

Characteristics

The Dashboard is the result of internal consultation and analysis of core indicators used in OECD Skills Strategy projects. It presents a simple, intuitive overview of the outcomes of skills systems that is easy to interpret, and gives a quick impression of a country's skills performance across the pillars of the OECD Skills Strategy ("developing relevant skills" and "putting skills to effective use"). The Dashboard applies a broad definition of skills by presenting foundational skills, problem-solving skills and broadness of skill sets, and considers both economic and social outcomes. A total of 38 key outcome indicators were selected and grouped into 18 aggregated indicators.

Indicator selection

The selection of indicators followed a process whereby a longlist of the most commonly used indicators in OECD Skills Strategy reports was gradually reduced to a shortlist of core indicators. This process built on the principle that the indicators describe the core outcomes of the different pillars of the skills system. In addition, these indicators express outcomes in terms of level, trend, distribution and equity. The indicators need to be comparatively easy to interpret and based on OECD sources, with data as recent as possible.

Method for the calculation of aggregate indicators

To develop aggregate indicators that represent the relative position of countries on key outcomes of the skills system, a number of calculations were made on the collected data. To describe the relative position across countries, a score for each indicator was calculated ranging from 0 to 10, with 0 for the weakest performance and 10 for the strongest performance. This resulted in an indicator that allows comparisons between different types of indicators (e.g. average performance of literacy scores and educational attainment rates). The resulting scores were normalised in such a way that better performance results in a higher score. Subsequently, an unweighted average of the indicators was calculated for each of the aggregates, and these scores were then ranked. The final ranking was separated into five groups of equal size, ranging from top 20% performer to bottom 20% performer. Aggregate indicators are only presented in the Dashboard when more than half of the underlying indicators have data available.

Annex Table 1.A.1. The OECD Skills Strategy Dashboard: Dimensions, indicators and sources

Dimension and aggregates	Indicator	Source
Developing relevant skills		
How skilled are youth?	Reading (PISA[1]), mean score, 2018	OECD (2019[24]), *PISA 2018 Results (Volume I): What Students Know and Can Do*, https://doi.org/10.1787/5f07c754-en.
	Mathematics (PISA[1]), mean score, 2018	OECD (2019[24]), *PISA 2018 Results (Volume I): What Students Know and Can Do*, https://doi.org/10.1787/5f07c754-en.
	Science (PISA[1]), mean score, 2018	OECD (2019[24]), *PISA 2018 Results (Volume I): What Students Know and Can Do*, https://doi.org/10.1787/5f07c754-en.
Are skills of youth improving?	PISA[1] average three-year trend (reading, mathematics, science)[2]	OECD (2019[24]), *PISA 2018 Results (Volume I): What Students Know and Can Do*, https://doi.org/10.1787/5f07c754-en.
Are skills of youth being developed inclusively?	PISA[1] economic, social and cultural status (ESCS) parity index, science performance, 2018	OECD (2019[24]), *PISA 2018 Results (Volume I): What Students Know and Can Do*, https://doi.org/10.1787/5f07c754-en.
How many young adults attain tertiary education?	Tertiary education attainment rate, 25-34 year-olds, 2017	OECD (2018[25]), *"Population with tertiary education" (indicator)*, https://doi.org/10.1787/0b8f90e9-en.
How skilled are young tertiary educated adults?	Literacy (PIAAC[2] mean score, tertiary educated 25-34 year-olds, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	Numeracy (PIAAC[3]), mean score, tertiary educated 25-34 year-olds, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	Problem solving (PIAAC[3]), % level 2/3, tertiary educated 25-34 year-olds, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
How inclusive is tertiary education?	Share of tertiary educated with low-educated parents, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
How strong are the foundational skills of adults?	Literacy (PIAAC[3]), mean score, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	Numeracy (PIAAC[3]), mean score, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	Problem solving (PIAAC[3]), % level 2/3, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
Do adults have a broad set of skills?	Percentage of adults with a broad set of skills (PIAAC[3]) (level 3-5 in literacy and numeracy and level 2 or 3 in problem solving), 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
Is there a strong culture of adult education?	Formal and/or non-formal adult education participation rate (PIAAC[3]), last 12 months, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	Willing to participate in adult education (PIAAC[3]), percentage of population, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	Low barriers to participation (PIAAC[3]), low % adults wanting to participate but who didn't, 2012/'15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
Are skills of adults being developed inclusively?	High-low educated parents, adjusted literacy difference (PIAAC[3]), 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
Putting skills to effective use		
How well are skills activated in the labour market?	Employment rate, working age, 2018	OECD (2018[27]), *"Employment rate" (indicator)*, https://doi.org/10.1787/1de68a9b-en.
	Labour force participation rate, 2018	OECD (2018[28]), *"Labouar force participation rate" (indicator)*, https://doi.org/10.1787/a452d2eb-en.
	Low share of youth not in employment education or training (NEET), 15-29 year-olds, 2017	OECD (2018[29]), *"Youth not in employment, education or training (NEET)"* (indicator), ahttps://doi.org/10.1787/72d1033a-en.
How inclusive is the labour market?	Gender (male-female), employment rate difference, 2018	OECD (2018[27]), *"Employment rate" (indicator)*, https://doi.org/10.1787/1de68a9b-en.
	High-low educated, employment rate difference, 2017	OECD (2018[30]) *"Employment by education level"* (indicator), https://doi.org/10.1787/26f676c7-en.

Dimension and aggregates	Indicator	Source
How well aligned are skills with the labour market?	Labour market imbalances indicator,[2] 2015/2017 (Skills for Jobs)	OECD (2018[31]), *Skills for Jobs Database*, www.oecdskillsforjobsdatabase.org/index.php#FR/.
Do workplaces make intensive use of skills?	Reading at work (PIAAC[3]), score, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	Numeracy at work (PIAAC[3]), score, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	Information and communication technology (ICT) at work (PIAAC[3]), score, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
Do people use their skills intensively in daily life?	Reading at home (PIAAC[3]), score, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	Numeracy at home (PIAAC[3]), score, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	ICT at home (PIAAC[3]), score, 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
Is the use of skills at work improving?	Reading skills use at work difference prime-age adults (26-54) and older (55-65) (PIAAC[3]), 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	Numeracy skills use at work difference prime-age adults (26-54) and older (55-65) (PIAAC[3]), 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
	ICT skills use at work difference prime-age adults (26-54) and older (55-65) (PIAAC[3]), 2012/15	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
Are firms designing workplaces to use skills effectively?	High-performance workplace practices, percentage of jobs, 2012/15 (PIAAC[3])	OECD (2021[26]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.
Is skills use stimulated by innovation?	Researchers, per 1 000 employed, 2016/2017	OECD (2018), Researchers (indicator), https://doi.org/10.1787/20ddfb0f-en.
	Triadic patent families, performance index (STI[2]Outlook), 2016	OECD (2018), Triadic patent families (indicator), https://doi.org/10.1787/6a8d10f4-en.
	International co-authorship, performance index (STI[5] Outlook), 2016	OECD (2018), *OECD Science, Technology and Innovation Outlook 2018*, https://doi.org/10.1787/sti_in_outlook-2018-en.
	International co-invention, performance index (STI[5] Outlook), 2016	OECD (2018), *OECD Science, Technology and Innovation Outlook 2018*, https://doi.org/10.1787/sti_in_outlook-2018-en.

1. Programme for International Student Assessment (PISA).
2. The average trend is reported for the longest available period since PISA 2006 for science, PISA 2009 for reading, and PISA 2003 for mathematics.
3. Survey of Adult Skills (PIAAC).
4. Labour market imbalances, average standard deviation across occupations in wages, employment, hours worked, unemployment and under-qualifications, 2015/2017.
5. Science, Technology and Innovation (STI).

2 Strengthening the skills of youth in Tlaxcala, Mexico

To ensure that countries are able to adapt and thrive in a rapidly changing world, all people need access to opportunities to develop and maintain strong proficiency in a broad set of skills. This process is lifelong, but the foundations are laid during childhood and youth. Providing young people with the necessary skills not only benefits their own prospects and self-esteem, but also builds strong foundations for economic growth, social cohesion and well-being. This chapter explains the importance of strengthening the skills of youth for the Mexican state of Tlaxcala and provides an overview of current practices and performance. Three opportunities to strengthen the skills of youth in Tlaxcala are explored: 1) increasing access and quality in pre-primary education; 2) building a strong teaching workforce; and 3) strengthening the responsiveness of secondary vocational education and training (VET) and tertiary education institutions to labour market needs.

Introduction: The importance of strengthening the skills of young people in Tlaxcala

Equipping Tlaxcalan youth with the right skills is important to achieve the state's social and economic goals. While the strengthening and sharpening of skills is a continuous process throughout life, literature has highlighted the importance of developing certain foundational skills during childhood and youth (Heckman, 2006[1]). A strong process of skills development during childhood supports better educational outcomes. Skills development during early childhood is linked to higher graduation and completion rates across all levels of compulsory education (García, Heckman and Ziff, 2018[2]). Individuals with strong skills are also more likely to enrol in higher education or vocational institutes, and complete tertiary education.

More highly skilled youth are better prepared for a smooth transition into the labour market. On average across OECD countries, those with higher levels of education have better employment outcomes: 84% of tertiary educated younger adults are employed, compared with only 78% of those with upper secondary or post-secondary non-tertiary education, and 60% of those without upper secondary education. In addition, the unemployment rate of those without upper secondary education is 14%, twice the unemployment rate of those with upper secondary or post-secondary non-tertiary education (7%) (OECD, 2019[3]).

The development of young people's cognitive and socio-emotional skills helps foster a culture of adult learning that can facilitate young people's adaptability to changes in the economy. A strong set of skills also permits youth to perform better in the work environment as they can demonstrate higher levels of productivity and problem-solving abilities. Furthermore, the development of cognitive and socio-emotional skills is important for the development of professional skills such as effective communication and collaboration in team settings. Beyond the traditional work environment, basic skills are important for promoting innovative entrepreneurship. Cognitive and socio-emotional skills are essential to identify entrepreneurial challenges and to organise resources to create efficient and sustainable solutions to challenges.

This chapter examines the importance of strengthening the skills of youth for the Mexican state of Tlaxcala and provides an overview of current practices and performance. It is structured as follows: the next section provides an overview of the education system at the federal and state levels. The following section describes how it is organised, identifies the key actors and their responsibilities, and assesses the main trends in student performance and challenges. The final section conducts a detailed assessment of the identified opportunities and provides tailor-made policy recommendations in these areas.

Overview of Mexico's and Tlaxcala's education system

As with all other Mexican states, Tlaxcala follows the national education system and is organised into five sequential levels. The first recognised level of education in Mexico, which is the only one not compulsory, is referred to as initial education, henceforth called early childhood education for children under 3 (ISCED 01) in this report. Pre-primary ages 3-5 (ISCED 02) is the first mandatory level of education. Together, these first two levels of education are considered early childhood education (ISCED 0). These are followed by primary school (grades 1-6) (ISCED 1) and lower secondary school (grades 7-9) (ISCED 2). Early childhood education to primary school comprise basic education. After completing these levels of education, students continue on to upper secondary school (ISCED 3), which comprises grades 10-12. Higher education (ISCED 4), which is not compulsory, follows upper secondary education.

Pre-primary and primary education are provided by public and private schools in three different modalities, each typically associated with a school type: general, communitarian and indigenous. Each modality adapts teaching to different circumstances, such as linguistic and cultural needs, remote locations, and migrant groups. In urban zones, general schools that provide conventional schooling are more common and receive the majority of students, while communitarian schools cater to more rural sectors of

the population. Indigenous schools are often found in smaller and rural communities and have a distinguished bilingual/bicultural approach. Pre-primary education for children aged 3-5 became compulsory in 2012.

Lower secondary education is also provided through three distinct modalities, each typically associated with a school type: general, technical and televised (*telesecundarias*). General schools account for approximately 52% of student enrolment, and 27% of students attend technical schools, which offer a range of technical subjects such as information and communication technology (ICT) and electronics. The remaining 21% of students attend secondary schools that use the televised education modality (SEP, 2019[4]). *Telesecundaria* is a teaching model that combines distance with face-to-face education. It consists of a 15-minute television programme followed by a 35-minute face-to-face lesson, which is led by a teacher who responds to questions from students and supervises a class activity.

After completing lower secondary education, students enrol in upper secondary school (*educación media superior*) (equivalent to ISCED 3), which is mainly oriented to young people aged 15-19 years. It includes high school (*bachillerato* or *preparatoria)* and professional technical education. Upper secondary education became mandatory in 2012 due to a constitutional reform presented by the federal government and approved by congress (Secretariat of Goverment, 2012[5]) (Monroy and Trines, 2019[6]). Based on this decree, all states have until the academic year 2021/2022 to expand the provision to grant universal access (Chamber of Deputies, 2012[7]). Upper secondary education is divided into three strands: general, vocational and combined. Only graduates from the general and combined strands of upper secondary education can enter either a two-year post-secondary vocational programme at ISCED level 5 (*técnico superior universitario* or *profesional asociado*) or a four- or five-year bachelor's programme at ISCED 6 level (*licenciatura*). Depending on the strands, students can take between two and three years to complete this level of education. The selection of a strand usually depends on student preference and the potential professional career they want to pursue.

The main objective of the general and combined strands is to prepare students to enrol in higher education programmes. Institutions in these modalities offer a formative and comprehensive education programme that provides general basic preparation to students covering scientific, technical and humanistic knowledge. In addition to this preparation, institutions in the combined strand offer students the option to simultaneously complete a two-year post-secondary vocational programme. At the end, schools grant a completion certificate to students who graduate successfully.

The vocational strand has two main purposes: it provides the practical skills and competences to solve problems in the workplace, and it gives the scientific, cultural and technical bases to prepare students to continue their studies in higher education. This educational approach facilitates the school-to-work transition of students into a productive activity of their choosing. There are several specialties that students can take in the vocational strand, ranging from agriculture activities to classes in manufacturing skills and services. Most institutions providing a vocational strand also offer a technical degree equivalent to a post-secondary diploma. The fields of speciality are defined based on the need of the labour market, which means that programmes have an immediate connection with the needs of firms' human resources.

Upon completion of upper secondary education, students can continue on to higher education, which includes post-secondary vocational education and undergraduate programmes. Professional technical education (equivalent to post-secondary VET programmes, ISCED 5) is a two-year programme that grants a technical professional degree. Education institutions at this level offer a wide range of specialisations that aim to respond to labour market needs. The programmes are mostly provided by upper secondary schools; however, depending on the subsystem, universities and independent providers are also able to grant a technical degree.

Undergraduate programmes are four-year or five-year programmes that grant a bachelor's degree (ISCED 6). A wide range of fields of study are offered, including teacher training. A bachelor's degree gives access to postgraduate programmes, either to a one-year specialisation (*especialización*) or a two-year

master's programme (*maestría*), which are both equivalent to ISCED 7). Completing these postgraduate programmes allows graduates to pursue further academic studies at the doctoral level (*doctorado,* ISCED 8).

Key actors of Mexico's and Tlaxcala's education system

Education at all levels in Tlaxcala, including higher education, is provided by both private and public institutions, although the private sector accounts for a smaller proportion of the enrolment rate, with 12% of the total student population, 18% of teachers and 33% of schools (SEP, 2019[4]). There are a number of federal, state and municipal actors that oversee and manage education design and delivery in Mexico and in Tlaxcala, their responsibilities are summarised in Table 2.1.

At the federal level, the national Secretariat of Public Education (Secretaría de Educación Pública, SEP), which is represented in the cabinet, is the highest authority that oversees national education policy and standards in Mexico. SEP has several responsibilities, such as ensuring that all requirements related to pre-primary, primary, secondary, technical and teacher training are carried out in strict observance of the Constitution of Mexico. It also manages the funding, evaluation and administration of education personnel at a national level (Santiago et al., 2012[8]). SEP establishes the national academic curricula for all levels of education, determines whether each is compulsory, regulates the licensing and qualifications for teachers, and manages VET and tertiary education institutions. It also determines and distributes public education funds to states.

Table 2.1. Main actors in Mexico's and Tlaxcala's education system, and their responsibilities

Level of management	Actor	Main responsibilities
National centralised	Secretariat of Public Education (Secretaria de Educación Pública, SEP)	• Oversees national education policy and standards in Mexico. • Regulates all requirements related to pre-primary, primary, secondary, technical and teacher formation to be carried out in strict observance of the Constitution of Mexico. • Manages the national funding, evaluation and administration of education personnel. • Establishes the national academic curricula for all levels of education. • Regulates the licensing and qualifications for teachers. • Manages the VET and tertiary education institutions. • Determines and distributes public education funds to states.
National decentralised (upper secondary education)	Co-ordination of each subsystem in upper secondary education (only those subsystems relevant for Tlaxcala are shown): • School of Scientific and Technological Studies of the State of Tlaxcala (Colegio de Estudios Científicos y Tecnológicos del estado de Tlaxcala, CECyTE); and Distance Upper Secondary Education (Centros de Educación Media Superior a Distancia, EMSAD) • System of Upper Secondary Schools and Community Tele-schools of Tlaxcala (Colegio de Bachilleres del Estado de Tlaxcala y Telebachillerato Comunitarios, COBAT-TBC)	• Co-ordinate education provision across all school subsystems. • Define and manage the supply of field and vocational specialties. • Co-ordinate placement strategies and external relations with firms. • Co-ordinate placement strategies and external relations with universities. • Maintenance of school infrastructure and equipment.

Level of management	Actor	Main responsibilities
	• National Upper Secondary School for Technical Professional Education (Colegio Nacional de Educación Profesional Técnica, CONALEP) • Industrial Technology and Service Unit of Upper Secondary Education (Unidad de Educación Media Superior Tecnológica Industrial y de Servicios, UEMSTIS) • Unit of Upper Secondary Education in Agricultural Technology and Marine Services (Educación Media Superior Tecnológica Agropecuaria y Ciencias del Mar, UEMSTAyCM) • Upper Secondary Centre of Studies "Lic. Benito Juarez"	
National decentralised (higher education)	Co-ordination of each subsystem in higher education (only those subsystems relevant for Tlaxcala are shown): • General Co-ordination of Technological and Polytechnic Universities (Coordinación General de Universidades Tecnológica y Politécnicas, CGUTyP) co-ordinates polytechnic and technological universities. • National Technological Institute of Mexico (Tecnológico Nacional de México, TecNM) co-ordinates centralised and decentralised institutes of technology) • General Directorate of Higher Education for Education Professionals (Dirección General de Educación Superior para pofresionales de la Educación, DGESPE) co-ordinates public teacher education colleges. • Higher education institutions and decentralised SEP agencies: • National Pedagogical University (Universidad Pedagógica Nacional) • National Polytechnic Institute (Instituto Politécnico Nacional) • Public research centres	• Define the supply of higher education programmes. • Define structure and content of curricula. • Oversee the operation of courses. • Manage funding received from federal (and state government when applies). • Co-ordinate placement strategies and external relations with firms.
State decentralised (higher education)	Autonomous University of Tlaxcala (Universidad Autónoma de Tlaxcala) Remaining subsystems are private and completely independent from national and state government.	• Define the supply of higher education programmes. • Define structure and content of curricula. • Oversee the operation of courses. • Co-ordinate placement strategies and external relations with firms.
State	Secretariat of Public Education Tlaxcala	• Manages education provision to the population. • Oversees the general implementation of education, including indigenous and special education, as well as teacher formation. • Manages federal funds based on state needs and strategies. • Enforces education regulations established at the federal level.

Level of management	Actor	Main responsibilities
Local	Municipalities	• Solicit the national SEP for updates and modifications to plans and programmes of study. • Operate local projects that support infrastructure or offer training courses for parents or teachers.
Local	School community (school committee composed of teachers, principals, parents, etc.)	• Manage the maintenance of school infrastructure and equipment. • Oversee local level implementation of education strategies and disbursed state level resources.

Note: National centralised refers to schools and higher education institutions co-ordinated, operated and funded directly by the federal government. National decentralised refers to schools and higher education institutions that are fully or partially funded and co-ordinated by the federal government but operated by states. State decentralised refers to schools and higher education institutions that are funded, co-ordinated and operated by the state government.

At the state level, each Mexican state has a Secretariat of Public Education that is tasked with the management and administration of education provision to its population. The national SEP oversees the general implementation of education, while the states are awarded the full responsibility of provision of basic education services, including indigenous and special education, and teacher training (OECD, 2014[9]). SEP Tlaxcala determines how to administrate the received federal funds based on state needs and strategies. Within SEP Tlaxcala, the Directorate of Basic Education regulates basic education by following and enforcing the regulations established at the federal level.

At the local level in Tlaxcala, municipalities currently have a limited role across all levels of education. The federal law allows municipalities to request modifications to curricular programming when context relevant adjustments are necessary at the local or regional level (Government of Mexico, 2019[10]). In Tlaxcala, the 60 municipalities were responsible for the maintenance of school infrastructure and equipment up to 2019. However, the transference of this responsibility to the school community has weakened the role of municipalities (INEGI, 2019[11]). Despite their formally constrained role, most municipalities in Tlaxcala have a Directorate of Education that carries out local educational projects, such as municipality funded childcare centres, as part of their own initiative.

Upper secondary and higher education institutions have different degrees of government dependence, and are divided into subsystems that group together a set of schools or institutions managed by a specific co-ordination body. The subsystem can be co-ordinated by a federal or state body and composed of one or multiple schools or institutions. Upper secondary institutions operate across the state through 11 subsystems, 7 co-ordinated at the state level and 4 at the federal level (see Table 2.2). Except for the subsystem of private upper secondary institutions, the subsystems are all financially supported by the state government, and four subsystems are mainly funded by the federal government. The Centre of Upper Secondary Studies, Lic. Benito Juárez, and the School of Upper Secondary Schools of Tlaxcala and Community Tele-schools are the only subsystems offering just the upper secondary general strand. Most subsystems offer upper secondary technical or combined strands, such as the School of Scientific and Technologic Studies of Tlaxcala, which is operated by the state.

Most higher education providers are public. As shown in Table 2.3, there are five public institutions that act as decentralised government agencies under the direction of SEP Tlaxcala. These universities are operated by the state, including the Autonomous University of Tlaxcala, which is fully funded by the state, but independently managed. The federal government operates the Technological Institute of Apizaco and the Technological Institute of the Altiplano de Tlaxcala, which are part of the National Technological Institute of Mexico. Private institutions are independent of the government, but co-ordinated by the state.

Table 2.2. Tlaxcala's upper secondary education subsystems

State subsystem	Federal subsystem
Upper secondary schools of Tlaxcala (Colegio de Bachilleres de Tlaxcala)	General Directorate of Technical, Industrial and Services Education (Dirección General de Educación Tecnológica, Industrial y de Servicios, DGETIS)
Tlaxcala Community High School (Telebachillerato Comunitario de Tlaxcala)	General Directorate of Agricultural Technology Education and Marine Sciences (Dirección General de Educación Tecnológica Agropecuaria y Ciencias del Mar, DGETAyCM)
School of Technical and Profesional Education of the State of Tlaxcala (Colegio de Educación Profesional Técnica del Estado de Tlaxcala, CONALEP)	General Directorate of the Upper Secondary Education (Dirección General del Bachillerato)
School of Scientific and Technological Studies of the State of Tlaxcala (Colegio de Estudios Científicos y Tecnológicos del Estado de Tlaxcala, CECyTE)	Training Center for Industrial Work in the State of Tlaxcala (Centro de Capacitación para el Trabajo Industrial en el Estado de Tlaxcala)
Distance Upper Secondary Education (Educación Media Superior a Distancia)	
Open Upper Secondary School (Preparatoria abierta)	
Private institutions	

Source: Information provided by SEP Tlaxcala for the purpose of this project.

Table 2.3. Tlaxcala's higher education subsystems

State subsystems	Federal subsystems
Higher Technological Institute of Tlaxco (Instituto Tecnológico Superior de Tlaxco)	Technological Institute of Apizaco (Instituto tecnológico de Apizaco)
Technological University of Tlaxcala (Universidad Tecnológica de Tlaxcala)	Technological Institute of the Altiplano de Tlaxcala (Instituto tecnológico del Altiplano de Tlaxcala)
Polytechnic University of Tlaxcala (Universidad Politécnica de Tlaxcala)	
Polytechnic University of Tlaxcala, Western Region (Universidad Politécnica de Tlaxcala, Región Poniente)	
Autonomous University of Tlaxcala (Universidad Autónoma de Tlaxcala)	
Private institutions	

Source: Information provided by SEP Tlaxcala for the purpose of this project.

Two public subsystems are responsible for the provision of higher education programmes in Tlaxcala: The National Technological Institute of Mexico (TecNM) and the General Co-ordination of Technological and Polytechnic Universities (DGESPE). The total enrolment in higher education in the academic year 2019-2020 was 37 521. The Autonomous University of Tlaxcala accounts for 44% of total enrolment whereas TecNM and DGESPE account for almost 40%. The DGESPE co-ordinates three technological institutions in three regions within the state. The remaining 16% of students are enrolled in pedagogic universities, private institutions and research centres that offered mostly graduate programmes.

Funding of Mexico's and Tlaxcala's education system

In 2020, per student annual direct expenditure within Mexican educational institutions (primary to tertiary) was approximately USD 3 300, one of the lowest in the OECD and roughly one-third of the OECD average (USD 11 200) (OECD, 2020[12]). For primary and lower secondary education, expenditure per student was USD 2 782 and 2 438, respectively, both less than one-third of the OECD averages. For upper secondary and VET, per student expenditure was USD 3 418, again roughly one-third of the OECD average (OECD, 2020[12]). According to government stakeholders, the main source of public funding for tertiary education

is the federal government, with the state government accounting for approximately 40% of the total. The average tertiary education expenditure per student in Mexico was USD 5 263 in 20217 less than half of the OECD average (OECD, 2020[12]).

While formally the national SEP is responsible for providing all Mexican states with public funding for basic education, in practice, states also partially fund education. In 2019, federal spending on education amounted to 57%, while state and municipal expenditure was 15.5% and 0.1%, respectively. Private education accounts for approximately 27.5% of total expenditure. State-level spending often addresses specific education challenges areas within the state. For instance, in Tlaxcala a new initiative called Child Welfare Support Programme (Programa de Apoyo para el Bienestar de las Niñas y los Niños) was launched in the 2019-2020 academic year to increase the participation of disadvantaged students in early childhood education for children under 3 and pre-primary education. The programme targets children of mothers who are working, seeking work or studying. The programme disburses MXN 1 600 (Mexican pesos) for each child aged 0 to 4, as well as MXN 3 600 for each child with a disability (Government of Mexico, 2019[13]).

Performance of Tlaxcala's education system

Enrolment in education

In Tlaxcala, gross enrolment rates (GER), calculated as the total number of children receiving education as a percentage of the total number of age-appropriate students, vary greatly across all education levels. For instance, the GER for early childhood education for children under 3 (ISCED 01) is low, at 6.9% of the full age-relevant population (Table 2.4), while for four-year-olds it is 99.6%. The GER rate for upper secondary education in Tlaxcala is 77.5%, similar to the national average of 78.9%. Enrolment is mostly concentrated in the general upper secondary strand (66%), followed by combined (22%) and vocational strands (12%). Tlaxcala, compared to other states, has one of the highest proportion of students enrolled in VET and combined upper secondary education in Mexico. These education strands are the most responsive to labour market needs.

Table 2.4 also shows the dropout rates at different education levels in Tlaxcala, compared to the national average. At the primary education level, the reported percentage of students who drop out from school in Tlaxcala is zero, which is lower than the national average of 0.5% (SEP, 2019[4]). For lower secondary education in Tlaxcala, the dropout rate is 3.8%, while for upper secondary education it rises to 8.1%. Although dropout rates across all education levels are lower than national averages, they increase with level of education.

Table 2.4. Tlaxcala's and Mexico's education enrolment rates, early childhood education to higher education

	Tlaxcala (%)	National (%)
Early childhood education for children under 3 and pre-primary education		
Gross enrolment rate: 0- to 2-year-olds	6.9	4.1
Gross enrolment rate: 3-year-olds	57.2	48.4
Gross enrolment rate: 4-year-olds	99.6	89.3
Gross enrolment rate: 5-year-olds	70.3	78.2
Primary education		
Gross enrolment rate	103.8	104.7
Dropout rate	0.0	0.5
Lower secondary education		
Gross enrolment rate	99.7	96.1
Dropout rate	3.8	4.3

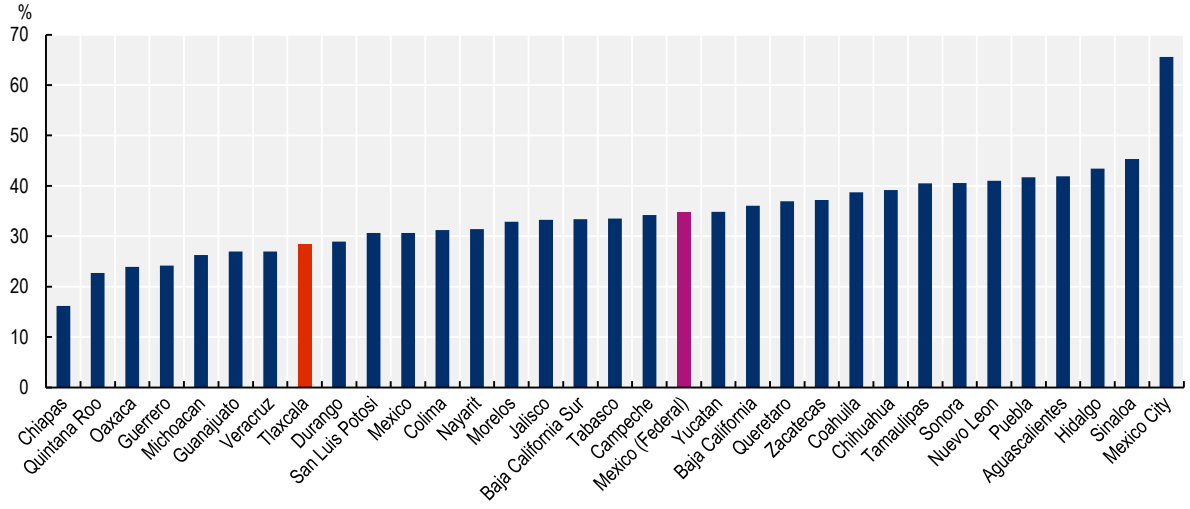
	Tlaxcala (%)	National (%)
Upper secondary education		
Gross enrolment rate	77.5	78.9
Dropout rate	10.3	13.0
Higher education		
Gross enrolment rate	28.4	34.8
Dropout rate	7.1	8.2

Note: The higher education GER rate is computed by dividing the number of students enrolled in technical, normal and bachelor's programme and the total population aged 18-22 years inclusive. The numerator is taken from SEP (2019[4]). The denominator is computed using the National Survey of Household Income and Expenses (Encuesta de Ingresos y Gastos de Los Hogares, ENIGH, INEGI (2018[14])).
Source: SEP (2019[4]), *Key data on the education system 2018-2019,* https://www.planeacion.sep.gob.mx/Doc/estadistica_e_indicadores/principales_cifras/principales_cifras_2018_2019_bolsillo.pdf.

Mexico increased the percentage of adults holding a tertiary education degree from 7% to 23% between 2008 and 2018 (OECD, 2019[15]). This proportion is 10 percentage points lower than the OECD average (33%). Most students in higher education are enrolled in bachelor programmes (88%), and almost 7% of students are enrolled in short-cycle tertiary programmes or VET education (SEP, 2019[4]), which are more responsive to labour market needs. Participation in VET programmes in Mexico is almost three times lower than the OECD average (17%) (OECD, 2019[15]).

Enrolment in tertiary education has expanded rapidly in Tlaxcala, as in the rest of the country. The enrolment rate in higher education is 28%, which is 7 percentage points below the national average (35%), excluding graduate programmes (Figure 2.1). Furthermore, this expansion has not reached the entire population, and there is still room to improve access among certain groups. For example, in Tlaxcala there is a large enrolment gap between high-income and low-income households. The enrolment rate among the richest households (the richest income quartile) is 37%, which is 5 percentage points higher than the enrolment rate among the poorest households (32%) (The lowest income quartile). Participation in tertiary education is even lower among middle-income households: around 31% and 26% of youth from low-middle- and upper-middle-income households, respectively, enrol in higher education programmes. Low-income households have been targeted by certain social programmes (e.g. Prospera), which has increased their disposable income for investing in higher education (Ferreyra et al., 2017[16]). The current Mexican government has increased the supply of scholarships and subsidies for higher education, targeting mostly disadvantaged young individuals across the country. Young people from rural areas are less likely to enrol in VET or university programmes (21%) than their peers from urban areas (30%). Higher education participation varies significantly across regions in Tlaxcala. Centrosur is the region with the highest enrolment rate (40%), while Oriente has the lowest (19%). In Tlaxcala de Xicohténcatl, the capital city, almost 49% of young people are enrolled in higher education programmes, 19 percentage points more than the rest of the state (32%).

Figure 2.1. Enrolment rate in higher education in Tlaxcala is lower than the national average



Note: Enrolment in graduate programmes is excluded.
Source: INEGI (2018[14]), *National Survey of Households Income and Expenses (ENIGH)*, https://www.inegi.org.mx/programas/enigh/nc/2018/.

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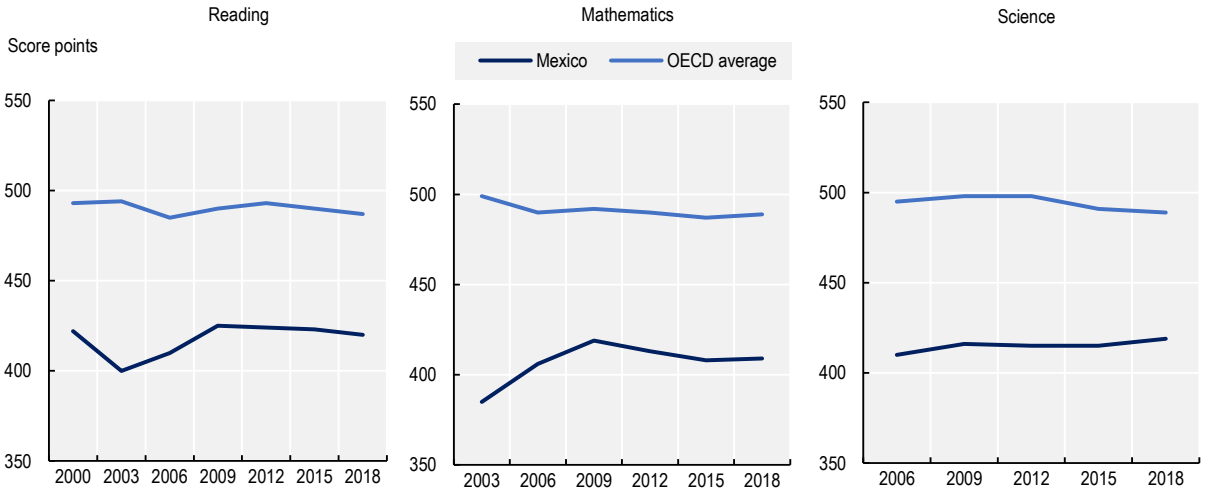
In Tlaxcala, 90% of tertiary enrolment is concentrated in five-year higher education programmes, similar to the national level. No more than 7% of students in Tlaxcala are enrolled in short-cycle programmes or VET. The remaining 3% of students are enrolled in graduate programmes (masters and PhDs). Disaggregation by field of study reveals that the three most popular study choices for Tlaxcalan students are business, administration and law (31%); engineering, manufacturing and construction (18%); and health and well-being (16%).

Educational achievement

Mexico's mean performance in reading, mathematics and science in the Programme for International Student Assessment (PISA) has remained stable since the country began participating (Figure 2.2). However, this overall stability hides positive trends in reducing achievement gaps. The score that 90% of Mexican students were able to attain has improved by about 5 score points per 3-year period, on average. This decreasing gap between the performance of the highest and lowest performing students over time reflects a meaningful and consistent decrease in the achievement gap (OECD, 2018[17]).

Figure 2.2. Mexico's trends in reading, mathematics and science performance in PISA (2003-2018)



Notes: The light blue line indicates the average mean performance across OECD countries with valid data in all PISA assessments. The dark blue line indicates mean performance in Mexico.
Source: OECD (2018[18]), PISA 2018 Database. https://www.oecd.org/pisa/data/2018database/.

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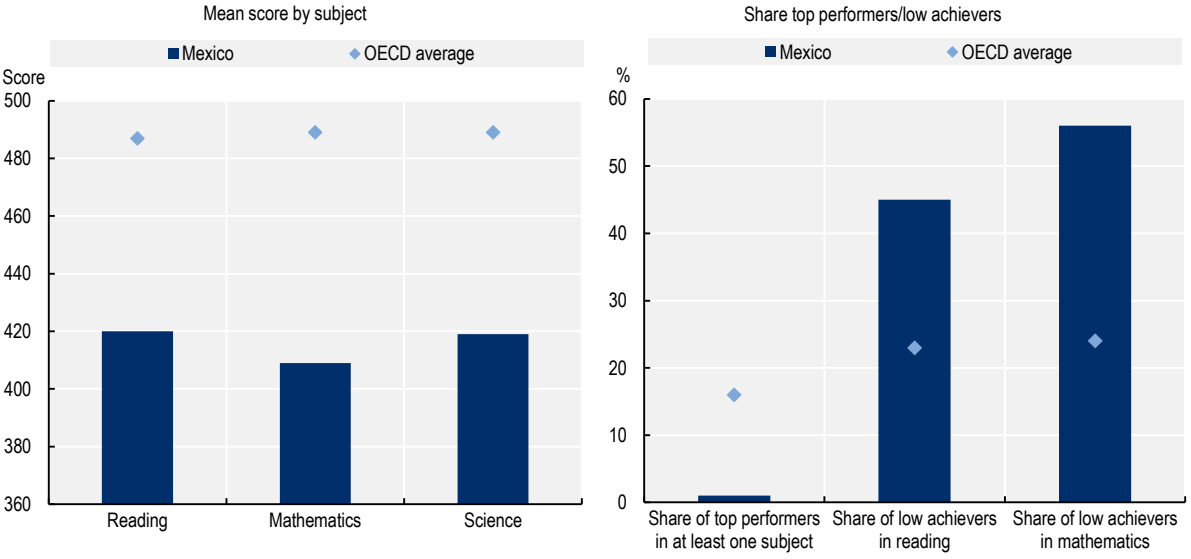
Figure 2.3. Mexico's performance in reading, mathematics and science, PISA 2018



Source: OECD (2018[18]), PISA 2018 Database. https://www.oecd.org/pisa/data/2018database/.

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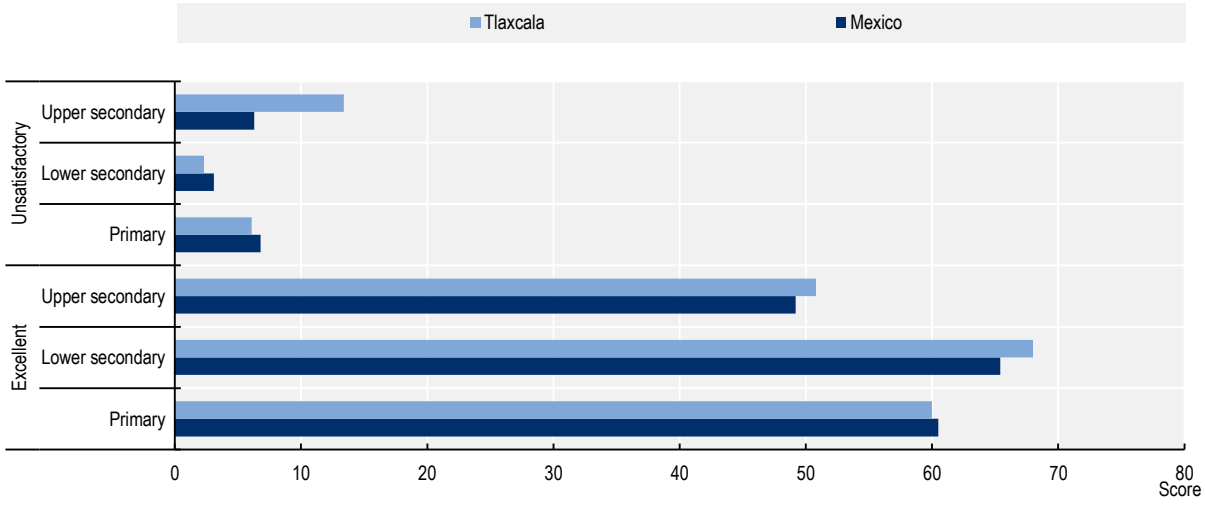
Despite this progress, Mexican students are still performing comparatively less well than peers in other OECD countries. Figure 2.3 shows that Mexican mean scores for reading, mathematics and science were lower than the OECD average in 2018. In addition, compared to the OECD average a smaller proportion of students in Mexico performed at the highest levels of proficiency (Level 5 or 6) in at least one subject, and a smaller proportion of students achieved the minimum level of proficiency (Level 2 or higher) in at least one subject. Only 1% of students in Mexico were top performers in reading, meaning that they attained Level 5 or 6 in the PISA reading test. Similarly, only 1% of students scored at Level 5 or higher in mathematics, compared to the OECD average of 11% (OECD, 2018[19]).

While Mexican students perform worse than their OECD peers on average, the academic achievement of students in Tlaxcala also lags behind the Mexican national average. In the 2015 National Plan for Evaluation for Learning (Plan Nacional de Evaluación de Aprendizaje, PLANEA), which is a national standardised achievement test that evaluates the academic achievement of students in the sixth grade of primary education and the third grade of secondary education, Tlaxcala ranked 29th (out of 32 Mexican states) for lower secondary reading comprehension, and 28th for mathematics. Figure 2.4 illustrates that the proportion of students with an unsatisfactory (lowest) score in Tlaxcala is higher than the national average for primary, lower and upper secondary educational levels. Considering that an unsatisfactory level for mathematics means that students are not able to perform operations with decimals, fractions or basic conversion of units, this is a significant achievement gap that should be addressed.

Figure 2.4. PLANEA mathematics scores for Tlaxcala and Mexico, 2015



Source: SEP (2019[4]), *Key data on the education system 2018-2019.*

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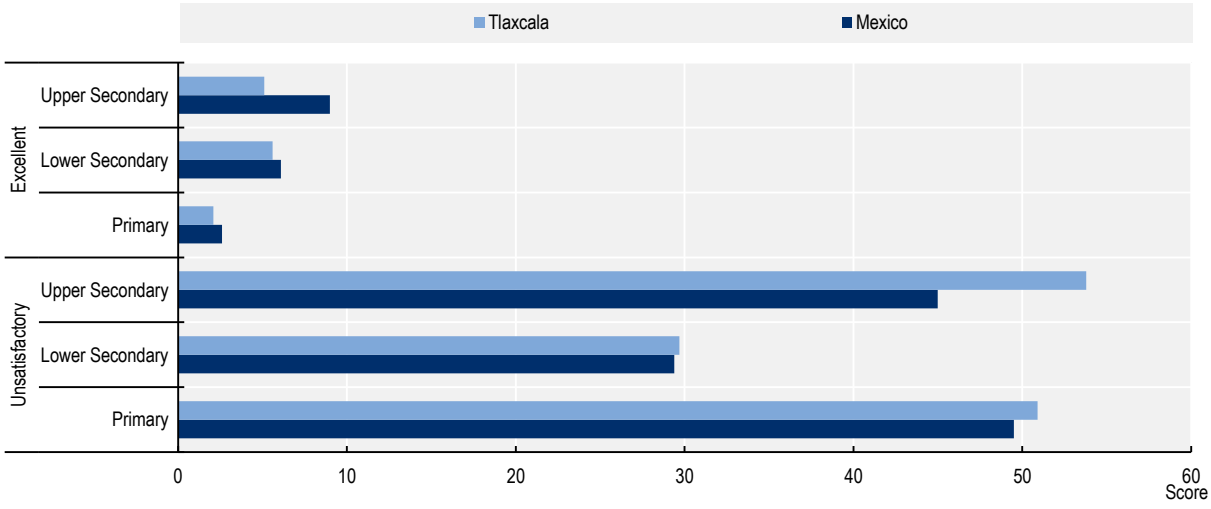
Figure 2.5 shows that the proportion of students scoring an excellent (highest) score in language and communication in Tlaxcala is lower than the national average for primary, lower and upper secondary educational levels. The gap between state and national proportions of highest-scoring students increases from primary to secondary levels of education. In 2018, Tlaxcala PLANEA results for mathematics and language for primary school were similar to those in 2015. The proportion of students with the highest score in Tlaxcala (2.0) was 0.8 percentage points lower than the national level in mathematics, while for reading (6.2), it was 2 percentage points lower than the national level (6.2) (INEE, 2018[20]).

Figure 2.5. PLANEA language and communication scores for Tlaxcala and Mexico, 2015



Source: SEP (2019[4]), *Key data on the education system 2018-2019.*

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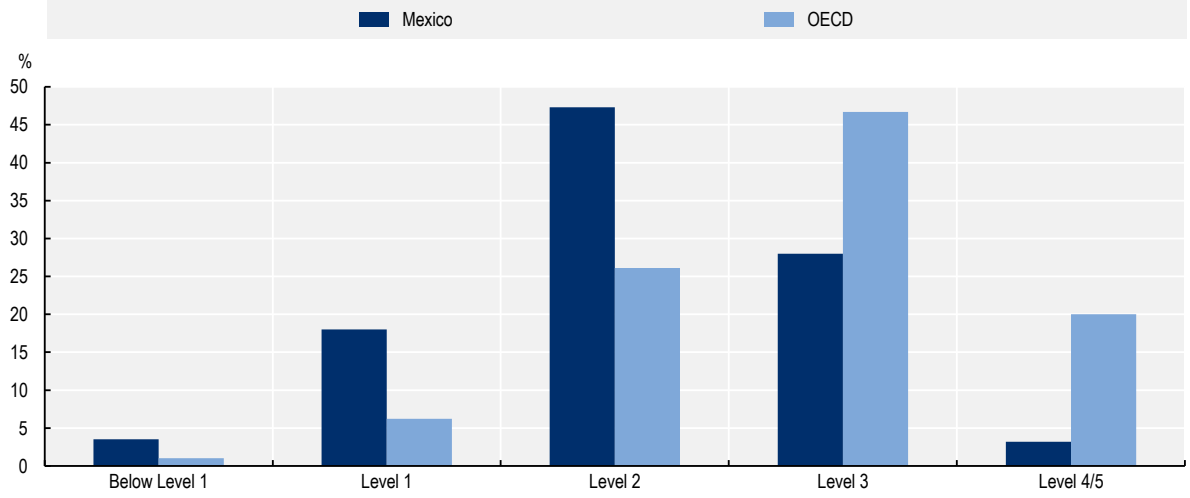
The skills outcomes of Mexican tertiary education graduates lags behind those of other OECD countries. Figure 2.6 reflects the percentage of adults at each proficiency level in literacy. As observed, the OECD average proportion of adults obtaining higher levels of proficiency is much higher than the Mexican average, with the OECD average proportion of tested adults with a proficiency of 4 or 5 more than 5 times greater than Mexico's average.

Figure 2.6. Literacy skills outcomes of tertiary graduates, Mexico and the OECD average



Note: The literacy proficiency scale is divided into six levels: Levels 1 to 5 and below Level 1. Being "below level 1" the lowest and level 5 the highest category. The tasks at "below level 1" require the respondent to read brief texts on familiar topics to locate a single piece of specific information. At level 5, tasks may require the respondent to search for and integrate information across multiple, dense texts; construct syntheses of similar and contrasting ideas or points of view; or evaluate evidence-based arguments.
Source: OECD (2019[21]), *Skills Matter: Additional Results from the Survey of Adult Skills*, https://doi.org/10.1787/1f029d8f-en.

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Opportunities to strengthen the skills of youth in Tlaxcala

This chapter will provide advice for strengthening the skills of youth across all stages of education from early childhood education and care to tertiary education, and among both the general population and disadvantaged groups.

Based on the desk research of the OECD team, consultations with the Government of Tlaxcala and stakeholder interviews, the following opportunities to strengthen the skills of youth in Tlaxcala have been identified:

1. Boosting access and quality in pre-primary education.
2. Building a stronger teaching workforce.
3. Strengthening the responsiveness of secondary VET and tertiary education institutions to labour market needs.

Opportunity 1: Boosting access and quality in pre-primary education

Early childhood education (ISCED 0) is essential to the development of cognitive and socio-emotional skills that are important throughout life. International research supports this, finding that if a child falls behind in learning basic numeracy and reading skills prior to entering first grade, this learning gap continues to widen throughout primary and secondary school (McClelland, Acock and Morrison, 2006[22]). In addition, research indicates that early investment in the development of these skills facilitates the learning of other skills that are important for broader outcomes in adult life, such as health and decreasing intergenerational poverty (Johnson and Jackson, 2019[23]; Cunha and Heckman, 2007[24]).

Data from PISA 2018 lend support to these findings – on average across OECD countries, students who had attended pre-primary education for longer scored better in reading than students who had not attended. The mean reading score of students who had attended pre-primary education for one year (471 points), two years (491 points) or three years or more (493 points) was higher than the score of students who had not attended or had attended for less than one year (444 points).

In 2015, the proportion of Mexican 15-year-old students who were low performers was almost 20 percentage points higher for those with 0-1 years of pre-primary education than for those with 2-3 years of pre-primary education (OECD, 2018[25]). For this reason it is important to have a strong foundation of skills from the beginning of education to obtain the highest possible return on investment in education across all levels.

Access to quality early childhood education (ISCED 0) is equally essential to Tlaxcala's future prosperity and policy objectives. As previously discussed in the section above, enrolment rates for pre-primary education vary largely across different ages. It is also widely recognised that in Tlaxcala, children who can benefit most from early childhood education are those who face barriers to access. For these reasons, gaps in the gross enrolment rate reflect a significant opportunity for Tlaxcala to increase the access to and quality of early childhood education.

Tlaxcala could increase access to quality early childhood education by:

- Strengthening early childhood education programmes.
- Strengthening the initial training of pre-primary education teachers.

Strengthening early childhood education programmes

Ensuring that all children have access to early childhood education is important to enable them all to benefit from early skills development (Berlinski and Shady, 2015[26]). Early childhood education is considered a sensitive period of development that takes place from birth through to age 5. Constant stimulation and care

throughout this period is essential for skills development in several developmental areas, including motor skills, cognitive skills and socio-emotional abilities. For instance, socio-emotional and communication-related abilities are a focus during early infancy (age 0-2), and these skills can be built on during age 3-5 to introduce basic verbal and arithmetic reasoning (Eming, 2002[27]). Early childhood education can be provided through distinct policy approaches, such as increasing enrolment to pre-primary education, increased access to day care services and parental education programmes. In countries with relatively high levels of socio-economic inequality, like Mexico, access to pre-primary education services plays an especially important role in combatting social and economic inequalities among vulnerable populations. In Tlaxcala, stakeholders indicate that only around 20% of parents seeking pre-primary and early childhood education are able to secure it – illustrating the importance of expanding access to these education levels.

To provide children in Tlaxcala with better early childhood education opportunities, the Supérate programme – Tlaxcala's social policy flagship programme launched in 2019 – includes a component that targets children in both levels of early childhood education (pre-primary and early childhood education for children under 3). Based on stakeholder conversations, Supérate uses a holistic approach that targets families in poverty in Tlaxcala and seeks to improve their economic conditions by providing several services in tandem to address skills and productivity, financial inclusion, and early childhood development.

To reach families with children between the ages of 0 and 5 (covering children eligible for pre-primary and early childhood education), Supérate trains local "promotors" in basic nutrition and child care and stimulation. According to Supérate officials, these promotors then provide early childhood care services directly in the homes of beneficiaries through periodic visits during which they monitor infant growth and health, identify illnesses the child may have, and connect families to proper health care, while also educating children's care takers on how to provide better at-home care for their children. Supérate promotors receive in-depth training on early childhood development, which is organised into 10 weekly sessions by child age, level and skillset type; this same training is also offered to interested mothers (Supérate, 2020[28]). Supérate officials report that interest and attendance in this training is generally high among mothers. This guidance is important, as parents may not be well equipped to give proper basic early childhood care (nutrition, health) and often lack knowledge regarding the early stimulation of basic abilities such as fine and gross motor skills, which are essential for a smooth transition to primary education. According to Supérate stakeholders, these early childhood care services are meant to complement and not replace formal early childhood education.

During the COVID-19 pandemic, Supérate has continued to train promotors and provide early childhood care services for children aged 0 to 5, as this difficult time makes the need for childhood care support even greater. Supérate has begun working with 13 of the 60 municipalities in Tlaxcala, and stakeholders indicate that the remaining municipalities will be incorporated into the programme by 2022. Supérate's large-scale reach to families living in poverty gives the programme a strategic advantage in addressing barriers to accessing pre-primary and early childhood education for the underprivileged Tlaxcala population.

Although Supérate does not formally offer early childhood education for children under 3, childcare centres (*centros de atención infantil*, CAIs) and child development centres (*centros de desarrollo infantil,* CENDIs) offer this type of education. As mentioned by interviewed stakeholders, a substantial number of children who attend these programmes have parents who take advantage of these services in order to work. In 2019, the state of Tlaxcala also launched the Programme to Expand Initial Education (Programa para Expansión de la Educación Inicial, PEEI), which aims to increase the provision of services for early childhood education for children under 3 in Tlaxcala to meet demand. This initiative aims to improve several challenges currently faced at this education level, including limited financial resources for CAI equipment and infrastructure maintenance, training and preparation of CAI educational agents, and the insufficient number of education agents placed in CAIs. The PEEI will also increase the number of home visits offered by educational agents from SEP Tlaxcala to young children as part of non-school early childhood education for children under 3 (*educación no escolarizada)*. Currently, there are 14 such educational agents serving 212 families in Tlaxcala.

According to stakeholders, challenges to increasing enrolment for early childhood education are linked to limited federal funds. Compared to pre-primary schools, CAIs and CENDIs often require more resources, such as medically trained nurses, to provide safe care to infants, as well as other staff specialised in social work, infant health and child development. Stakeholders indicate that in Tlaxcala, many centres lack sufficiently trained staff to operate. Without these resources, existing institutions for early childhood education for children under 3 cannot operate at the necessary standards nor increase their enrolment rates. For pre-primary school enrolment, Tlaxcala has prioritised increased enrolment for ages 4 and 5 in recent years, potentially crowding out children age 3 from accessing pre-primary schools.

There are several infrastructural and resource related challenges for early childhood education for children under 3. A qualitative study by the National Pedagogic University in Tlaxcala found that existing CAIs and CENDIs are often oversubscribed, leading to reduced physical space for children (Ramos Montiel, 2019[29]). Staff or educational agents at CAIs also often lack educational resources and materials to facilitate stimulation and learning for all children. These limited resources can have direct impacts on the quality and safety of child development.

An overarching challenge that Tlaxcala faces is raising or maintaining the quality of early childhood education for children under 3 during this phase of expansion with the PEEI. Addressing infrastructural and resource constraints is an important first step; however, it does not guarantee improvement in development and learning outcomes. The Colombian experience in Box 2.1 shows that the expansion of pre-primary education did not produce the expected learning gains among students when physical investment was not accompanied with quality improvements in other dimensions. These measures are simple but can be effective, such as measures to ensure that increased investments maintain a minimum level of quality by setting teacher-to-student ratio limits and allocating funds to enrich the structural and pedagogical environment.

Box 2.1: Relevant international example of expanding education services: Pre-primary education in Colombia

In Colombia, enrolment rates in pre-primary education increased from 13% in 1990 to 84% in 2015, while in 2011 the government committed to triple expenditure on early childhood education. A recent study by Andrew et al. (2019[30]) analyses the "Hogares Infantiles" (children's homes) programme, which provides pre-primary education to children from disadvantaged backgrounds aged 5 and younger. Using an experimental design, the authors show that investment in what is often called "structural quality" (e.g. physical infrastructure, staff resources, pedagogical material) alone does not produce the expected learning gains in students. The authors found that when greater resources are given to schools, teachers tend to substitute their efforts and involvement with children and delegate some responsibilities to less experienced and less qualified teaching assistants. The study shows that these children saw no improvements in their cognitive and socio-emotional development on average, and that for some children the effect was even negative. In contrast, when structural quality was paired with pedagogical training for teachers, children's cognition, language and school readiness increased by around 0.15 of a standard deviation (SD).

Source: Andrew, A. et al. (2019[30]), *Preschool Quality and Child Development,* http://www.nber.org/papers/w26191.

From a demand perspective, although cultural and informational barriers hamper access to early childhood education, Supérate stakeholders and staff in close contact with parents indicate that some parents may not fully understand the benefits of pre-primary education, which leads to lower demand. Some families may have household constraints, such as working parents who require small children to stay at home instead of going to school so that they can take care of grandparents. For other households there may be asymmetries of power, where mothers may want to increase their own or their child's participation but may not be able to convince the other parent to do so.

Recommendations for strengthening existing early childhood education programmes

2.1. **Increase demand for early childhood education by targeting informational gaps on the educational benefits.** To address the principal demand-side limitation to participation in both pre-primary and early childhood education for children under 3, priority should be placed on raising awareness of the positive long-term educational benefits and addressing any potential sources of distrust in the education system. These efforts could include both targeted awareness campaigns for parents, as well as a "one-on-one" strategy that could entail specialised and trained experts tasked with contacting and establishing ongoing dialogue with individual parents.

2.2. **Establish minimum quality standards to safeguard the quality of education throughout and after the expansion of early childhood education for children under the age of 3.** The expansion of early childhood education for children under 3 through the PEEI will address shortcomings in the availability of spaces for under-served communities. To ensure that these investments are impactful, Tlaxcala should identify indicators of education quality. These could include the minimum level of preparation of teachers, the minimum level of additional in-service training they should receive, and the educational and didactic materials that centres will receive. Strict monitoring that ensures targets set for these indicators are met for all new and existing education centres could reduce the risk that expanding early childhood education will come at the cost of quality

Strengthening the initial training of pre-primary teachers

The degree of preparedness of pre-primary school teachers is important for children's learning and to ensure larger returns to the early development of cognitive and non-cognitive abilities. Studies show that children attain higher levels of mastery for numeracy and literacy skills when there are more positive child-staff interactions, which in turn are influenced by aspects of teacher quality such as pre-service qualifications and participation in in-service training (OECD, 2018[25]).

The current pandemic has magnified the importance of the initial training and preparedness of pre-primary teachers to deliver high-quality teaching (OECD, Forthcoming[31]). For example, teachers who received strong training in the use and effective application of ICT for educational purposes were better prepared for the change in teaching methods during the pandemic, and may also have had a stronger network of similarly prepared teachers to draw on for support. Schooling prior to entering primary education focuses on developing skills and abilities that prepare a child to acquire more applicable skills such as reading, writing, and verbal and mathematical reasoning. These abilities, which include the development of gross and fine motor skills, rely pedagogically on recreational, playful activities that engage a child's attention. These learning activities are more difficult to implement successfully through distance learning, and require additional effort to adapt effectively to a completely different learning modality.

The process of becoming certified as a pre-primary teacher in Tlaxcala follows regulations at the federal level by the national SEP. To become a pre-primary teacher, individuals must complete their studies at a teacher training institute, referred to in Mexico as a normal school, and pass exams to receive relevant certification (*título docente pre-escolar*). Because early childhood education for children under 3 was not formally recognised as an education level until 2019 under the New School Initiative (Nueva Escuela Mexicana), teachers at this level of education were not offered formal pedagogic training.

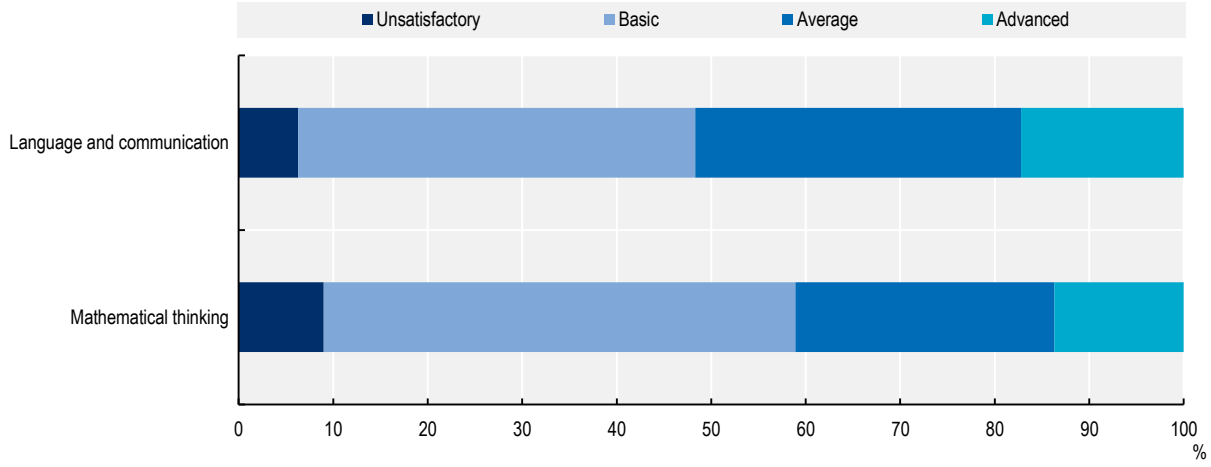
The initial training of pre-primary education teachers faces several challenges in Tlaxcala. The direct measurements of teacher preparedness and quality has been a politically sensitive issue in Mexico, leading to little or no systematic and reliable sources by which to monitor initial and ongoing pre-primary teacher preparedness. For instance, pre-primary teachers have a portfolio that they are required to update yearly with every diploma, additional education and training received throughout the year. However, stakeholders indicate that in practice teachers do not update these portfolios yearly as expected.

In terms of specific areas requiring strengthening, stakeholders indicate that on average, teachers have a positive disposition and attitude to support their students' learning, as well as solid theoretical and pedagogical backgrounds on which they can draw to support classroom learning. Stakeholders note that more preparation is needed in integrating digital technology with in-practice learning, supporting the development of socio-emotional abilities and communication with parents.

Although it is not possible to accurately assess teacher preparedness from student performance, it can highlight areas for potential improvement. Recent pre-primary student achievement tests indicate low student achievement. Prior to being replaced by PLANEA in 2016, the Exams for Quality of Educational Achievement (Exámenes para la Calidad y Logro Educativos, EXCALE) measured learning for children in grade 3 of pre-primary (age 5) at the national level – although PLANEA measures the same subjects with the same methodology as EXCALE. The most recent EXCALE assessment for pre-primary in 2011 revealed that for reading comprehension and mathematics, between 40% and 50% of Mexican students demonstrated a basic mastery of skills. Figure 2.7 shows the distribution of levels of achievement in language and communication, and mathematical thinking of the Mexican student population of children age 5, corresponding to grade 3 of pre-primary school.

Figure 2.7. EXCALE achievement levels in language and communication, and mathematical thinking in 2011

Children in grade 3 of pre-primary school, Mexico



Source: INEE (2011[32]) Quality of Educational Achievement Exams (Exámenes de la calidad de logro educativos, EXCALE) for 3rd grade preschool students (databases), https://historico.mejoredu.gob.mx/evaluaciones/planea/excale/tercero-preescolar-2010-2011/.

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A survey by Together for Learning (Juntos por el Aprendizaje), a coalition of national education stakeholders, collected feedback from teachers of early childhood education for children under 3 across Mexico in 2020, and highlighted deficiencies in pre-primary teacher preparation. Only 4% of teachers surveyed had a post-graduate degree, and 35% had completed up to upper secondary education. In relation to the COVID-19 pandemic, 17.6% of surveyed teachers reported having difficulties training or

retraining as needed to continue providing distance learning. Teachers also highlighted that they did not feel prepared to adequately use technology for educational purposes: approximately 40% of surveyed teachers reported feeling slightly or not capable at all of searching for information on the Internet, and almost 50% reported feeling slightly or not capable at all of generating documents, writing and making simple calculations (Juntos por el aprendizaje, 2020[33]). Stakeholders confirm that the situation is similar in Tlaxcala. To address these issues in Tlaxcala, a teacher training programme was implemented through ICATLAX to support teachers with digital learning challenges. Approximately 8 000 teachers in Tlaxcala have received this training so far.

For pre-primary education, survey responses generally reflected that teachers were not adequately prepared to maintain effective education services and previous levels of quality early childhood education and stimulus when COVID-19 arrived (Juntos por el aprendizaje, 2020[33]). For instance, several pre-primary school teachers reported not knowing how to use digital tools with children, which led to difficulty finding playful or recreational activities for the learning process. Teachers also reported not feeling capable of using online platforms and information resources and technologies.

Although not directly related to curricular or pedagogic preparation, teachers in Tlaxcala also face challenges regarding the quantity and quality of interaction between teachers and parents, especially in the context of the COVID-19 crisis. In Tlaxcala, teachers have reported difficulties communicating and planning learning activities for children with parents, especially those who do not have access to social networks or the Internet. For pre-primary school students, distance learning implies less time spent directly in communication with students, as many learning activities require direct guidance by an adult. Beyond the guidance and co-ordination of activities, parents can also have an important effect on learning while using ICT (OECD, 2020[34]). According to PISA 2018 results, high levels of emotional support from parents is linked to higher levels of child self-efficacy, which encourages confidence in the child to increase their educational effort. It is also linked to better performance across all PISA subject matters, in particular for students who use ICT (OECD, 2020[35]). This evidence stresses the importance of collaboration between teachers and parents at the pre-primary education level.

Engagement with parents is a key part of process quality in pre-primary education centres, and has been shown to be strongly associated with children's later academic success and socio-emotional development. Good communication between parents and pre-primary education staff is critical to enhance the knowledge of staff about the children they work with and to ensure the continuity of learning for children at home (OECD, 2011[36]). Box 2.2 highlights two case studies of how Chile and Germany have developed strategies to improve teacher preparedness for communicating with parents in the context of distance learning for young children to ensure educational continuity.

Box 2.2. Relevant international example: Ensuring educational continuity for children in early childhood education centres

Chile

Following the closure of early childhood education centres in Chile, the Undersecretary of Early Childhood Education worked with the Behavioural Unit from the Innovation Hub of the Chilean government to adapt and implement an educational programme that was first put into place at the beginning of 2020. The programme, based on the "Boston Basics" from Harvard University, seeks to support the early learning of children aged 0-2 through the participation of parents and caregivers as primary educators. To this end, the programme communicates and disseminates information (through website, videos, etc.) on simple and powerful actions that support children's development. In response to the closure of early childhood education centres, the programme has been sending text messages with information, facts and tips with subtle instructions and advice to parents of children staying at home. Messaging is based on behavioural insights and communicates five main concepts or ideas to interact with children: 1) give them all your love; 2) talk to them and sing with them; 3) count, group and share; 4) explore playing; and 5) read and comment on children's stories/books. The programme is currently being evaluated.

Further initiatives have been launched by the main providers of early childhood education in the country. The Integra Foundation (operating more than 1 200 early childhood education centres) provides families with activities and advice related to the Early Childhood Curriculum Framework through a phone application (IntegrApp) to improve parental engagement in the context of the pandemic. JUNJI, the country's main early childhood education provider, has also released an application (Mi Jardín JUNJI) that facilitates communication between parents and their children's teachers. For example, parents can share with teachers the activities they are doing with their children and receive feedback. JUNJI and the Undersecretary of Early Childhood Education have made available a range of digital resources on their websites. The materials target specific ages according to the curriculum framework and include videos and games to improve different areas of children's learning and development (e.g. motor skills, language skills, socio-emotional development, and grouping and counting skills).

Germany

In Germany, the early childhood education sector is regulated and managed at the level of the states (*länder*). The websites of the respective state ministries provide a range of information and materials that seek to support early childhood education staff in continuing to work with parents and provide educational continuity for children during centre closures. In addition to best practice examples for concrete implementation in day care practice, staff are also provided with background information on media use to be able to advise parents on this topic. The general approach has been to emphasise the importance of continuing to work with parents and children, especially with families whose children do not yet attend the day care centre. Many innovative practices have emerged in this context from early childhood education providers and centres themselves, such as the use of video-conferencing tools in pedagogical practice, online exchange with parents on a regular basis (i.e. to advise and help families in stressful situations at home) and providing online/offline materials for pedagogical activities at home.

Source: OECD (2020[37]), *Building a High-Quality Early Childhood Education and Care Workforce: Further Results from the Starting Strong Survey 2018*, https://doi.org/10.1787/b90bba3d-en.

To smooth the transition to distance learning for initial and pre-primary education levels, Tlaxcala has responded to education quality related issues stemming from the pandemic by organising informal regular conversations with teachers to identify the main challenges. These spaces have revealed how pre-primary

school teachers have been facing the challenges of distance learning. Teachers have generated their own teaching content, videos and instructions for learning activities for parents to follow at home with children. Many have used online social platforms such as WhatsApp to share and better co-ordinate with parents in the absence of regular in-person discussions. Moving forward with distance learning it will become important to equip teachers of pre-primary and early childhood education for children under 3 with the skills to communicate and co-ordinate learning activities effectively with parents.

Recommendations for strengthening the initial training of pre-primary teachers

2.3. **Gather and centralise recently acquired pedagogical knowledge and lessons learned from in-service teachers on how to effectively engage with students and parents during the pandemic.** Although 2020 was a difficult year, it also entailed a significant amount of learning and adaptation to online learning for pre-primary teachers. However, without the centralised and systematic documentation of the knowledge accumulated by individual teachers, this know-how could be lost, or shared with only a small group of individuals within a teacher's network. It would therefore be valuable to document and centralise the learning material and know-how generated and learned by teachers to capitalise on existing efforts and provide incoming and/or less experienced teachers with a bank of knowledge to draw on as they continue to address distance-learning related challenges in the future.

2.4. **Provide teachers with opportunities for specialised in-service teacher training on how to develop students' socio-emotional skills.** The development of students' socio-emotional skills can support them to better adapt to learning challenges and to changes in the labour market and society in the future. Tlaxcala can better prepare pre-primary education teachers to strengthen students' socio-emotional skills by expanding teachers' access to existing or modified in-service training courses. These efforts could be co-ordinated with Tlaxcalan institutions such as ICATLAX, which has already been actively providing teachers with training resources to address pandemic-related teaching challenges.

2.5. **Improve communication and co-ordination between teachers and parents by establishing standard practices, such as initial meetings to set expectations and social-norm-oriented practices for parents.** Better communication and co-ordination strategies with parents can improve parental engagement and the learning environment at home for students. To improve communication, teachers could conduct an initial meeting at the onset of the school year to highlight the importance and benefits of parental involvement and to establish a feasible plan of action for collaboration throughout the year. It may also be helpful for teachers to manage communication in small groups of parents (three or four) to leverage social normative expectations and the resulting collective peer oversight to motivate parental engagement.

Opportunity 2: Building a stronger teaching workforce

In the context of supply-side factors in education, teacher preparedness has demonstrated stronger impacts on school learning than, for example, infrastructural investments and the increased provision of school resources (Glewwe and Muralidharan, 2016[38]). Recent literature indicates that teacher preparedness in the classroom has important long-term impacts on student outcomes. For instance, Chetty, Friedman and Rockoff (2013[39]) found that a one standard deviation improvement in teacher value added in a single grade raises the probability of attending higher education at age 20 by 0.82 percentage points, relative to a sample mean of 37%.

In Mexico, approximately 36.6 million students and 2.1 million teachers lost access to education institutions during the COVID-19 pandemic (Juntos por el aprendizaje, 2020[33]). In many ways, the effort and competences required by teachers has increased greatly due to the pandemic. Teachers now are not only expected to manage traditional pedagogical practices and curricular content, but must also adapt quickly to apply this knowledge in a new distance learning setting. In Tlaxcala, both initial and in-service teacher training courses were severely disrupted. Institutes offering initial teaching training, such as normal schools, as well as all in-person in-service teacher training courses were forced to close. As many of these were not operationally prepared to continue offering educational services online, this led to delays and new challenges for the consistent provision of professional development services. It is likely that mixed learning models, where education is part in-person and part online, will remain in use in the short term.

In this context, the challenge of catering to students with different learning needs in the classroom has been compounded as the education process has shifted to distance learning (OECD, 2020[34]). For instance, modified distance learning has expanded the role of stakeholders in the learning process, including parents and teachers, and thus requires more careful collaboration among these stakeholders. This underscores the importance of preparedness and competencies for all stakeholders, especially teachers and school principals and leaders, as well as the improvement of processes through which these skills are acquired.

This opportunity develops and provides policy recommendations for two aspects of the teaching profession:

- Strengthening initial and in-service teacher education and training.
- Improving the management skills of school principals and leaders.

Strengthening initial and in-service teacher education and training

One of the main challenges for policy makers is how to sustain teacher quality and ensure that all teachers continue to engage in effective ongoing professional learning. To address this challenge it is important to view teachers as lifelong learners. This perspective considers that teachers should have the necessary tools to build upon their initial knowledge in a way that facilitates their growth. In the framework of a lifelong learning approach it is important to address challenges to improving teacher preparedness both from the outset of their career (initial training) and as part of continuous (in-service) skills strengthening.

Initial teacher training is an opportunity to endow teachers with knowledge and proven best practices from the outset. Initial training equips teachers with the knowledge and skills to teach effectively and to meet the needs of their institution and students, according to their education level. The duration of education, the networks that teachers develop, the programme content and the quality of the education provided overall determine the extent to which initial training prepares teachers to launch and grow on their career path. In-service teacher training is important to provide a continuous means to improve the quality of the teacher workforce and retain effective teachers over time. In addition, it can facilitate teachers' transition into the workplace and respond to the weaknesses that teachers may have when they complete initial preparation. In-service teacher training is essential as a mechanism to continuously adapt to unforeseen or gradual changes in the social and learning environment.

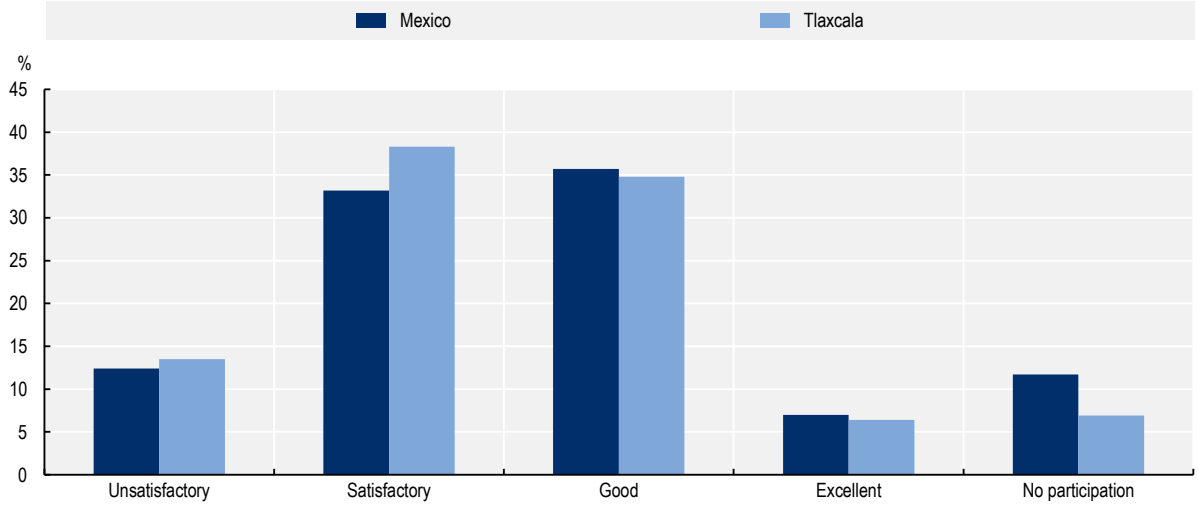
In Tlaxcala, the Department for Professional Teaching Service (SPT) within SEP Tlaxcala's Directorate of Educational Evaluation (Dirección de Evaluación Educativa, DEE) is responsible for regulating initial teacher training. SEP Tlaxcala also operates teacher colleges (normal schools). The state of Tlaxcala has six teacher training schools – four are normal schools, and there is the Teacher Update Center (Centro de Actualización de Magisterio, CAM), and the National Pedagogic University (Universidad Pedagógica Nacional, UPN). These schools largely provide initial teacher training (where individuals formally enter the teaching profession) (DGESPE, 2016[40]). They also provide professional development for basic education teachers, and give private providers of basic education authorisation to operate.

In-service teacher training in Tlaxcala can be pursued in two main ways. Teachers can access online training tools and sessions offered at the federal level by SEP Tlaxcala. In Tlaxcala, the SPT is in charge of in-teacher training within SEP Tlaxcala and the Teaching Professionalization (Profesionalización Docente, PRODEP), which offers a catalogue of teacher training courses for teachers to update their skills and professionalise. Teachers can also enrol in courses at local normal schools for teachers, or with ICATLAX.

The level of teacher preparedness in Tlaxcala varies significantly. According to the annual evaluation of teachers implemented by the SPT in 2016, fewer than 10% of teachers obtained an excellent level of performance, and only 14% obtained an unsatisfactory result (Figure 2.8).

Figure 2.8. A significant share of teachers demonstrates unsatisfactory performance

Teacher evaluation results by performance level in Mexico and Tlaxcala



Source: Government of Tlaxcala (2017[41]), *State Development Plan of Tlaxcala 2017-2021*.

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The evaluation of teachers is not mandatory by law, so statistics are based only on teachers who opted to take the exam (more than 90% in Tlaxcala). Teachers decide each year whether they take the exam. While there is no official data on the profile of teachers who opt out of the SPT annual evaluation, stakeholders indicate that often teachers who fear the consequences of low performance or with less motivation decide not to participate.

Closing gaps in teacher preparedness starts with improving the initial training of teachers. In Mexico, the initial teacher training exiting STP exam results have consistently reflected shortcomings in the preparedness of incoming teachers. In 2015, half of individuals who took the exam to be granted entry to the teaching career received a result of “non-suitability”, indicating that they were not sufficiently qualified to occupy a teaching position. These results could suggest that the quality of initial training is not adequate to prepare upcoming teachers, or that the exam is too rigorous and does not accurately assess teaching abilities. Stakeholders indicate that often in Tlaxcala, new teachers are equipped with sufficient pedagogical knowledge, but lack the in-practice expertise to apply this knowledge. Teachers report feeling unprepared due to initial teacher training that does not reflect up-to-date educational innovation in pedagogy and learning theory.

The evidence suggests that there is large variation in the level of preparedness of individuals who have completed their training as teachers and are beginning their profession. This could be because teachers receive their initial training at different types of institution. For example, teachers of lower secondary may receive their training at the CAM, UPN or a normal school, but may also pursue a teaching specialisation at a higher education institution that can be public or private. Teachers of upper secondary education levels are only required to receive their degree from a higher education institution specialising in the subject they will teach. In Tlaxcala, there are four normal schools, in 2019 these were staffed by 123 instructors that trained a total of 790 future teachers (SEP, 2019[4]). The diversity in the type and number of institutions matters because each is organised and prepares teachers to its own standards. This makes it difficult to standardise the quality and content of teaching instruction and training that all incoming future teachers receive, which can often lead to these institutions not preparing candidates properly. Interviewed stakeholders indicated that different types of institutions operated and managed differently leads to differences in how teachers are prepared to deal with challenges in the classroom learning environment.

In an effort to address teacher preparedness at the beginning of the teaching career, the 2017 federal educational reform required that all incoming teachers for all education levels are evaluated not only upon completion of their initial training in order to be certified, but also during the first three years of their teaching career. This move was intended to generate incentives to better prepare individuals to pursue a teaching career, and to strengthen a healthy culture of evaluation and feedback. Stakeholders in Tlaxcala indicate that the recent reform has increased demand for more training and retraining courses, particularly among teachers who completed studies after the reform was implemented. It is not yet clear how the reform has impacted teacher attitudes and perceptions regarding continuous evaluation. The reform presents an opportunity for Tlaxcala to make a long-lasting positive change in how teachers view assessments by taking advantage of the first three years of a teacher's career to reinforce the link between assessment and effective guidance and support.

The gaps in the preparedness of Tlaxcala's teachers also reflect several limitations in the in-service teacher training system. Stakeholders indicate that there are insufficient resources for teachers to maintain and improve their skills (e.g. insufficient course availability). This means that teachers often also take short-term courses (*diplomados*) offered online by several universities across Mexico. For instance, it is common for teachers to take distance learning courses from the Technological Institute of Monterrey (Instituto Tecnológico de Monterrey), which provides training on online and digital pedagogical tools and resources.

In addition to potential gaps in the supply of in-service training opportunities, challenges around teacher preparedness are likely also linked to a lack of demand for in-service training. Federal law does not require in-service teachers to receive additional in-service training, which leads to many teachers, often those who might need it the most, to avoid such training. However, as mentioned the recent reform has generated an increase in teacher demand for retraining courses, although it is largely from teachers who have been admitted to the public teaching career since 2017. Even in settings where in-service training is not compulsory, there are several avenues to compel teachers to engage in professional development, as demonstrated by the case of Norway in Box 2.3.

Box 2.3. Relevant international example: Promoting the participation of early childhood education staff in continuous professional development, Norway

Norway is implementing an ongoing national strategy (2014-22) to enhance the professional competence of all early childhood education staff. Similar to Mexico, there is no legal requirement for staff to participate in professional development activities. Although the Norwegian strategy establishes financial incentives, these are indirect in nature and targeted mainly at early childhood education providers and centres to compensate for teacher absences while they are in training. Early childhood education teachers can also apply to participate in state-subsidised vocational training and in further education. The Directorate for Education and Training pays for participation in the programme, while the early childhood education provider/owner pays for their employees' travel and expenses. These multi-actor funded strategies both generate and promote the alignment of incentives across stakeholders in local educational communities, which itself may act as an incentive for teachers to participate in professional development.

The strategy also includes a mentoring scheme for targeted groups of teachers, such as newly employed graduate teachers in early childhood education working with children under the age of 3. The objective of the scheme is to ensure a good transition between initial preparation studies and the profession. The strategy also aims to help recruit, develop and retain talented kindergarten teachers and leaders by strengthening their skills from the outset. An evaluation study showed that the newly employed graduates mostly agree that the mentoring arrangement had helped them develop relevant skills for their work with children, given them confidence and self-awareness of their own competence, and reduced the "practice shock" in the workplace.

Source: OECD (2020[37]), *Building a High-Quality Early Childhood Education and Care Workforce: Further Results from the Starting Strong Survey 2018*, https://doi.org/10.1787/b90bba3d-en.

The provision of high-quality in-service training for teachers in Tlaxcala is hampered by the absence of a structured and systematic process to understand teachers' level of competences. Political sensitivity regarding the use of standardised testing as a proxy for teacher quality further complicates the ongoing assessment of teacher training. While the SPT entrance exams reflect the competency levels of teachers at the start of their initial teacher training, there are no systematic centralised monitoring systems for teacher quality. In Tlaxcala, this makes the monitoring of improvement, and of areas in need of improvement, a difficult task. Stakeholders in Tlaxcala indicate that training courses are often recommended or required without any knowledge of teachers' profile or courses they have previously taken. This results in an inefficient use of teachers' time if they end up receiving repeated training, or in reduced teacher motivation to receive training overall. Box 2.4 illustrates a measurement framework based on data from the Teaching and Learning International Survey (TALIS) to monitor and measure the participation and trajectory of in-service and initial teacher training.

Box 2.4. Monitoring and measuring the participation and trajectory of in-service and initial teacher training: A measurement framework based on TALIS data

In 2020, the OECD developed a basic structure for systematically assessing the breadth and trajectory of teacher training based on data from TALIS. The structure measures indicators of breadth, which relate to the variety of topics covered in training activities, and indicators of training trajectories, which relate to the amount of training recorded for each teacher in a specific thematic area. Both types of indicator are summarised below:

Breadth of training

Breadth indicators relate to thematic breadth, which is the variety of topics included or covered in training activities. Thematic breadth is measured as the number of areas that staff report having covered at different points in time, ranging from zero to nine thematic areas (child development, child health, classroom management, families, monitoring, transitions, playful learning to facilitate play with problem solving, diversity and pedagogy). Breadth of format relates to the variety of types of in-service training activities (e.g. in-person, peer observation), ranging from zero to ten activities. The indicators for breadth of training are:

- Number of thematic areas covered by teachers in their pre-service training programmes.
- Number of thematic areas covered by teachers in their recent in-service training programmes.
- Number of thematic areas covered by teachers both in their pre-service and in-service training.
- Number of thematic areas in which teachers report a high level of need for professional development.
- Number of in-service training activities in which staff participated during the last 12 months.

Training trajectories

Trajectory indicators refer to a teacher's training history within a specific thematic area. Trajectories aim to capture teachers' exposure to specific training topics (i.e. whether teachers covered a given area in their training, and how many times). Within each area, four possible and mutually exclusive trajectories are distinguished.

- Teachers that have never covered a given thematic area (in neither pre-service nor recent in-service training).
- Teachers that covered a given thematic area in pre-service but not in recent in-service training.
- Teachers that covered a given thematic area in recent in-service but not in recent pre-service training.
- Teachers that covered a given thematic area both in pre-service and in recent in-service training.

Using a structure such as this can be useful in terms of individualised guidance for the professional development of teachers and guiding state-level educational teacher training policies.

Source: OECD (2018[42]), PISA 2021 ICT Framework, https://www.oecd.org/pisa/sitedocument/PISA-2021-ICT-framework.pdf.

The insufficient monitoring of teachers' need for in-service training in Tlaxcala has becomes even more important in the context of distance learning requirements as a result of COVID-19. Federal law requires teachers to pass SPT exams that focus on knowledge and skills for teaching practice, intellectual skills, and ethical-professional responsibilities to gain a teacher certification (Hincapie, Cruz-Aguayo and

Rodriguez, 2020[43]). However, these examinations were not designed to exhaustively assess teachers' ICT abilities, which means that while some teachers may be motivated once certified to strengthen their ICT skills, there may be many with poor ICT skills. This raises the importance of being able to assess such skills once teachers are in-service, as teachers' appropriate use of digital technology is essential to improving student learning, as detailed in Box 2.5.

Box 2.5. Teachers' use of ICT for teaching: Evidence from PISA

Teachers' pedagogical practices and teaching strategies regarding ICT largely determine the extent to which ICT use in the classroom will result in improved cognitive achievement. Research underscores the potential of computer-assisted learning to strengthen student achievement (Roschelle et al., 2016[44]) (Pane et al., 2016[45]) The PISA 2021 ICT Framework report summarised key teacher ICT practices:

- Take advantage of ICT to prepare lessons and discover new material. For example, teachers can use the Internet and other online applications to find suitable learning resources, or rely on specific software to present certain activities.
- Identify, assess and select the ICT resources that best fit their learning objectives, context and pedagogical approach. Sometimes, they may even have to adapt or create new digital resources.
- Discuss innovative teaching practices with their colleagues, share and co-create digital resources, monitor students' achievement across subjects or assess their own digital practices, and engage in professional development activities.
- Leverage ICT to inform parents of their child's progress and difficulties, encourage parents to help monitor their child's homework, and share homework assignments

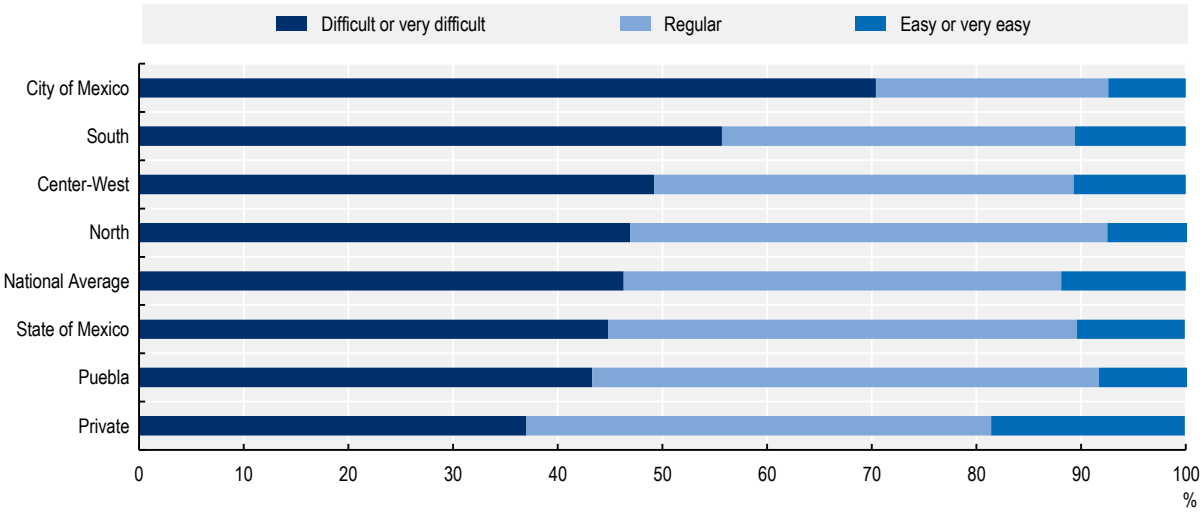
Source: OECD (2018[42]), PISA 2021 ICT Framework, https://www.oecd.org/pisa/sitedocument/PISA-2021-ICT-framework.pdf.

The importance and absence of these systems has generated a plethora of independent organisations launching ad hoc assessment surveys that have yielded helpful insights regarding teacher preparedness challenges. According to a national survey carried out by Together for Learning, teachers surveyed from all Mexican states reported accessing videos and webinars as tools to improve effectiveness, while 22.5% reported difficulties accessing materials and resources. In addition, 39.7% reported difficulties following the original curricular plan, and 23.8% reported difficulties self-training or self-updating. These findings point to potential ICT skills gaps and ICT-related educational challenges in Tlaxcala. While the need for ICT skills assessment can often be addressed by independent surveys, a state-organised survey in Tlaxcala could provide results that support a better policy response.

The insights gathered from independent surveys in 2020 further underscore the importance of improving teachers' preparedness to deliver distance learning through high-quality in-service training. According to a survey focused on the use of ICT in Mexico, which surveyed teachers in basic and secondary schools in all 32 Mexican states, teachers reported that they feel insufficiently prepared for undertaking the task of education at a distance. The survey shows that in the southern region of Mexico, which includes Tlaxcala as well as nine other states (Chiapas, Guerrero, Campeche, Morelos, Oaxaca, Quintana Roo, Tabasco, Veracruz, Yucatan), on average 64% of surveyed teachers reported spending two hours or less on distance learning, and no teachers in public schools reported spending seven hours or more on distance learning. Figure 2.9 reveals that teachers in the southern region also report the highest level (56%) of perceived difficulty in conducting distance learning compared to all other regions.

Figure 2.9. Teacher perceived difficulty to carry out distance learning

National average and average for selected Mexican states



Source: Consulta Valora (2020[46]) Docencia en tiempos de Pandemia. April 2020. https://valora.com.mx/wp-content/uploads/2020/05/200424-sondeo-educaci%C3%B3n-en-pandemia.pdf.

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Recommendations for strengthening initial and in-service teacher education and training

2.6. **Increase teacher participation in periodic needs-based training by creating positive incentives.** While there are no legal requirements for teachers to participate in in-service training, Tlaxcala could establish several incentives to encourage teachers' participation. Non-pecuniary incentives such as campaigns that generate social recognition or symbolic merit from local authorities highlighting successful teacher case studies have been proven effective in educational settings. These initiatives should also aim to create a culture of positive linkages and feedback between teachers' evaluation and training. The scheme of incentives could rely on a monitoring system to diagnose levels of ICT and other relevant competencies for teachers so that training undertaken and offered to teachers are on topics that are relevant for them and for which they have not yet received sufficient training.

2.7. **Promote the informal exchange of knowledge and know-how between teachers through organised mentoring and learning group initiatives.** To better prepare teachers for success in the classroom, complement formal in-service training with mechanisms for teachers to exchange their specialised and accumulated knowledge and experience. Initiatives that foster exchange between experienced and younger incoming teachers, such as mentoring and role model schemes, and small, facilitated learning groups, have been shown to be effective in improving teacher preparedness.

2.8. **Foster stronger links between in-service and initial teacher training in the first years of a teacher's career by providing individualised assessment-based guidance and support.** Although the state's ability to change legislation and official procedures regarding initial teacher training is limited (e.g. states cannot modify the official certification exam process), Tlaxcala can build upon federal level initiatives to strengthen the quality of initial teacher training in the state. For instance, the first three years of evaluation for new teachers could be more strongly linked to receiving feedback for continuous improvement, and triangulated with additional support from higher levels of educational leadership. This could entail individualised in-service feedback and guidance for teachers based on their individual examination results.

2.9. **Identify the key aspects of high-quality initial teacher training, and standardise these aspects across all initial teacher training institutes.** For each education level, initial teacher training requires learning similar skill sets and key level-specific knowledge and content. To ensure that all teachers have an opportunity to complete their training with the skills and knowledge they need, all initial training institutions must provide high-quality training as defined by key components that can be assessed and determined by teachers themselves. These key components could include more exposure to the in-practice use of digital technology to generate learning opportunities, more in-practice learning experiences that complement theoretical coursework, and instructors at initial teacher training institutes who are well equipped to carry out this training

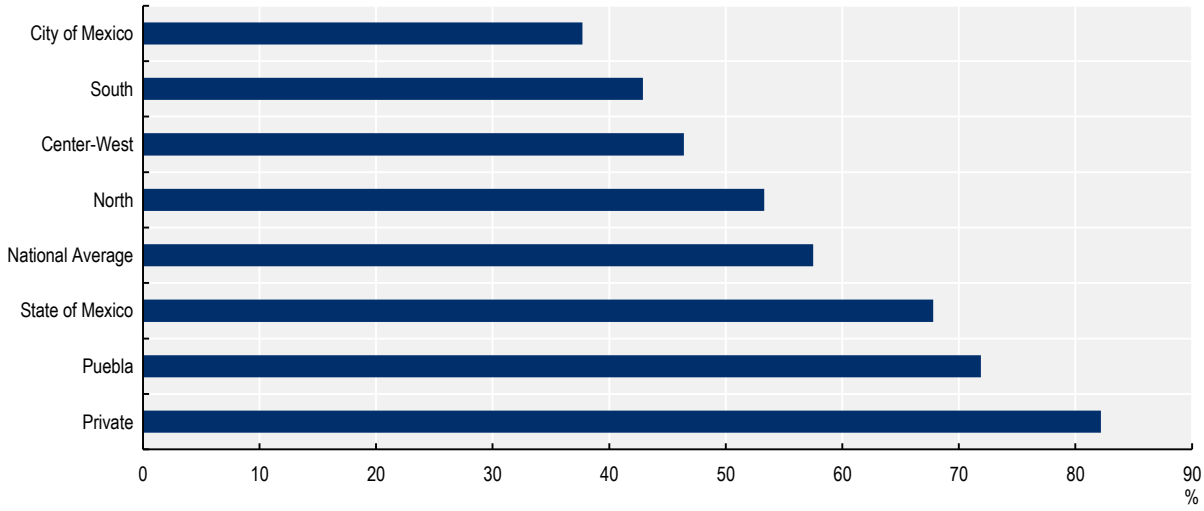
Improving the management skills of school principals and leaders

School management and education authorities play an important role in improving teacher preparedness. School principals can provide teachers with resources and feedback on curricular and pedagogical practices. They also have control over the school and learning environment, the capacity to identify and address context-related challenges that teachers face, such as external health or safety threats or negative shocks to the school community, and can positively motivate teachers (Botcher Jacobsen, Hvitved and Bogh Andersen, 2013[47]). At the same time, school principals can empower teachers to have a voice in developing the school mission, and can promote teacher involvement and leadership. They can also foster collaboration between teachers, which is essential for innovative and effective practices.

The COVID-19 pandemic has further underlined the importance of the effective management and leadership skills of school principals and leaders. With the abrupt transition to distance learning, teachers across all levels of education have faced drastic changes in curriculum, pedagogical practices and course planning. During such a time, the leadership of principals and other educational authorities is important to guide and support teachers. However, the perceived support that teachers receive from educational leadership officials varies greatly. As can be seen in Figure 2.10, in the southern region, where Tlaxcala is located, teachers are least likely to report receiving support from educational authorities (42.9%).

Figure 2.10. Teacher perceived support from the school director or other educational authority during the COVID-19 pandemic.

Selected Mexican states



Source: Mancera Corcuera et al. (2020[48]), *Pandemia: maestros, tecnología y desigualdad*, https://educacion.nexos.com.mx/?p=2286.

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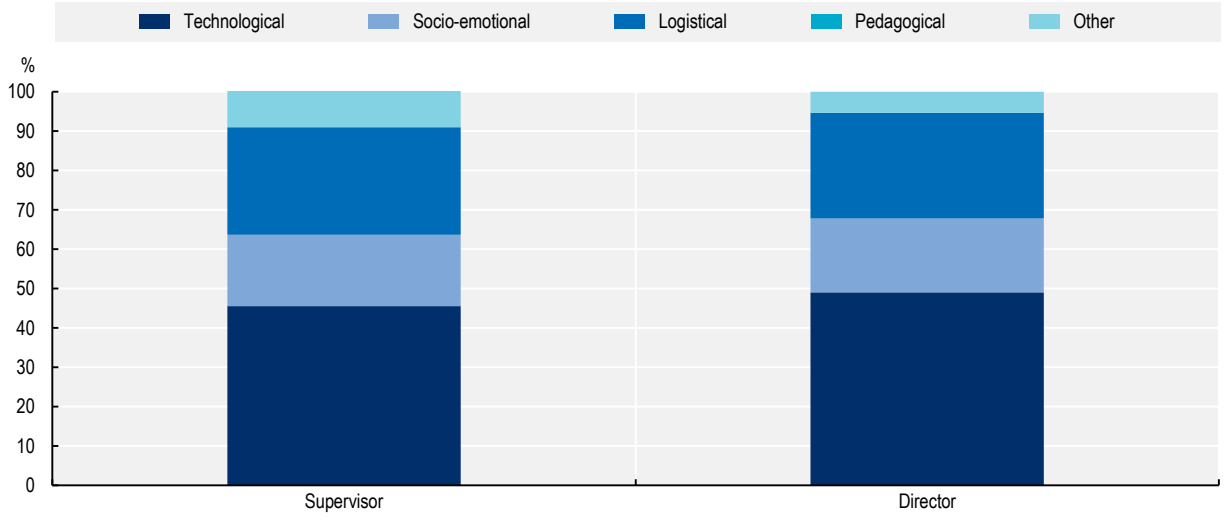
In Mexico's national education system, educational leadership authorities across all states are organised in terms of hierarchy. Teachers are directly supervised and managed by school principals. Both teachers and school principals report to and are supervised by zone supervisors (*supervisores de zona*). Zone supervisors usually oversee 11 schools each on average, and are in turn supervised by one sector co-ordinator (*jefe de sector*). Sector co-ordinators supervise between 5 and 14 zone supervisors and directly report to the department co-ordinator (there is one for each education level). The department co-ordinators directly report to the relevant directorate in SEP Tlaxcala, depending on education level. The sector co-ordinators are responsible for the proper planning and execution of educational planning for the entire geographic sector, working closely with zone supervisors to guide school principals and teachers. The sector co-ordinator is also responsible for identifying needs and improvement areas for zone supervisors. The zone supervisors' responsibilities include providing lesson planning and pedagogic support to teachers within the stipulated zone. They also monitor and report on teacher performance in class, and are in charge of managing the distribution of educational resources and services within their zone. More recently, pedagogical technical advisors have been incorporated in a leadership position to supports principals and teachers in their technological preparation. They fall under the zone supervisors.

In Mexico, school principals and leaders indicate several areas where they could strengthen their skills. Figure 2.11 indicates that, similar to teachers (see section above), school directors and zone supervisors need additional technological and socio-emotional support to perform their duties.

Figure 2.11. Schools directors and zone supervisors need additional technological as well as socio-emotional support to perform their duties

Percentage of school directors and zone supervisors, by type of support needed



Source: Juntos por el aprendizaje (2020[33]), *Pre-school survey*, https://juntosxelaprendizaje.mx/.

StatLink https://stat.link/msudat

In Tlaxcala, in addition to the areas for improvement highlighted above, stakeholders indicate that zone supervisors and school principals face limited resources, which hampers their ability to fulfil their management duties. In particular, school principals indicate that they often lack sufficient administrative personnel, while sector and zone supervisors indicate that they would benefit from support from trained pedagogical technical advisors, a position which has only recently been formalised. To address the resource and training limitations of educational leadership, schools principals can be provided with time to improve their leadership skills as in Germany in Box 2.6.

Box 2.6: Relevant international example: Supporting educational leadership in Germany

Within the framework of the Good Childcare Act (*Gute-Kita-Gesetz*), the federal government enables the states to further develop day care for children, and provides financial resources for this purpose. The funding period is set until 2022, with a total investment of EUR 5.5 billion. The framework of the Good Childcare Act describes various fields of application and intervention, but the 16 states can decide which and how many fields are chosen, and how much funding to allocate to each field.

The state of Baden-Württemberg, for example, has allocated 90% of its budget to strengthen the role and tasks of education centre leaders, and defines the following objective: “ensure management time and quality leaders”. In addition, centres in Baden-Württemberg, regardless of size, give centre leaders at least six hours per week for leadership tasks. Centres with larger groups of students should receive an additional two hours of leadership time. The state of Baden-Württemberg plans to offer further training for centre leaders with a basic qualification and optional modules on topics such as communication and the management of conversations.

Source: OECD (2020[37]), *Building a High-Quality Early Childhood Education and Care Workforce: Further Results from the Starting Strong Survey 2018*, https://doi.org/10.1787/b90bba3d-en.

Schools principals and supervisors with low management abilities and leadership skills in Tlaxcala partly reflect Mexico's legislation governing the professional development of pedagogical and managerial staff in schools. Prior to the 2013 national education reform, promotion to positions with management functions or supervisory responsibility could only be obtained by the vertical progression of leadership positions. For example, for a teacher to become a zone supervisor, they first had to become a school principal. Furthermore, the procedure and requisites to be promoted to the next leadership position were not transparent, nor directly based on formal examinations of knowledge. The modification of Article 3 of General Law of Education in 2013 replaced this vertical progression with a promotion system that consisted of opposition contests. These opposition contests sought to guarantee the suitability of the knowledge and abilities that correspond to a given leadership position by awarding promotion based on the ranking of scores for an examination specific to each level of leadership. However, in practice this system allows an applicant to obtain a given leadership position without having been in the position immediately below, which means they may lack practical experience.

The legislative change to discontinue the vertical career progression system has led to a significant challenge regarding education leadership in Tlaxcala. While the system places more weight on applicants' basic understanding of pedagogical and curricular knowledge, an unintended negative consequence is that individuals who obtain a position after high examination scores may have little or insufficient experience. Stakeholders indicate that this is important for positions of leadership working directly with teachers, as some officials do not have the resources and experience to provide teachers with proper support and guidance. Although vertical career progression was reinstated in January 2021, there are still many teaching professionals who have been placed in positions under the previous regime who still lack support and training. There is currently no formal and standardised training for any education leadership position beyond the study guide for the exams to access each position.

An independent yet linked challenge in Tlaxcala is the interaction between teachers, school principals and higher education leadership officials. Stakeholders indicate that most interactions between teachers and school principals and zone supervisors often relate to monitoring activities for teachers, which risks being interpreted as actions of policing rather than support. For instance, stakeholders indicate that zone supervisors may spend a proportionately larger amount of their time on monitoring duties such as verifying the presence of teachers in classroom or corroborating if teachers stay on schedule in terms of curricular planning, as opposed to providing teachers with guidance and support. Although monitoring teachers to ensure that they are fulfilling their responsibilities dutifully is an important part of leadership responsibilities, the relationship between teachers and higher education leadership should be balanced between the verification of the fulfilment of basic responsibilities and offering guidance and support. Stakeholders in Tlaxcala indicate that teachers do not feel that they receive sufficient support for the pedagogy, administrative, practice and procedural aspects of their role.

Recommendations for improving the management skills of school principals and leaders

2.10. **Provide ongoing assessment and training to officials across all levels of educational leadership to increase effective support for teachers.** To address shortcomings in expertise regarding how to provide effective support and guidance to teachers, it is important to map needs and opportunities, as well as the skills sets of those in leadership position, from initial and in-service training. These assessments can be used to provide training and support to leadership officials to improve their leadership skills. A simple framework for assessment, parallel to that proposed for teachers in Box 2.4, can be developed for skill areas relevant for leadership.

2.11. **Provide regular training opportunities to new educational leaders to strengthen their preparedness.** This can be achieved in several ways, such as through mentorship or the exchange of knowledge among more experienced individuals within a given level of leadership. As Box 2.6 identifies, regular assessment-based leadership training is also important as it can encourage individuals in leadership positions to provide more guidance and support to teachers in lieu of employing supervision as a form of monitoring with punitive consequences.

Opportunity 3: Strengthening the responsiveness of secondary VET and tertiary education institutions to labour market needs

Better adapting education systems to labour market needs allows students to develop a set of skills that are well connected to job requirements (OECD, 2015[49]). A responsive education system prepares students for evolving labour market needs by strengthening their resilience to future changes in job creation patterns. Being able to adapt to the shifting requirements of the labour market becomes more important as megatrends such as globalisation, digitalisation and population ageing are transforming the types of skills in greatest demand. Furthermore, the COVID-19 pandemic has been uniquely disruptive in increasing the impact of these megatrends. For example, digitalisation has accelerated as individuals have been forced to learn and work remotely (Espinoza and Reznikova, 2020[50]).

A weak connection between the education system and the needs of the labour market can create a misalignment between skills demand and supply, leading to skills imbalances (i.e. skills mismatches, skills shortages and skills surpluses) (Box 2.7). In Mexico, upper secondary VET and tertiary education are key inputs to the supply of skills to the labour market as both grant terminal diplomas (two-year post-secondary vocational programme, four- or five-year bachelor's programme, one-year specialisation programme, two-years master's programme and doctoral level). Therefore, it is important that the skills produced in upper secondary VET and tertiary education provide a wide range of skills and competences that are well aligned with labour market needs.

Box 2.7. Types of skills imbalances

There are three types of skills imbalance:

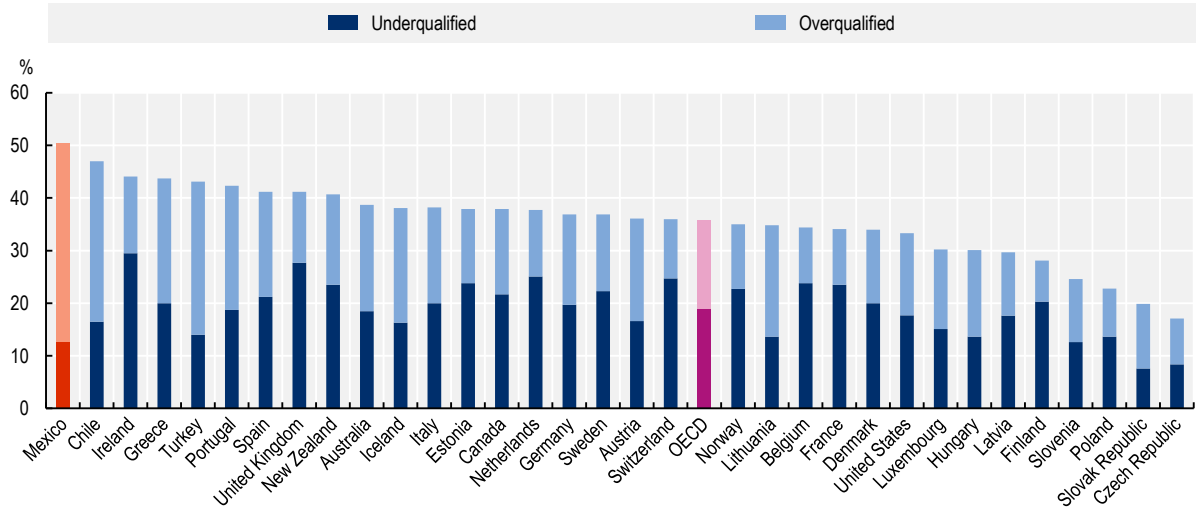
- **Skills shortages**: This is a disequilibrium condition in which the demand for a specific type of skill exceeds its supply in the labour market at the prevailing market wage rate.
- **Skills surpluses**: These arise when the supply of a specific type of skill exceeds its demand in the labour market.
- **Skills mismatches**: This describes a situation when a workers' skills exceed or fall short of those required for the job under current market conditions (Shah and Burke, 2005[51]). Skills mismatches can be measured along different dimensions:
  - **Skills mismatch**: When workers have higher or lower skills proficiency than required by their job. If their skills proficiency is higher workers are classified as over-skilled, if lower they are classified as under-skilled.
  - **Qualifications mismatch**: When workers have an educational attainment that is higher or lower than required by their job. If their job qualification is higher workers are classified as over-qualified, if lower they are classified as under qualified.
  - **Field-of-study mismatch**: When workers are employed in a different field to their specialisation when in education.

Source: OECD (2016[52]), *Skills Matter: Further Results from the Survey of Adults Skills*, https://doi.org/10.1787/9789264258051-en; Shah & Burke (2005[51]), "Skills Shortages: Concepts, Measurement, and Policy Response", Australian Bulletin of Labour, http://hdl.handle.net/2328/27700. Junankar, (2009[53]). "Was there a Skills Shortage in Australia?", http://repec.iza.org/dp4651.pdf.

Skill imbalances are costly for individuals because they affect job satisfaction and earnings (OECD, 2016[54]). In Mexico, over-qualified workers earn on average 14% less than workers who are well matched (Arias-Ortiz and Bornacelly, Forthcoming[55]). Similarly, firms and the economy as a whole bear the burden of skills imbalances through their effects on increased labour costs, lower labour productivity growth, slower adoption of new technologies and lost production associated with vacancies remaining unfilled (OECD, 2016[54]).

In Mexico, the share of workers mismatched in their job is the highest among OECD countries, and more workers are over-qualified than under-qualified. Data from the Survey of Adults Skills, a product of the Programme for the International Assessment of Adult Competencies (PIAAC), show that Mexico has the highest proportion of workers with qualification mismatch (51%) among countries participating in the survey. In other words, one in two workers in Mexico considers that their level of education differs from that required to perform their job. Mexico's over-qualification rate of 38% in 2017 ranks Mexico in the upper half of PIAAC participating countries. Under-qualification is substantially lower at 13% (Figure 2.12). In Tlaxcala, 53% of workers are mismatched by their qualifications, which is higher than the national average (Figure 2.13). In particular, the proportion of workers with qualification mismatch is higher among recent graduates (58%) (Workers aged 25-34) than older workers (workers aged 35+).

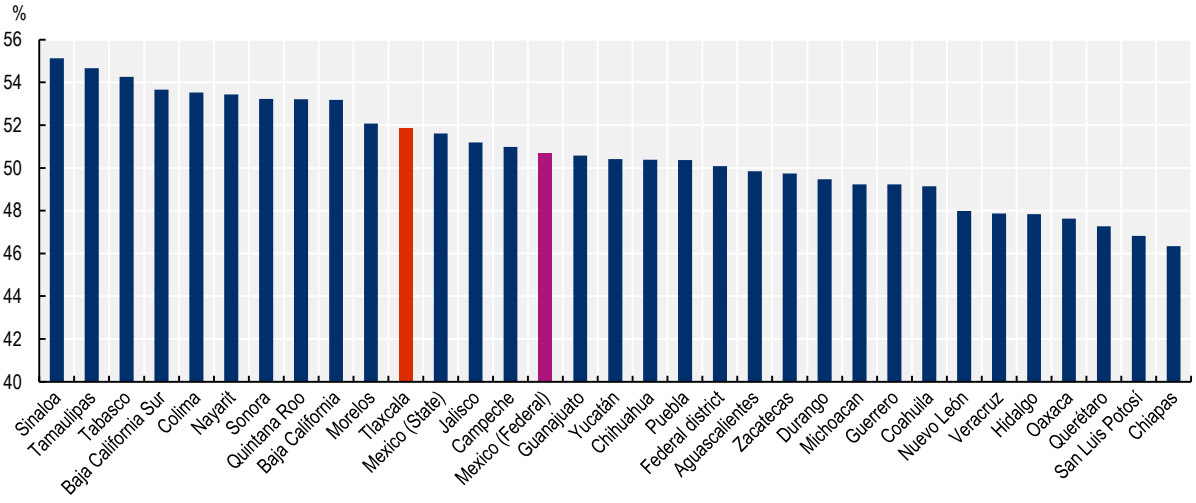
Figure 2.12. Under- and over-qualification in Mexico and OECD countries



Source: OECD calculations based on OECD (2021[56]), *Skills for Jobs (database)*, www.oecdskillsforjobsdatabase.org.

StatLink https://stat.link/jgb4r2

Figure 2.13. Qualifications mismatch in Mexico, by state



Note: The percentage of qualification mismatch is computed by dividing the number of workers with an educational attainment level different from the one required for the job by the total number of workers. The required level of education can be defined by observing realised matches in the labour market, derived from the level of educational attainment for workers in the same job. In this method, the required level of education for a worker is inferred from the median level of education among workers holding the same occupation. A worker is then over-qualified (under) if their educational attainment is higher (lower) than the median level for their occupation.
Source: OECD calculations based on INEGI (2019[57]), *National Survey of Employment (ENOE)*, https://www.inegi.org.mx/programas/enoe/15ymas/#Documentacion.

StatLink https://stat.link/qrkb09

In recent years, improving the responsiveness of the upper secondary and higher education systems has been a key challenge for Tlaxcala, as for Mexico. According to the most recent State Development Plan, strengthening the quality and relevance of upper secondary and higher education has been recognised as one of the priorities for the current government (Government of Tlaxcala, 2017[41]). At the national level there are several initiatives to enhance the labour market relevance of higher education undertaken by SEP Tlaxcala, the Secretariat of Economy (e.g. industrial clusters) and the National Council of Science and Technology (Consejo Nacional de Ciencia y Tecnologia, CONACyT). During 2013-015, the federal 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 Impusar el Desarollo y la Competitividad). This federal commission has provided the legal framework to foster and harmonise the state's strategies on improving the alignment between the higher education system and labour market needs. Under this framework, the State Commission for Planning and Coordination of the Upper Secondary and Higher Education System of the State of Tlaxcala (Comisión Estatal de Planeación y Coordinación del Sistema de Educación Media Superior y Superior del Estado de Tlaxcala) has led implementation of the State Education Act in 2018 and the Higher Education General Act (2019) to promote co-ordination among subsystems and their initiatives to ensure better alignment between the supply and demand of skills (Government of Tlaxcala, 2020[58])

Tlaxcala should take advantage of the benefits of strengthening the responsiveness of upper secondary VET and higher education systems by:

- Improving the alignment between education offer and labour market demand.
- Encouraging greater employer provision of work-based learning.
- Improving students' career choices by strengthening career guidance.
- Designing financial incentives to increase participation in higher education and to help align career study choices with labour market demand.

Improving the alignment between education offer and labour market demand

Improving the responsiveness of education systems entails ensuring a good alignment between the skills developed and the skills needed in the labour market and society, and ensuring that these adjustments are made quickly. The responsiveness of education requires the co-ordination effort of several actors in the skills system. For instance, firms and employers are key sources of insight about the specific skills needed in the labour market. VET and higher education institutions use insights from employers about the specific skills and competencies in high demand, and the knowledge gaps that firms may face. This information can be used to determine which academic programmes should continue and which should be created to fulfil current and future labour market needs.

However, the process by which the supply of programmes in Tlaxcala is adjusted is cumbersome, time consuming and without clear guidelines. The information, indicators and quality of the research used to support these adjustment decisions depend on the education subsystem, and not all education providers co-operate to synchronise response strategies for a better alignment of their offer with local labour needs. The process for opening or closing academic programmes or specialties in Tlaxcala relies primarily on contextual studies, also known as background reports. In these reports, institutions assess labour market needs and analyse enrolment and graduation dynamics. However, the structure of these background reports and the depth of the analysis varies. For instance, in upper secondary VET education, the National Upper Secondary School for Technical Professional Education (Colegio Nacional de Educación Profesional Técnica, CONALEP), under the leadership of the Judging Committee of the Educational Supply (Comité Dictaminador de la Oferta Educativa, CDOE), prepares a report on employability and monitors the graduates from each speciality (CONALEP, 2019[59]). This report includes an analysis of educational relevance from information provided by employers and surveys of graduates. Based on this

report, CONALEP identifies the technical programmes and potential specialties that should be opened, closed or adjusted. Also in upper secondary VET education, the School of Scientific and Technological Studies of the State of Tlaxcala (CECyTE) establishes the academic offer of programmes, specialities and courses based mainly on a feasibility study. This study includes a sectoral analysis of labour market needs in the state, a report on the evolution of the local and regional economy, a report on labour market opportunities and needs, an enrolment forecast, and a study evaluating the relevance of the courses' content (CECyTE, 2010[60]). This report is co-ordinated by the Directorate of Academic and Planning (Dirección Académica y Planeación) and not necessarily based on information collected from graduates or employers (SEP, 2008[61]).

The board of directors for subsystems of upper secondary education and higher education are in charge of analysing and discussing these reports and approving the supply of programmes and adjustments to curricula. In some cases, the board can include employers, sectoral chambers of commerce or business associations. For instance, the academic planning department of the Technological Institute of Tlaxcala, a state higher education institution that belongs to TecNM, must bring a proposal to the Directorate of Decentralised Technological Institutes (Dirección de Institutos Tecnológicos Descentralizados, TecNM-DGEST) in order to open, close or adjust an academic programme. This proposal is revised at the state level in regional meetings in which teachers, researchers and private sector representatives participate and discuss how the potential academic programme fulfils local labour market needs. The State Commission for the Planning of Higher Education (Comisión Estatal para la Planeación de la Educación Superior, COEPES) also participates in the process, mainly to verify that the new programme does not overlap with the programmes already offered by other institutions. However, the TecNM-DGEST at the national level is the entity in charge of approving the changes to the list of programmes offered. The stakeholders involved in the process include employers and firms, and the stages in which the process is divided depends on the type of institution (federal, state, autonomous or private) and the subsystem to which the institution belongs.

Adjusting the institutional offer of academic programmes can be a cumbersome and highly bureaucratic process, which prevents education institutions from flexibly altering their education offer according to labour market needs. In Tlaxcala, this problem is especially prevalent in higher education. Stakeholders and representatives from tertiary subsystems in Tlaxcala note that the process for creating new higher education programmes can last between one to three years, depending on the subsystem. The process is initiated with the background report, which is the main input to analyse the feasibility of opening a new programme, and requires a research process that can take around one year. The presentation and discussion with the boards at the state, and in some cases the federal level for institutions such as the Technological Institute of Apizaco and the Technological Institute of the Altiplano de Tlaxcala, take between 6 to 12 months. Curricular structure adjustments of existing programmes (e.g. offering a new specialisation within the same degree) can take at least six months. It takes a similar amount of time to open new specialties in upper secondary VET schools. On the basis of endorsement, upper secondary VET schools and higher education institutions must initiate a programme creation process before SEP Tlaxcala, which can take six more months depending on the fulfilment of all requirements. Therefore, Tlaxcala could benefit from developing a fast-track process for adjusting the offer of VET and higher education programmes in areas of strategic importance to the state, an approach already encouraged under New Zealand's Tertiary Education Strategy (see Box 2.8).

Box 2.8. Relevant international example: Improving the alignment between education provision and labour market demand

New Zealand's Tertiary Education Strategy

In New Zealand, the government sets national goals and priorities for the tertiary education sector every five years in the Tertiary Education Strategy (TES). Institutions use the TES and information derived from consultations with their stakeholders to determine what is required at a more detailed level. The TES recognises sectors of strategic importance for New Zealand's economy and identifies the skills needs and priority fields of education and training needed to support these sectors. Institutions base their investment and development plan on TES priorities, including the needs of strategic sectors.

All institutions produce a development and investment plan responding to TES priorities. This plan is how tertiary education organisations seeking funding demonstrate their alignment with the TES. The development and investment plan outlines the institution's strategic direction, activities, policies and performance targets, and explains how it expects to contribute to the achievement of TES priorities. This could include opening a new programme oriented to meet the skills requirements of a strategic sector. For instance, in the TES 2014-2019, programmes in specific areas such ICT were prioritised in most of the development plans of post-secondary and higher education institutions. This resulted in an increase in the number of programmes offered by post-secondary and higher education institutions in ICT and related fields (12% between 2013 and 2019).

The TES also steers institutions towards its priorities. Institutions' development plans can lead the allocation of government funding to tertiary institutions and programmes. Depending on how institutional priorities respond to national priorities, institutions can attract more funding to implement their development plan.

Source: New Zealand Qualification Authority (2021[62]), *New Zealand Qualification Authority website*, https://www.nzqa.govt.nz/; Government of New Zealand (2014[63]), *Tertiary Education Strategy 2014-2019*, https://www.education.govt.nz/assets/Documents/Ministry/Strategies-and-policies/Tertiary-Education-Strategy.pdf; Ministry of Business, Innovation and Employment (2017[64]), *New Zealand Sector Reports: Informations and Communications Technology*, https://www.mbie.govt.nz/dmsdocument/3879-information-and-communications-technology-report-2017+&cd=1&hl=nl&ct=clnk&gl=nl.

Recommendations for improving the alignment between education provision and labour market demand

2.12. **Harmonise and simplify the process for opening, closing or adjusting VET and higher education programmes and specialisations.** SEP Tlaxcala, with the support of CONEVAL, CECyTE, TecNM-DGEST and COEPES, should assess the strengths and weaknesses of the various processes to open, close and adjust VET and higher education programmes in the state. The main objective should be to identify the bottlenecks and duplication of efforts in the preparation of background reports and feasibility studies, and develop a harmonised and simplified process. The process should establish clear steps and deadlines, reducing the current average duration. A fast-track process could be developed to allow faster adjustments (e.g. creation of higher education and VET programmes) in areas identified to be of strategic importance to Tlaxcala (see Box 2.8 for an approach employed in New Zealand).

2.13. **Develop clear guidelines to support the process of opening, closing and adjusting VET and higher education programmes and specialisations.** Tlaxcala should support schools in adopting the simplified processes for adjusting the supply of VET and higher education programmes and specialisations. SEP Tlaxcala and COEPES should develop clear guidelines with step-by-step instructions to facilitate the implementation of the new processes. They should also work on a communications strategy to inform VET schools, higher education institutions and relevant stakeholders about the new process, while establishing designated points of contact to respond to related questions or clarification requests.

Encouraging greater employer provision of work-based learning

Schools and employers can partner together to provide work-based learning (WBL) in the context of dual education programmes (at the upper secondary VET and higher education levels). Work-based learning enables students to develop work-relevant technical and soft skills that are valuable in the workplace, helping them to transition into the labour market quickly and achieve better outcomes. At the same time, employers obtain access to the skilled labour force they need, while being granted the opportunity to test students' skills as prospective future employees, which helps lower recruiting costs (OECD, 2015[49]; 2019[65]).

Employers have an essential role to play in ensuring the provision of work-based learning; however, their participation in these programmes comes at a cost. As employers share the responsibility for students' learning experience, they need to allocate resources to select, train and supervise students, among other tasks. Employers with limited resources and capacity for implementing dual education training, especially small and medium-sized enterprises (SMEs), can be particularly discouraged from participating. Given that SMEs dominate Tlaxcala's economy (see Chapter 4), the challenges related to the effective provision of work-based learning are of particular importance.

Mexico introduced a dual education programme, the Mexican Model of Dual TVET (Modelo Mexicano de Formación Dual, MMFD), in 2013. The programme was first piloted in 11 states (including Tlaxcala), and in 2015, 11 more states joined. Since its introduction, around 3 500 young individuals and more than 600 enterprises have participated every year (Government of Mexico, 2020[66]). Research shows that the programme reduces the risk of dropping out of school among participants, and helps them transition into the labour market (Fazio, Fernandez-Coto and Ripani, 2016[67]). However, the number of participants in Tlaxcala remains very low compared to other states. Tlaxcala registered only 148 trainees participating in

the MMFD programme in 2018-2019 (around 2% of VET students in Tlaxcala), most of whom were in upper secondary VET schools (81%) (Box 2.5).

Interviewed stakeholders in Tlaxcala underlined that the low level of participation in the MMFD is mainly explained by the limited number of places offered by Tlaxcalan enterprises to train MMFD students, rather than a lack of student interest. Based on information provided by CONALEP, only 19% of students found a place in an enterprise to start their training in an MMFD programme.

Table 2.5. Number of upper secondary and higher education students enrolled in MMFD, 2018-2019

Education subsystem	Number of students with internships	Number of students in MMFD
Upper secondary schools		
School of Scientific and Technological Studies of the State of Tlaxcala	3 647	11
Directorate of Technological, Industrial and Services Education	349	5
National Upper Secondary School for Technical Professional Education (CONALEP)	927	104
Subtotal	4 923	120
Higher education institutions		
Higher Technological Institute of Tlaxcala	171	5
Polytechnic University of Tlaxcala	2 981	0
Polytechnic University of Tlaxcala, Western Region	459	2
Technological University of Tlaxcala	2 219	11
Technological Institute of Apizaco	541	6
Technological Institute of the Altiplano de Tlaxcala	n/a	n/a
Subtotal	6 371	24
Total	11 294	144

Note: Only institutions that operate MMFD programmes are included.
Source: Information provided by the Directorate of Upper Secondary and Higher Education, SEP Tlaxcala, for the purpose of this project.

The MMFD programmes in Tlaxcala are run under partnership agreements between schools and enterprises. Upper secondary schools rely on the central offices of the subsystem (state or federal level) to co-ordinate MMFD partnerships. In order to establish a partnership, schools and enterprises must agree on the definition of the number of students that companies can train, the areas of training, the job-related requirements with which companies need to comply (e.g. trainer expertise, provision of work rotation), and the financial compensation and/or support provided to students (salaries or transportation subsidy). Higher education institutions mostly rely on framework agreements that outline the conditions (e.g. number of students who can be trained, compensation and/or support provided to students) that companies have to agree to in order to provide apprenticeships under the MMFD, among other things. In some cases, schools and universities receive support for establishing the partnership and framework agreements from Tlaxcala's Secretariat of Economic Development (Secretaria de Desarrollo Económico, SEDECO) through the creation of formal spaces for dialogue and negotiation (e.g. seminars, fairs) with business groups and chambers of commerce, such as the Mexican-German Chamber of Commerce (Cámara Mexicano-Alemana de Comercio e Industria, CAMEXA) and the Confederation of Workers of Mexico in Tlaxcala (Confederación de Trabajadores de México en Tlaxcala).

Most MMFD partnership agreements have been signed with large or well-structured medium-sized multinational enterprises – i.e. those with multiple departments and units of operation allowing for work rotation – rather than with local SMEs. This is due to the fact that the larger firms have the organisational structure and personnel required to ensure the proper implementation of training, and understand the benefits of training for the students' learning process and for the organisation (i.e. facilitate the recruitment

process). Additionally, they are more likely to be able to bear the direct and indirect costs of the provision of training (e.g. trainers' salary and students' subsidy for transportation or other expenses). International evidence has found that SMEs are less likely to have the well-developed human resource and support functions required to find, train, support and protect apprentices (OECD/ILO, 2017[68]). Micro-enterprises in particular are challenged to provide the full range of general training often required by WBL regulations (Schweri and Mueller, 2007[69])

The information that SMEs receive regarding the MMFD programme is very limited and unclear. Awareness-raising campaigns, which are mostly administered by outreach departments of individual schools and universities, have limited reach due to the lack of human resources and underdeveloped networks of contacts in the private sector. SEDECO, through the Directorate of Industries (Dirección de Industria, DI) and the Directorate of Commercial Development and Services (Dirección de Comercio y Servicio, DCS), also disseminates information about the MMFD programme during sectorial meetings (SEDECO, 2017[70]). However, stakeholders mentioned that the information provided by SEDECO lacks clarity on how SMEs can meet the requirements or get support to offer training places under the MMFD.

Tlaxcala should encourage greater employer provision of work-based learning to support MMFD programmes, especially among SMEs. First, Tlaxcala could strengthen awareness-raising campaigns to address the lack of information that SMEs receive about MMFD programmes. Given that they often face a lack of resources, SMEs would particularly benefit from a better understanding of how the MMFD can be implemented and the nature of requirements for offering training places. Similarly, SMEs could be made aware of the support mechanisms provided by the government for offering MMFD training places. International evidence shows that increasing employer and employee awareness of dual education programme measures helps increase training provision (Smith, 2015[71]) (OECD/ILO, 2017[68])

Second, Tlaxcala should facilitate the development of a support network involving social partners that can help employers navigate the MMFD model. Creating links between relevant institutions (e.g. industry organisations, employer groups, chambers of commerce) can help foster a greater degree of peer learning on how to effectively provide adequate placements for trainees, and how to negotiate training agreements with the government. The State of Mexico has launched multiple initiatives to increase employer participation in MMFD programmes, especially among SMEs. For instance, the SME Fund (Fondo PYME) programme provides financial support for project development that is conditional on partnering with universities and business chambers to promote dual education (Box 2.9). Spain has implemented similar initiatives to provide information regarding dual VET programme to SMEs and facilitate co-operation (Box 2.9).

Third, implementing an MMFD programme requires a multi-level and multi-department organisational structure that can ensure students' exposure to different relevant processes for their learning. In Tlaxcala, most SMEs do not have the organisational structure to ensure the work and task rotation of students necessary to carry out the MMFD training. In this context, intermediaries and social partners can play an important role in building capacity and collectively supporting SMEs to provide MMFD training places (OECD/ILO, 2017[68]).

Box 2.9. Relevant national and international example: Supporting employers' provision of work-based learning

State of Mexico's: Encouraging participation in the Mexican Model of Dual TVET (MMFD)

The State of Mexico has one of the highest number of students enrolled in an MMFD programme in Mexico, and more than 1 000 students have graduated from an MMFD programme. Evidence suggests that MMFD programmes have contributed substantially to reducing unemployment among young individuals in the state (aged 20-29) (Zamora-Torres and Thalheim, 2020[72]). Several initiatives and policy programmes have been put in place since 2011 to increase MMFD participation. First, the SME Fund provides financial resources for the development of projects aimed at improving productivity and competitiveness. The project requires that SMEs partner with intermediate organisations, including higher education institutions. Universities create partnerships with SMEs under the support programme to promote the development of technological and innovation projects of participant companies. This partnership demands SME collaboration for research and provision of MMFD places. SMEs can get support for implementing MMFD programmes through other intermediate organisations such as business chambers and other previous SME beneficiaries of the fund. Second, since 2018 the State of Mexico, through the National Council of Science and Technology (CONACyT), has offered The EDOMÉX Dual Education Scholarship programme, which aims to grant complementary monetary support to higher education students participating in MMFD programmes to cover additional student expenses.

The government of the State of Mexico has actively promoted the MMFD model through awareness-raising campaigns. Since 2019, In co-ordination with the German Cooperation Agency for Sustainable Development in Mexico, The State of Mexico's Department of Education carries out the Dual Education Forum, where all upper secondary VET schools and higher education institutions, as well as enterprises, are invited to participate and share MMFD best practices.

Source: Zamora-Torres & Thalheim (2020[72])- El Modelo Mexicano de Formación Dual como modelo educativo en pro de la inserción laboral de los jóvenes en México Periódico oficial, 2020, Reglas de operación del programa de desarrollo social beca de educación DUAL EDOMÉX, https://www.redalyc.org/jatsRepo/2991/299166156003/299166156003.pdf; Diario Oficial de la Federación (2013[73]) *Reglas de Operación Fondo PYME*, https://www.dof.gob.mx/nota_detalle_popup.php?codigo=5289919.

Spain: SME support programme for the development of work-based learning

The Spanish Ministry of Education established a work-based learning programme in 2012 as an alternative to formal education. The implementation of this type of training quickly spread to different regions throughout Spain, mainly involving large companies with the resources and organisational structure to implement WBL. SME participation in WBL did not have the same initial success, which was concerning as 82% of businesses in Spain are SMEs. Spain also faced one of the highest youth unemployment rates in Europe, which made the expansion of WBL among SMEs a good alternative for promoting youth employment. To address this issue, the Alliance for Dual Vocational Training (which includes the Spanish Chamber of Commerce, the Spanish Confederation of Business Organisations, the Bertlsmann Foundation for Youth Employment and the Princess of Girona Foundation as members), in partnership with the JP Morgan Chase Foundation, established the Support Programme for SMEs for the Development of Work-based Learning in Spain (SPWBL).

The SPWBL programme provided advice and support to companies and business organisations with fewer than 500 employees to help them implement WBL projects. During the 18 months that the support programme ran, SMEs received detailed information about WBL (benefits, costs, etc.), specific counselling on the requirements for its implementation and support for its start-up. The programme was initially offered in Madrid, Catalonia and Andalusia, regions with the highest percentage of unemployed

youth. The project targeted enterprises in sectors relevant to the economic development of selected regions, such as chemical, commerce, agri-food, consulting and logistics, although specific companies from other sectors key to the regions were also included.

Technical advisers were mainly in charge of informing, advising and accompanying the companies throughout the process of creating learning places and facilitating their relationship with universities. A key aspect of the success of the SPWBL was the network of support generated between SMEs and business associations that had successfully implemented WBL. In 2016, around 125 business associations and 300 SMEs joined the Alliance for WBL programme, and 70% of associated SMEs started implementing WBL.

Source: Fundación Bertlsmann (2017[74]), *Support Programme for SMEs for the Development of Vocational Training*, https://www.fundacionbertelsmann.org/es/home/publicaciones/publicacion/did/programa-de-apoyo-a-las-pymes-para-el-desarrollo-de-la-fp-dual-en-espana.

Recommendations for supporting employers' provision of work-based learning

2.14. **Strengthen awareness-raising campaigns about the benefits of, and requirements for, implementing dual education training among SMEs.** The Directorate of Upper Secondary and Higher Education (Dirección de Educación Media Superior y Superior, DEMSS) within SEP Tlaxcala should support the sectoral directorates of SEDECO to raise awareness about the benefits of, and requirements for, providing WBL opportunities, especially in SMEs, as part of Tlaxcala's MMFD programme. First, DEMSS should co-ordinate with the different subsystems to develop guidelines and dissemination materials regarding MMFD. Second, the directorates of services and commerce within SEDECO should take advantage of meetings with SME associations to disseminate these materials. During these meetings, the Directorate of Industries and Directorate of Commercial Development and Services could showcase examples of SMEs that have successfully implemented MMFD programmes. These presentations should also clearly outline both the short- and long-term benefits of MMFD for SMEs. Tlaxcala could follow the case of the State of Mexico and the annual MMFD forum to which main MMFD stakeholders, including SMEs, are invited (Box 2.9).

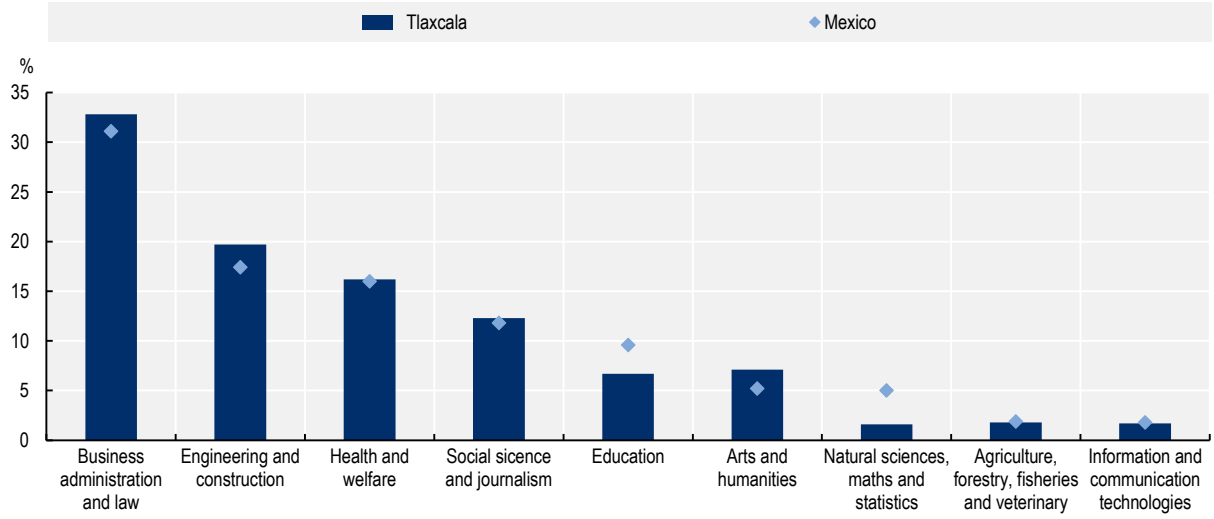
2.15. **Provide technical assistance to firms, especially SMEs, to increase the provision of work-based learning opportunities, as well as financial support to SMEs to foster participation in the MMFD programme.** Technical experts on the MMFD programme from SEP Tlaxcala should be assigned to assist, advise and accompany firms, especially SMEs, in the provision of WBL opportunities as part of the MMFD programme, following an approach similar to Spain (Box 2.9). SEP Tlaxcala's advisers could support firms throughout the process of creating adequate training placements that qualify for the requirements of the MMFD programme. Advisers or technical experts could also come from SMEs that have successfully implemented MMFD programmes. To incentivise SMEs to take part in the MMFD programme, Tlaxcala's government should provide financial support (e.g. grants) to help at least partially cover students' salaries and transportation expenses. Tlaxcala could look for inspiration from similar dual education scholarships provided by CONACyT in the State of Mexico (Box 2.9).

Improving students' career choices by strengthening career guidance

Providing career guidance services can help students transition to the labour market or select relevant further education study options (Hofer, Zhivkovikj and Smyth, 2020[75]). Career guidance is most effective when it provides advice tailored to each student's individual needs (e.g. through one-to-one career guidance sessions), and when it fosters students' exposure to workplaces and employers (e.g. by connecting students with work-based learning programmes or job shadowing opportunities) (OECD, 2010[76]) (Musset and Kurekova, 2018[77]). Well-informed students can then make career choices that are better aligned with labour market needs, thereby reducing mismatches and enhancing individual employment prospects (Cornwell, Lee and Mustard, 2006[78]; Yang, 2011[79]). Research shows that good quality career counselling can also help minimise course switching and dropout rates (Bowes, Smith and Morgan, 2005[80]).

In Mexico, there is evidence that students tend to make study choices that do not respond well to labour market needs. The top three fields of study with the highest proportion of students enrolled are business administration and law (32%), engineering and construction (18%), and health and welfare (16%). Together, these fields account for more than half of the total number (66%) of students enrolled in higher education in Mexico. The OECD Skills for Jobs Database shows that 48% of students in Mexico are enrolled in fields of study for which there is evidence of surplus (OECD, 2018[81]). In Tlaxcala, the distribution of enrolment by field of study follows a very similar pattern: around 31% of higher education students are enrolled in business administration and law, and 16% in health and welfare (Figure 2.14). Assuming that Tlaxcala faces the same surpluses of skills in these fields as found nationally, the state education system is likely to be promoting enrolment in fields already in surplus in the labour market.

Figure 2.14. Enrolment in higher education (aged 25-34) in Tlaxcala, by field of study



Source: OECD calculations based on INEGI (2019[57]), *National Survey of Occupations and Employment (ENOE)*, https://www.inegi.org.mx/programas/enoe/15ymas/#Documentacion.

StatLink https://stat.link/i4o927

The provision of effective career guidance is essential to better align students' learning with labour market needs. At the upper secondary level in Tlaxcala, the career guidance provided to students is limited and focuses mainly on providing information about higher education supply, including a list of higher education institutions, their catalogue of programmes and details regarding admission processes. This information is

collected by the university outreach department of upper secondary schools across all subsystems in the state. The content of the information provided is very heterogeneous and the quality, relevance and level of detail vary substantially between schools. Generally, a teacher is in charge of running information sessions for the students, on top of their regular workload. According to interviewed stakeholders in Tlaxcala, most teachers that assume the career counsellor role do not have the experience, skills and knowledge to provide comprehensive career guidance.

In Tlaxcala there are supplementary activities co-ordinated by schools that aim to provide information to guide students' career choices. In some schools, psychologists offer career aptitude tests that help students identify potential professions and occupations that fit their aptitudes and career orientation. Additionally, upper secondary schools in Tlaxcala hold university fairs. Each school organises these fairs independently and invites local universities and public and private institutions to promote their programmes. University fairs are also an opportunity for students to meet delegations from universities and receive information regarding admissions, course content, career choices and professional profiles. Despite these activities, stakeholders report that students about to graduate from upper secondary education often lack access to relevant labour market information. In this context, developing skills assessment and anticipation (SAA) tools to generate and disseminate labour market information would be helpful (see Chapter 5). Current career guidance programmes also do not provide sufficient information about the scholarships and financial aid available to pursue higher education.

Upper secondary schools in Tlaxcala are aware of the importance of providing career guidance to help steer students' career choices. The institutional development plans of most schools have established the need to develop career offices, expand career guidance services, and strengthen the knowledge and skills of career advisors (Colegio de Bachilleres del Estado de Tlaxcala, 2016[82]). Most schools run tutoring programmes mainly designed to support students at risk of dropout due to low academic performance or family related problems (pregnancy, domestic violence, etc.). Although this programme has a component on motivational guidance that includes talks on career development to discourage students from dropping out (CECyTE, 2020[83]), tutoring programmes provide limited information and guidance to steer students' career choices.

Existing career guidance services for upper secondary students in Tlaxcala generally do not promote exposure to employers, which could help to promote field of study and career choices that are responsive to labour market needs. Schools offering upper secondary technical streams, in particular those promoting dual vocational education, are currently the only institutions promoting workplace exposure to students. Work-based learning opportunities that take place early in life help to shape career goals and provide relevant experience that can support decisions about further education or training (Musset and Kurekova, 2018[77]). Nevertheless, dual VET may not always provide effective career counselling to students. Career guidance services in the context of dual VET would require career advisors with the skills and knowledge to guide students' career decisions, and which may be limited in most enterprises. Employment offices usually also provide career guidance to young individuals, including students from secondary education, in addition to jobseekers and workers seeking upskilling and reskilling opportunities (see Chapter 3). The career guidance services provided by employment agencies in German secondary schools are a good example of the role that employment offices can play in providing career counselling that steers students' career choices (Box 2.10). However, the National Employment Service of Tlaxcala (Servicio Nacional de Empleo Tlaxcala, SNET) does not provide career guidance to upper secondary students, through neither career guidance programmes in school nor activities to foster employer-student interactions.

Box 2.10. Relevant international example: Improving individuals' career choices by strengthening career guidance

Germany: Career guidance provided by employment agencies in secondary schools

Employment agencies (EA) in Germany are in charge of the provision of vocational guidance to youth. This vocational guidance focuses on career choice and career development, and the relevant educational paths providing occupational counselling and career orientation inside and outside of schools.

Career education services provided in secondary schools are generally supported by career counsellors from EA. The local EA offers a service combining guidance, individual counselling and placement in apprenticeship training places. EA career counsellors offer individual career counselling to pupils and school leavers both in the employment office and regularly on the school premises. They offer classes on different vocational paths, workshops and seminars, and organise class visits to the Career Information Centre (BIZ). BIZ also arranges career fairs and career-related lectures and seminars. In addition, counsellors support teachers responsible for school guidance in all matters related to career education and orientation. These services are provided both in lower and upper secondary schools. The cooperation of schools and guidance services of the EA is regulated through a formal agreement between the Federal Employment Agency and the Standing Conference of the Minister of Education and Cultural Affairs of the Länder (state), complemented by agreements at the state level. This benefits not only young people, but also employers hiring apprentices by facilitating the recruitment process.

The service is complemented by special support measures for youth and financial support schemes for apprentices, as well as support for target groups with special needs (e.g. rehabilitation, work experience, internships, and courses of vocational preparation).

Source: DVB (2021[84]), German Association for Education and Career Advice website, https://dvb-fachverband.de/bbb-beratung/beschreibung/.

Recommendations for improving individual career choices by strengthening career guidance

2.16. **Provide high-quality career guidance services in upper secondary education.** SEP Tlaxcala, through the DEMSS, should identify or establish a co-ordinating body to develop standards for career guidance (e.g. minimum levels of career counselling classes/seminars, student-to-counsellor ratios). Schools should then develop their career guidance services in accordance with these standards. SEP Tlaxcala should monitor the development of these standards and their impact on improving career guidance services. In addition, school governing authorities should ensure that counsellors or teachers in charge of career guidance have sufficient time and compensation to fulfil their functions. Counsellors should offer activities besides career guidance classes, including one-to-one counselling sessions, meetings with parents and employer-guided visits to workplaces. The state government should provide financial support to any school governing authorities that lack of the funds or capacity to implement this recommendation.

2.17. **Involve employers and SNET in the provision of career counselling services in upper secondary education.** Upper secondary schools should offer students career guidance services that involve the participation of local employers, such as guided visits to workplaces and taster programmes to expose students to the practical aspects of different occupations. These activities should be carried out primarily in sectors of strategic importance to Tlaxcala. As in the case of career guidance programmes led by employment agencies in Germany (Box 2.10) SNET should actively provide career counselling to students through workshops and seminars on priority sectors, as well as information about related fields of study. In addition, SNET should train teachers and school counsellors on career guidance techniques to steer students' educational choice to fields of study that are relevant for the local labour market.

Designing financial incentives to increase participation in higher education and to help align study choices with labour market demand

The need to invest in formal education is increasing in order to help young people meet the skills requirements of future jobs opportunities. Structural changes and megatrends have altered the nature of work and the skills required in the labour market, and have increased the pace of skills obsolescence. Therefore, it is not enough simply to invest in more skills, countries must also invest in the right types of skills. In this context, financial incentives can play an important role in helping governments to promote more informed investments in skills and achieve a better match between skills supply and demand. Whether they target institutions or individuals, well-targeted financial incentives can be used to steer education decisions (OECD, 2017[85]).

Increasing higher education enrolment by providing financial support has been a priority for Tlaxcala. One of the objectives established in the current State Development Plan is to increase scholarships and financial aid to promote human capital development and reward high-performing students (Government of Tlaxcala, 2017[41]). The State Development Plan outlines two strategies to achieve these objectives: 1) create a state scholarship system; and 2) provide financial support to top-performing students (Table 2.6).

Table 2.6. Strategies established by Tlaxcala's State Development Plan 2017-2021 to promote the development of human capital and reward talent

Objective	Strategy	Strategy details
Promote the development of human capital in the state and reward talent	2.6.1. Create a state scholarship system to co-ordinate efforts aimed at expanding financial support for youth in Tlaxcala.	2.6.1.1 Supporting scholarship programmes aimed at boosting the school-to-work transition of high school graduates with technological or technical professional training, including technical and vocational careers and job apprenticeship programmes.
		2.6.1.2 Recognising upper secondary and higher education students with extraordinary achievement in academic, scientific, innovative, artistic and other areas.
		2.6.1.3 Rewarding the talent and extraordinary achievement of young people from Tlaxcala in extracurricular areas.
	2.6.2 Support talented students to continue their studies.	2.6.2.1 Increasing the number of undergraduate and graduate scholarships, especially for careers related to the economic priorities.
		2.6.2.2. Promoting the integration of women in technical careers.

Source: Government of Tlaxcala (2017[41]), *State Development Plan of Tlaxcala 2017-2021*.

Tlaxcala has recently taken important steps to improve the financial incentives offered through the state scholarship system by supplementing federal scholarships with merit-based scholarships, including 1) Los Mejores Mil (the best thousand); 2) *Tu Prepa Terminada;* and 3) *Beca Gobernador*. Table 2.7 shows the number of beneficiaries of these state scholarships in the period 2018-2020.

Table 2.7. Number of students benefiting from scholarships provided by the state, 2018-2020

State scholarship	2018	2019	2020
Tu Prepa Terminada	3 972	4 304	3 681
Los Mejores Mil	1 014	1 007	n/a
Beca Gobernador	30	46	55
Total	5 016	5 357	3 736

Note: This table only includes scholarship programmes aiming to foster higher education enrolment.
Source: Information provided by SEP Tlaxcala for the purpose of this project.

The Los Mejores Mil scholarship is awarded to students with outstanding performance in the EXANI-II or EXANI-III exams administered by the National Centre of Evaluation for Higher Education (Centro Nacional de Evaluación para la Educación Superior, CENEVAL). To be eligible, students must be enrolled in an undergraduate programme offered by either public or private higher education institutions in Tlaxcala (SEP Tlaxcala, 2019[86])

The Tu Prepa Terminada scholarship incentivises students to complete upper secondary education and gives a one-time lump-sum bonus to students who graduate from upper secondary school with average school grades above eight in a ten-point scale.

The Beca Gobernador scholarship is granted to individuals studying in four- to five-year undergraduate programmes, master's or PhD in a university abroad. The beneficiaries receive USD 1 000 to cover student expenses. In addition to these state scholarships, the federal government, through the National Co-ordination of Para el Bienestar Benito Juarez Scholarships (Coordinación Nacional de Becas para el Bienestar Benito Juarez, CNBES), offers scholarships mainly for students from low socio-economic backgrounds, indigenous and afro-descendant, and students with disabilities.

The scholarships offered to students in Tlaxcala do not always meet the objectives set in the State Development Plan or in the scholarships' operational rules. For example, the State Development Plan establishes that scholarships should target students pursuing degrees in key areas for the economy.

However, none of the scholarships highlighted above target specific fields of study (e.g. in areas in high demand in the labour market) or areas considered to be of strategic importance to the state. One consequence of this is that, as previously discussed, higher education enrolment is highly concentrated in fields of study in which supply may already be exceeding demand in the labour market. Box 2.11 describes a financial support programme in British Columbia (Canada) called StudentAidBC that targets support at students pursuing degrees in fields of study deemed of high priority by the province.

Box 2.11. Relevant international example: Designing financial incentives to help align study choices with labour market needs

StudentAidBC – Access grant for labour market priorities in British Columbia (Canada)

The province of British Columbia (Canada) launched StudentAidBC in 2017 to help eligible students with the cost of their post-secondary education through loans, grants, bursaries, scholarships and other programmes. Student financial assistance is completely needs-based, and it is not intended to fully fund students' post-secondary education and living costs. StudentAidBC co-ordinates all full scholarship programmes funded by the province. It also centralises the information on different sources of financial aid available to students through the Government of Canada, as well as the scholarship programmes of universities within the province.

Among the financial aid programmes managed by StudentAidBC is the BC Access Grant for Labour Market Priorities. This programme provides grant funding to encourage eligible students to attend targeted high-priority programmes at eligible British Columbia public post-secondary institutions. The list of high-priority programmes includes college and university level degrees and trades training courses. In 2019, fields of study eligible for funding included power engineering, heavy mechanical trades, industrial mechanics, mechanical engineering, mining industry certificates, oil and gas field operations, and electrical and electronic engineering.

The BC Access Grant for Labour Market Priorities is structured in four components of student eligibility (students can be eligible for more than one component): tools, relocation, loans and unmet needs. For the tools component, students in eligible programmes can receive a CAD 500 (Canadian dollar) grant to purchase tools. The relocation component aims to assist with the cost of relocating by offering a grant of up to CAD 4 000. Students receiving a loan can receive a grant to replace a portion of the loan. Finally, the unmet need component is intended to reduce or eliminate the difference between the maximum StudentAidBC funding that students are eligible for and education and living expenses. Students are offered a grant of up to CAD 6 500 on or after the mid-point of their programme.

Source: StudentAidBC (2021[87]), *StudentAidBC website*, https://studentaidbc.ca/; B.C. Access Grant for Labour Market Priorities - https://studentaidbc.ca/explore/grants-scholarships/bc-access-grant-labour-market-priorities; Government of Canada (2020[88]), *Canada–British Columbia Workforce Development Agreement*, https://www.canada.ca/en/employment-social-development/programs/training-agreements/workforce-development-agreements/bc.html.

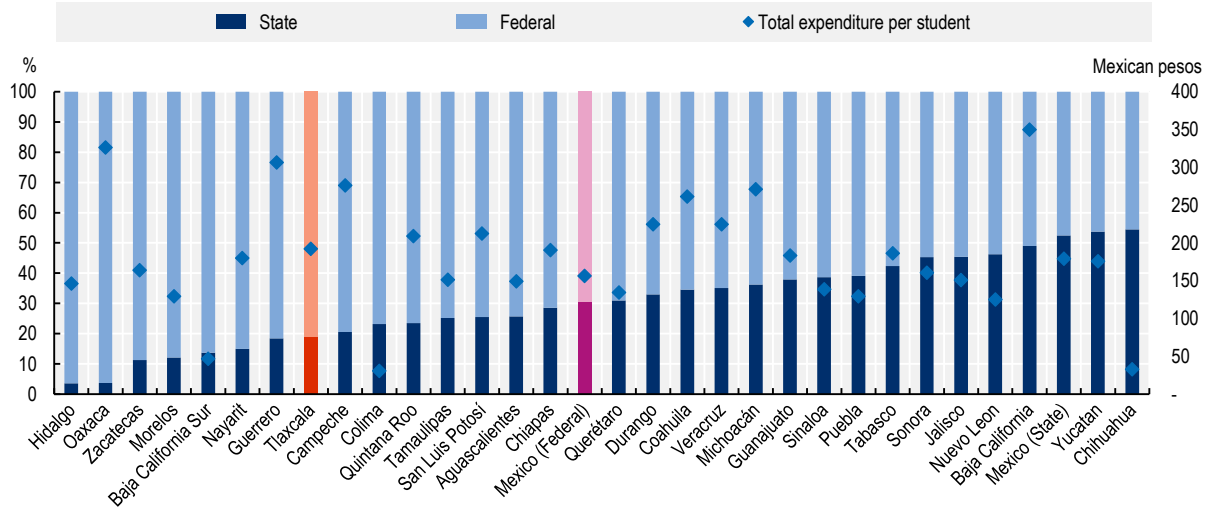
There is scope to improve the impact of certain scholarships. For example, the aforementioned scholarship, Tu Prepa terminada, was designed to incentivise students to complete upper secondary education and enrol in higher education. However, students who graduate from upper secondary education receive a one-time lump-sum payment unconditional on enrolment in higher education. Therefore, even if the scholarship may incentivise students to complete upper secondary school, it does not guarantee that the second objective of the scholarship (enrolment in a higher education institution) will be achieved.

Despite the provision of the state scholarships mentioned in Table 2.7, and Tlaxcala's efforts to increase the amount of financial support to students, public expenditure on higher education is still lower in Tlaxcala than in most Mexican states (Figure 2.15), and only 14% of higher education students in Tlaxcala benefit from a scholarship – 4 percentage points below the national average. The majority of financial aid is disproportionally awarded to low- and high-income groups (i.e. first and fourth quartile), leaving middle-income groups with fewer benefits than in other states (Panel B in Figure 2.16). Low-income groups benefit from means-tested federal grants and from state grants aimed at supplementing federal aid (e.g. Becas para el Bienestar Benito Juarez). High-income students, who tend to do better in university admissions exams, receive a higher share of merit-based scholarships (i.e. Los Mejores Mil). This pattern helps explain the fact that the enrolment rate among low-income students is almost 10 percentage points higher than the national average (Panel B in Figure 2.16), but lower for students from the third quartile.

Tlaxcala should therefore expand the financial incentives available to students and reassess the current targeting strategies of scholarship programmes to increase enrolment, especially among middle-income young individuals and in fields of study in high demand in the labour market.

Figure 2.15. Distribution of public expenditure on higher education across Mexican states, by source of funding

Percentage and actual (Mexican pesos) shares by state



Note: For all states the year of reference is 2016, except for Tamaulipas which is 2017 (latest information available).
Source: OECD calculations based on the statistical report of the State Education Financing questionnaire collected by the Secretariat of Public Education's Sub-secretary of Planning, Evaluation and Co-ordination: SEP (2017[89]), *State Education Financing questionnaire*, https://www.planeacion.sep.gob.mx/cfee/.

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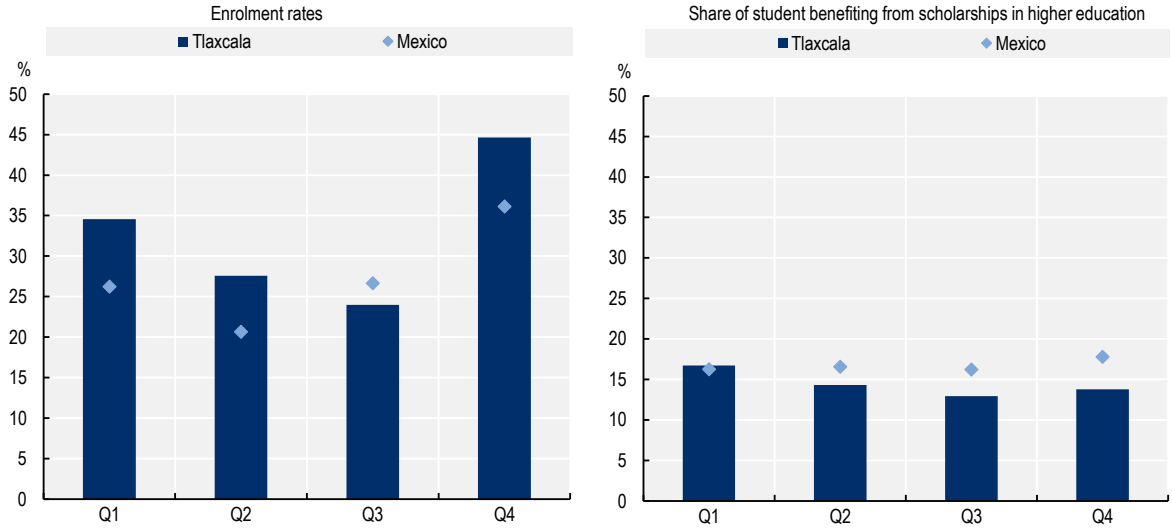
Figure 2.16. Gaps in enrolment and financial aid to attend higher education are large.

Enrolment rate and share of students receiving higher education scholarships in Tlaxcala and Mexico by household income quartiles



Source: OECD calculations based on INEGI (2018[14]), *National Survey of Household Income and Expenditure (Encuesta Nacional de Ingresos y Gastos de los Hogares - ENIGH)*, https://www.inegi.org.mx/programas/enigh/nc/2018/.

StatLink https://stat.link/tligs9

Recommendations for designing financial incentives to increase participation in higher education and to help align study choices with labour market demand

2.18. **Provide targeted financial incentives to encourage young individuals to undertake studies in higher education programmes that are in high demand.** In addition to the scholarships currently offered as part the State Scholarship System in Tlaxcala, SEP Tlaxcala should provide financial incentive programmes that are conditional on selecting a field of study considered relevant for the labour market. Inspiration could be drawn from the example of British Columbia's (Canada) Access Grant for Labour Market Priorities (Box 2.11), while the identification of in-demand fields of study could be supported by information from Tlaxcala's SAA tools (see Chapter 5). SEP Tlaxcala could offer a multiple component grant funding covering one or several specific student needs, such as tuition, living expenses, study materials and transportation. The grant funding should be approved based on students' financial needs (see Recommendation 2.19).

2.19. **Expand financial aid to reach middle-income students.** Tlaxcala should take steps to address the fact that under current arrangements, financial support to students in higher education is disproportionally awarded to low- and high-income groups. SEP Tlaxcala should consider expanding support to groups (especially middle-income students) currently receiving disproportionally less aid and participating less in higher education. In order to contain the fiscal cost to the state, aid could take the form of income-contingent loans, which, as opposed to grants and scholarships, are reimbursed to the state when students join the labour market. To effectively target middle-income students, SEP Tlaxcala should gather information about students' socio-economic characteristics, which should foster an accurate assessment of their financial needs and determine their eligibility for support.

Overview of recommendations

Policy directions	Recommendations	Responsible parties
Opportunity 1: Boosting access and quality in pre-primary education		
Strengthening early childhood education programmes	2.1 Increase demand for early childhood education by targeting informational gaps on the educational benefits.	SEP Tlaxcala
	2.2 Establish minimum quality standards to safeguard the quality of education throughout and after the expansion of early childhood education for children under the age of 3.	SEP Tlaxcala
Strengthening initial training of pre-primary teachers.	2.3 Gather and centralise the recently acquired pedagogical knowledge and lessons learned from in-service teachers on how to effectively engage with students and parents during the pandemic.	SEP Tlaxcala
	2.4 Provide teachers with opportunities for specialised in-service teacher training on how to develop students' socio-emotional skills.	SEP Tlaxcala ICATLAX
	2.5 Improve communication and co-ordination between teachers and parents by establishing standard practices, such as initial meetings to set expectations and social-norm-oriented practices for parents.	SEP Tlaxcala
Opportunity 2: Building a stronger teaching workforce		
Strengthening initial and in-service teacher education and training	2.6 Increase teacher participation in periodic needs-based training by creating positive incentives.	SEP Tlaxcala
	2.7 Promote the informal exchange of knowledge and know-how between teachers through organised mentoring and learning group initiatives.	SEP Tlaxcala
	2.8 Foster stronger links between in-service and initial teacher training in the first years of a teacher's career by providing individualised assessment-based guidance and support.	SEP Tlaxcala
	2.9 Identify the key aspects of high-quality initial teacher training, and standardise these aspects across all initial teacher training institutes.	SEP Tlaxcala National Pedagogical University Normal schools
Improving the management skills of school principals and leaders	2.10 Provide ongoing assessment and training to officials across all levels of educational leadership to increase effective support for teachers.	SEP Tlaxcala
	2.11 Provide regular training opportunities to new educational leaders to strengthen their preparedness.	SEP Tlaxcala
Opportunity 3: Strengthening the responsiveness of secondary VET and tertiary education institutions to labour market needs		
Improving the alignment between education offer and labour market demand	2.12 Harmonise and simplify the process for opening, closing or adjusting VET and higher education programmes and specialisations.	SEP Tlaxcala CONEVAL CECyTE COEPES
	2.13 Develop clear guidelines to support the process of opening, closing and adjusting VET and higher education programmes and specialisations.	SEP Tlaxcala COEPES
Encouraging greater employer provision of work-based learning	2.14 Strengthening awareness-raising campaigns about the benefits of, and requirements for, implementing dual education training among SMEs.	SEP Tlaxcala SEDECO
	2.15 Provide technical assistance to firms, especially SMEs, to increase the provision of work-based learning opportunities, as well as financial support to SMEs to foster participation in the MMFD programme.	SEP Tlaxcala SEDECO
Improving students' career choices by strengthening career guidance	2.16 Provide high-quality career guidance services in upper secondary education.	SEP Tlaxcala
	2.17 Involve employers and SNET in the provision of career counselling services in upper secondary education.	SNET
Designing financial incentives to increase participation in higher education and to help align study choices with labour market demand	2.18 Provide targeted financial incentives to encourage young individuals to undertake studies in higher education programmes that are in high demand.	SEP Tlaxcala
	2.19 Expand financial aid to reach middle-income students	SEP Tlaxcala

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3 Fostering greater participation in adult learning in Tlaxcala, Mexico

Fostering greater participation in adult learning of all forms can help adults to upskill and address deficiencies in their skill sets, or to reskill to respond to changing labour market needs. Adult learning can improve adults' employment and social outcomes, as well as enterprises' performance. This chapter explores the importance of fostering greater participation in adult learning for the Mexican state of Tlaxcala, and provides an overview of current practices and performance. Two opportunities to foster greater participation in adult learning in Tlaxcala are explored: 1) supporting the capacity of adults to engage in remedial education to acquire basic skills; and 2) supporting the capacity of adults to engage in adult learning and training to increase employability.

Introduction: The importance of fostering greater participation in adult learning in Tlaxcala

Adult learning strengthens people's skills and education, and increases their chances of better employability, higher earnings and occupational mobility (Midtsundstad, 2019[1]). Adult learning can also generate substantial social benefits: in comparison to low-skilled adults, higher-skilled adults are more likely to report better health, contribute to political processes and participate in community (OECD, 2016[2]), and are better able to adapt to change. Therefore, supporting adults to upskill or reskill is an economic and social imperative for a more inclusive and productive future.

Promoting both individual and societally shared skills is crucial to fostering equal opportunities and outcomes, and ultimately stabilising communities. Large disparities in skills outcomes across demographic groups, for example, can cause social instability (OECD, 2019[3]). Moreover, the lack of upskilling or reskilling opportunities hinders low-skilled adults' employability by putting them at risk of job loss. Inadequate opportunities for acquiring skills, therefore, can lead to lower incomes and well-being. Low participation in adult learning is associated with high probability of working in the informal sector with fewer protections, (OECD, 2020[4]). A dearth of retraining for adults has consequences that also ripple through the economy as a whole. Lower tax revenues, decreased productivity, slower technology adoption and, consequently, lower competitiveness are all outcomes of individuals lacking the skills needed to be productive workers and having insufficient opportunities to upskill or reskill (Woessmann, 2016[5]).

In Tlaxcala, the participation rate in adult learning is one of the lowest among Mexican states. This is compounded by the fact that the majority of adults (64%) in Tlaxcala have attained less than upper secondary education (a share greater than the national average). This is of concern as the employment opportunities in the formal sector for adults with a low level of education is very limited. For example, according to the National Institute of Statistics and Geography (Instituto National de Estadística y Geografía, INEGI), two-thirds of informal sector workers have completed less than upper secondary education, compared to one-third in the formal sector.

Despite the free or low-cost provision of adult learning in Tlaxcala, several barriers continue to impede adult participation in learning. Lack of motivation, stigma and negative perceptions of remedial education seem to explain low adult engagement. Limited career guidance and a weak connection between training providers and firms also drives a misalignment between skills supply and demand. A key challenge for Tlaxcala is to identify how to engage adults with a low level of skills in learning opportunities relevant to labour market needs.

In Tlaxcala, adult learning is crucial for addressing three main cross-cutting challenges that the state is currently facing. First, remedial adult education can provide upskilling opportunities to reduce the proportion of adults with less than upper secondary education, which is significantly higher than other states in Mexico. Second, adult learning can help individuals and firms respond to the challenges and opportunities arising from the recently signed United States-Mexico Canada Agreement (USMCA) and global megatrends. Third, the provision of relevant training combined with other measures can contribute to economic recovery in the context of the COVID-19 pandemic and its impacts.

This chapter examines the importance of fostering greater participation in adult learning for Tlaxcala and provides an overview of current practices and performance. It is structured as follows: the next section provides an overview of the adult education system in Tlaxcala, and is followed by a section that describes how it is organised, identifies the key actor and their responsibilities, and assesses the main trends in adult education (remedial education and training courses). The final section provides a detailed assessment of the identified opportunities and makes tailor-made policy recommendations in two key areas: 1) increasing adults' motivation to participate in remedial education; and 2) providing incentives for adults to participate in training that responds to labour market needs.

Box 3.1. Definitions: Formal education, non-formal education and informal learning

Adult learning comprises any education opportunity or training activity started by adults for remedial education, job-related or other purposes. It includes:

- **Formal education or training**: Education or training activity that leads to a formal qualification (at primary, secondary, post-secondary or tertiary level)
- **Non-formal education or training:** Education or training activity that does not necessarily lead to a formal qualification such as on-the-job training, open or distance education, courses or private lessons, and seminars or workshops.
- **Informal learning:** Learning that results from daily activities related to work, family or leisure. It is not organised or structured in terms of objectives, time or learning support. It may be unintentional from the learner's perspective.

Adult learning is "life-wide", occurring in the following diverse contexts:

- **Education and training institutions**: Traditional formal education providers, such as schools, colleges or universities, or specialised adult or continuing education and training centres, that may be public or private institutions.
- **Workplaces**: Typically as informal learning or non-formal education and training through civic and cultural activities, social networks, sports, volunteering activities, etc.
- **Homes**: Typically as informal learning through interactions with family members, reading books, Internet use, watching television, listening to the radio, etc. It may also involve formal or non-formal education and training via online or correspondence courses.

Source: OECD (2019[3]), *OECD Skills Strategy 2019: Skill to Shape a Better Future*, https://dx.doi.org/10.1787/9789264313835-en; OECD (2015[6]), *Skills for Social Progress: The Power of Social and Emotional Skills*, https://dx.doi.org/10.1787/9789264226159-en.

Overview and performance of the adult education system in Tlaxcala

Adult education covers formal, non-formal and informal learning opportunities. It can take many forms, such as remedial education and training courses (see definition in Box 3.1). For this report, this chapter mainly focuses on formal education (remedial education and literacy programmes) and non-formal education (employability training) taught in institutions and workplaces.

At the state level, several institutions play a central role in overseeing educational programmes for adults with incomplete formal education by offering training courses to increase adult employability. The Institute for Adult Learning (Instituto Tlaxcalteca para Educación de Los Adultos, ITEA) and the state-level Secretariat of Public Education (Secretaría de Educación Pública, SEP) are the institutions responsible for the provision of literacy programmes and remedial education for adults. Several other centres are in charge of further education and training programmes to increase employability, such as the Training Centre for Industrial Work (Centro de Capacitación para el Trabajo Industrial, CECATI), the Institute of Job Training (Instituto de Capacitación para el Trabajo del Estado, ICATLAX) and the National Employment Service of Tlaxcala (Servicio Nacional de Empleo de Tlaxcala, SNET). CECATI is part of the General Directorate of Work Training Centres (Dirección General de Centros de Formación para el Trabajo, DGCFT), co-ordinated by SEP Tlaxcala. ICATLAX and SNET are co-ordinated by the Co-ordination of the State System of Employment Promotion and Community Development (Coordinación del Sistema Estatal de Promoción de empleo y desarrollo comunitario, SEPUEDE).

Overview of remedial education and literacy programmes in Tlaxcala

ITEA provides two types of remedial education: literacy programmes and remedial education for adults with low levels of education (see Table 3.1). These programmes aim to provide basic skills such as literacy and numeracy, and certify primary and secondary education for adults who have not already completed these levels. The literacy programme is oriented towards the population aged 15+ who do not know how to write and read. Adults follow the programme in modules, with each module tailored to the learner's specific needs. Courses are offered in basic literacy, reading, mathematics, Spanish, languages, arts and even targeted instruction in a dozen native languages for indigenous communities. The instructors are mainly upper secondary student volunteers.

Table 3.1. Main types of provider of remedial education in Tlaxcala (2020 or latest available year)

Main providers	Programmes and target groups	Number of providers	Number of participants
Remedial education institutions			
Institute for Adult Learning of Tlaxcala (ITEA)	Literacy and numeracy programmes for learners aged 15+	16	n/a
	Primary school programme for low-educated learners aged 15+	n/a	710
	Lower secondary school programme for low-educated learners aged 15+	n/a	870
Upper secondary schools for adults co-ordinated by SEP Tlaxcala	For upper secondary school graduates aged 25+ Public provider: Upper Secondary Schools of Tlaxcala (Colegio de Bachilleres de Tlaxcala, COBAT) Private providers are also included	28	1 416

Source: OECD calculations based on INEGI (2018[7]), *National Survey of Household Income and Expenses (Encuesta de Ingresos y Gastos de Los Hogares, ENIGH)*, https://www.inegi.org.mx/programas/enigh/nc/2018/; Information provided by ITEA for the purpose of this project.

Remedial education programmes combine intensive and compressed courses that accelerate students' readiness to engage with further education (upper secondary education) or training courses. Participants can obtain a primary or secondary certificate once they complete the required modules for each level of education. Primary education for adults includes 12 modules, of which three are focused on literacy skills, seven on basic knowledge and two on diversified knowledge. Secondary education includes eight modules split into two parts: four modules about basic knowledge and four diversified modules available from a catalogue of 20 courses. The list of diversified courses covers a limited set of topics from civic education to personal finances, and provides basic skills and knowledge. The courses aim to fulfil learner interest in a variety of topics about general culture to ease students' development in society.

Those aged 18 and over who have completed secondary education can apply for an upper secondary degree following three modalities. In the first modality, SEP Tlaxcala provides adults with accelerated high school programmes operated by the Open Upper Secondary School (Preparatoria Abierta) (see Table 3.1). In these programmes, participants attend in-person classes compressed into 12 modules. In the second modality, the federal government, through the Distance Learning and Open Teaching System (SEAD), offers online platforms to study independently. In the third modality, as defined by agreement 286 from the national SEP - i.e. Procedure for the accreditation of knowledge acquired informally, for a fee adults can have their skills assessed and receive certification that they have the knowledge and skills equivalent to those completing a high school degree.

The tuition fees to participate in a literacy programme, as well as in primary and lower secondary remedial education, are fully covered by ITEA. Moreover, ITEA has developed an application where all books, guides and workshop materials necessary to primary and lower secondary remedial education are openly

accessible. For upper secondary remedial education, however, tuition needs to be covered by participants. ITEA provides books and related materials to adult learners across all levels of education. It has mobile units that take remedial education materials to municipalities across the state. However, in Tlaxcala, there is no public institution that provides financial support or subsidies to cover additional costs such as materials and transportation.

Although the main aim of the literacy programme and remedial education offered by ITEA is to develop basic skills, the supply of digital literacy programmes for adults is minimal. The Digital Inclusion Center (Centro de Inclusión Digital, CID) is the only public institution providing courses on information and communication technology (ICT). These workshops are mainly virtual.

Several policies designed to increase participation in remedial education for low-skilled adults have been put in place in Tlaxcala, and the vast majority of them have been co-ordinated by the Federal Government (see Table 3.2). The current Government of Tlaxcala recognises that the high percentage of adults with low levels of education is a problem that needs to be addressed, even though the illiteracy rate in the state has dropped substantially between 2013-2017 (Government of Tlaxcala, 2017[8]). Despite the recognition of insufficient opportunities to participate in adult education, no specific objectives or strategies have been codified in the State Development Plan to boost participation in adult learning.

Table 3.2. Main strategies implemented by the federal and state government to promote adult learning of basic skills

Strategies	Description	Institutions
National Campaign for Literacy and Abatement of Educational Lagging (Campaña Nacional de Alfabetización y Abatimiento del Rezago Educativo) (2015)	Seeks to promote adult participation by convening volunteers, teachers and pedagogical experts willing to offer their time to develop basic skills to adult learners.	National Institute for Adult Education (Instituto Nacional para la Educación de los Adultos, INEA)
Priority Strategic Alliances (Alianzas estratégicas prioritarias) (2019)	Seeks to establish a link between the public, social and private sector at federal, state and municipal levels to offer literacy and basic education services to individuals with a low level of education. Alliances established in 2019 are the: • National Council for Educational Promotion (CONAFE) • National Chamber of Freight Transportation (CANACAR) • Confederation of Workers of Mexico in Tlaxcala (Confederación de Trabajadores de México en Tlaxcala) • Revolutionary Confederation of Workers and Peasants in Tlaxcala (Confederación Revolucionario de Obreros y Campesinos en Tlaxcala)	

Source: Government of Mexico (2021[9]), *INEA webpage*, https://www.gob.mx/inea/.

Overview of further education and training programmes for employability in Tlaxcala

Adults in Tlaxcala can participate in formal and non-formal learning to increase their employability by supplementing, updating or extending adult's qualification and skills required in the labour market. In addition to pursuing formal education degrees such as technical and vocational, and bachelor and graduate degrees, adults can acquire labour market relevant skills by engaging in further education and specific training programmes.

In Tlaxcala, further education and training programmes are offered by public and private providers. On the public side, multiple institutions are involved in the provision of adult learning education (see Table 3.3). ICATLAX is the main institution supplying training programmes and qualifications to respond to immediate local labour requirements. Adults can engage in any of the 181 training programmes offered across ten centres in different municipalities. These programmes aim to upskill and reskill adult workers, jobseekers or inactive adults. Most programmes last about 60 hours, and their content is flexible and can be adjusted

to meet employers' labour needs. CECATI also offers a wide range of training courses throughout the state, mainly targeting jobseekers and inactive adults. The catalogue of programmes is determined at the federal level based on the background report provided by the employment service for each state, which compiles information on employment trends, job openings and sectorial dynamics. Compared to the courses from ICATLAX, the courses offered by CECATI are longer (up to 600 hours), and most follow the structure of the regular academic year (August to June).

Table 3.3. Main types of provider of training programmes in Tlaxcala (2020 or latest available year)

Main providers	Programmes and target groups	Number of providers	Number of participants
Public institution providing continuing education and training programmes for adults			
Institute for Job Training of Tlaxcala (ICATLAX)	Vocational qualification courses, vocational skills courses and general competence courses for adults out of school. Mainly short course provider (60 hours on average). Several courses from same specialisation lead to a post-secondary technical degree.	10	20 813
Training Centre for Industrial Work (CECATI)	Vocational qualification courses, vocational skills courses and general competence courses for adults out of school. High-intensity courses (up to 200 hours). Several courses from same specialisation lead to a post-secondary technical degree.	3	4 382
National Employment Service of Tlaxcala (SNET)	On-the-job training programmes for those unemployed and jobseekers registered with national employment services, aged 15+.	77 (number of courses)	1 192
Private training institutions			
Non-public institutions providing training programmes that are registered with the National Council for Standardisation and Certification of Competences (Consejo Nacional de Normalización y Certificación de Competencia Laborales, CONOCER)	For adults intending to extend their qualifications.	n/a	n/a
Non-public continuing education and practical centres	For adults intending to extend their qualifications. Certificates are not necessarily recognised by the state or validated nationwide.	n/a	n/a
Higher education			
Higher education institutions (HEIs) offering continuing education	For adults intending to extend their qualifications. Mainly postgraduate courses .	14	1 267

Note: According to computations based on ENIGH 2016, 2018, private institutions account for 12% of enrolment in training programmes.
Source: Information provided by ICATLAX and SNE for the purpose of this project.

Two other public institutions provide adult learning in Tlaxcala. SNET offers training programmes mainly for jobseekers through the Training Support Initiative for Employability (Apoyo a la Capacitación para la Empleabilidad, ACE). This initiative financially supports jobseekers to enrol in one to three months of on-the-job training programmes provided by companies with open vacancies. These programmes aim to provide the specific skills required to fill an open position (Periodico Oficial, 2015[10]). ACE, previously known as Bécate, is part of a bigger national strategy, the Employability Support Programme (Programa de Apoyo al Empleo), which aims to promote employment, self-employment and entrepreneurship; reskill workers; and enhance labour mobility. Initially, the Employability Support Programme was fully funded by the federal government and operated by different employment offices in each state (*secretarias estatales de empleo*). However, when the new government came into power in 2018, funding responsibility for the

Employability Support Programme was transferred to the state level. Since 2020, only one component of the ACE programme has continued to operate.

Supérate is a cash transfer programme aimed at reducing extreme poverty. The programme also promotes training among beneficiaries through its productive training component (*componente de entrenamiento productive*). The objective of this component is to improve the productive skills of the labour force and the potential of individuals to obtain a higher income in the medium term (Periodico Oficial, 2019[11]). The training provided is mainly operated by ICATLAX and targeted at all members of Supérate beneficiary households, as long as they are aged between 15 and 64 and belong to the labour force. Participants in the programme can take courses from a specific list that has been defined based on Tlaxcala's priority sectors, which themselves are defined based on the regional and labour prospect analysis developed by the United Nations Development Programme (UNDP) (see Box 3.7).

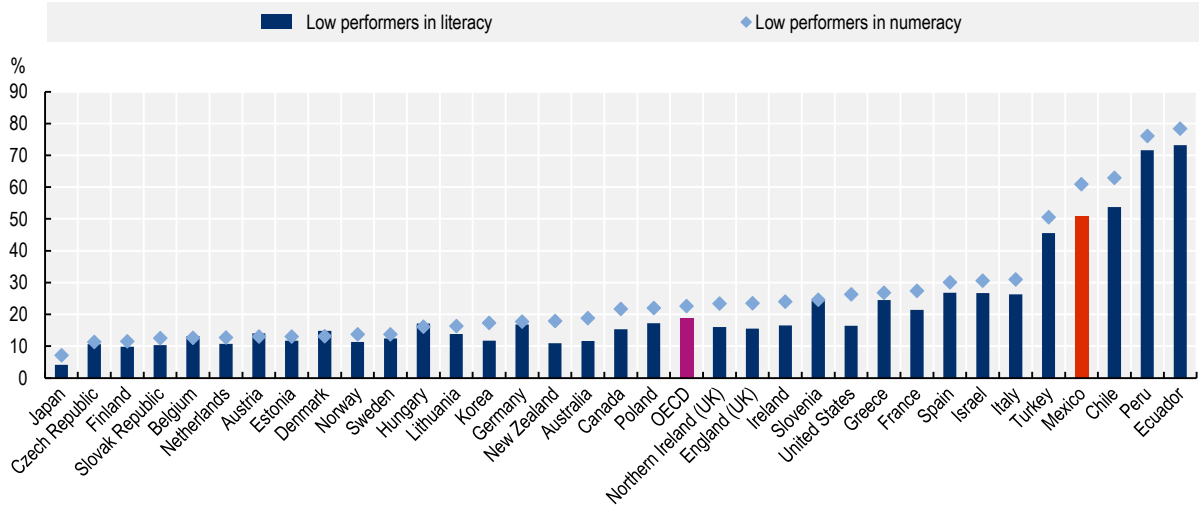
Most of the training programmes are certified to demonstrate the acquisition of relevant competencies. After completing a course, participants obtain a certificate that validates the acquired skill. Depending on the training centre and the characteristic of the programme, these certificates have curricular validity and allow adults to obtain a technical post-secondary degree (equivalent to ISCED level 4). Only certificates granted by accredited public institutions such as ICATLAX and CECATI are recognised nationwide. Adults with working experience or knowledge can be assessed for validation of skills and competences through CONOCER. Because private certifications have no validity in the state, adults with such certification need to be assessed by an accredited public institution. ICATLAX, the National Upper Secondary School for Technical Professional Education (Colegio Nacional de Educación Profesional Técnica, CONALEP) and the School of Tlaxcala (El Colegio de Tlaxcala, COLTLAX) are centres accredited by CONOCER to assess competences.

Performance of the adult education system in Tlaxcala

Basic skills and remedial education

The literacy and numeracy skill of adults in Mexico are low compared to other OECD countries. The Survey of Adults Skills, a product of the Programme for the International Assessment of Adult Competencies (PIAAC), finds that 51% of Mexican adults attain only level 1 or below in literacy proficiency (compared with the OECD average 19.7%) (Figure 3.1), which means they can understand only brief texts on familiar topics. In addition, 60% of adults attain only level 1 or below in numeracy (compared with the OECD average of 23.5%), which means that they are able to perform only simple mathematical processing, such as one-step calculations or simple percentages (OECD, 2019[12]). These proportions are among the highest across OECD countries, but fall below the averages of other Latin American countries participating in PIAAC (Ecuador, Chile, Peru) (63.4% for literacy and 70.2% for numeracy).

Figure 3.1. The proportion of low performers in literacy and numeracy, PIAAC countries



Note: Low-performers are defined as those who score at or below level 1 in in either literacy or numeracy, according to the Survey of Adult Skills (PIAAC). LAC = Latin American Countries. Year of reference for Hungary, Mexico, the United States, Ecuador and Peru is 2017; for Chile, Greece, Israel, New Zealand, Slovenia and Turkey it is 2015; for all other countries it is 2012. Data for Belgium refer only to Flanders and data for the United Kingdom refer to England and Northern Ireland jointly.
Source: OECD calculations based on OECD (2021[13]), *Survey of Adults Skills (PIAAC) (2012, 2015, 2017) (database)*, http://www.oecd.org/skills/piaac/.

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Box 3.2. Defining adults with low skills

There are many ways to define adults with low skills. In this report, adults with low basic skills refers to individuals with low proficiency in literacy or numeracy, or both. For the purpose of international comparisons, OECD PIAAC data are used, with low-skilled adults defined as those aged 25-64 who scored level 1 or below on the literacy or numeracy dimensions of the assessment. This means that at most they understand brief texts on familiar topics and/or are able to do simple mathematical processing.

Adults with low qualification levels are those who have not attained more than lower secondary education (*secundaria*) (ISCED 0-2). In the Mexican context, these adults have left education after compulsory comprehensive school, or earlier. Given the importance of qualifications in the Mexican labour market, having low qualifications puts individuals in a vulnerable position.

Adults with low basic skills and those with low qualifications are not identical, but overlap. For instance, some adults with low qualifications may actually have good levels of basic skills because of their experience in the workplace. By contrast, some adults with higher qualifications may have low levels of basic skills because of skills depreciation or the poor quality of their initial education. Irrespective, both low-qualified and low-skilled adults are strongly exposed to the consequences of changing demand for skills in the labour market, which increases the need for them to upskill or reskill to stay in employment.

Source: OECD (2019[12]), *Getting Skills Right: Engaging Low-Skilled Adults in Learning*, http://www.oecd.org/employment/emp/engaging-low-skilled-adults-2019.pdf.

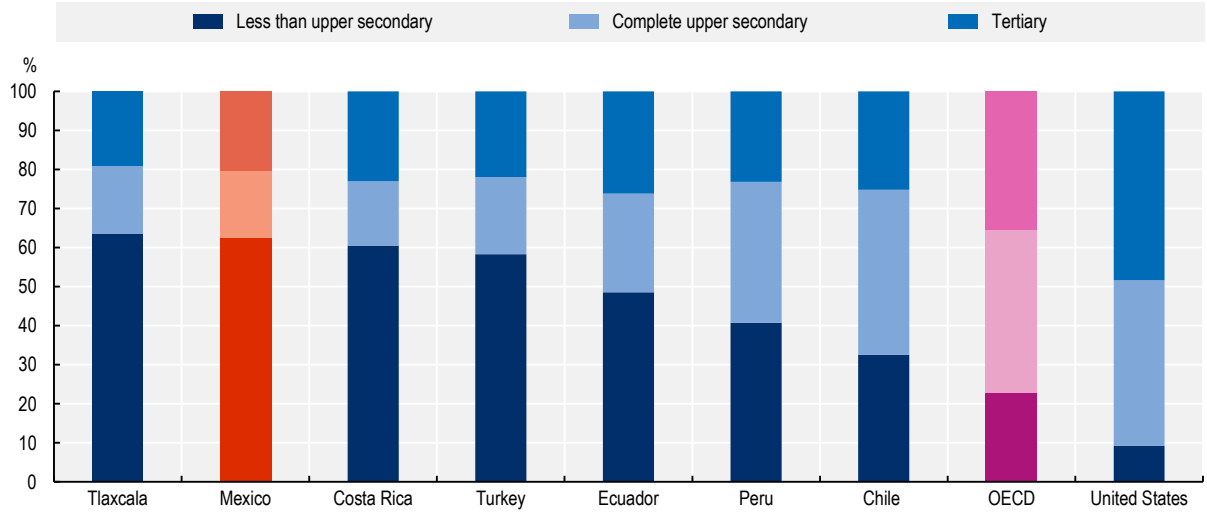
Low levels of basic skills do not necessarily imply weak occupational skills or low qualifications. Although low-skilled and low-qualified can go together, some adults with higher qualifications can still have low levels of basic skills because of skills depreciation or the poor quality of their initial education, and some adults with low qualifications may have good levels of basic skills because of their experience in the workplace (see Box 3.2).

Many adults in Mexico do not have the skills to succeed in an interconnected digital world. According to data from the Survey of Adults Skills (PIAAC), approximately 40% of Mexicans lack very basic computer skills or have insufficient computer experience to participate in the "assessment of problem-solving skills in technology-rich environments". This proportion is the largest among OECD countries. When comparing the percentage of adults lacking basic computer skills or computer experience between less and more educated adults, Mexico has the widest gap among all OECD members: around 67% of adults with lower than upper secondary education lack digital skills, compared to 6% of adults with tertiary education.

Although PIAAC data are not available for Tlaxcala, the educational attainment of adults suggests that the overall level of skills in the state follows a similar pattern to the rest of the country. According to the National Survey of Occupation and Employment (Encuesta Nacional de Ocupación y Empleo, ENOE), almost 64% of adults in Tlaxcala have only attained an upper secondary education (ISECD 3 or below), equivalent to *educación media superior* or *bachillerato* in the Mexican system. This figure is slightly higher than the national average (63%), and almost three times the OECD average (23%) (see Figure 3.2). Among adults with less than upper secondary education, 35% had attained lower secondary education, 20% primary education and 9% had never attended school.

Figure 3.2. Percentage of adults with less than upper secondary education in Tlaxcala is higher than the national average and the OECD average

Selected countries and OECD average



Note: Data for Mexico and Tlaxcala were obtained from the ENOE survey. For the remaining countries, data are obtained from the Survey of Adult Skills (PIAAC). The shares for Tlaxcala correspond to the average share from 2017-2018. Both surveys provide comparable estimates of the shares presented in the figure. All Latin-American countries participants of PIAAC and with similar income per capita (as Turkey) were including for comparison.

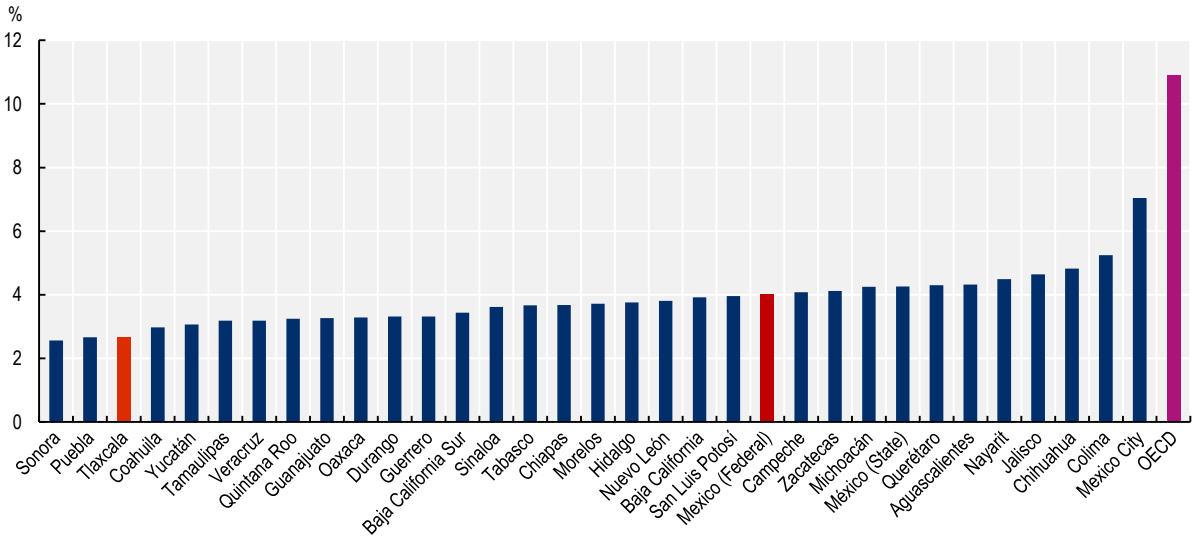
Source: OECD calculations based on INEGI (2019[14]), *National Survey of Occupations and Employment (Encuesta Nacional de Ocupación y Empleo, ENOE) (2018)*, https://www.inegi.org.mx/programas/enoe/15ymas/#Documentacion; OECD (2021[13]), *Survey of Adults Skills (PIAAC) (2012, 2015, 2017) (database)*, http://www.oecd.org/skills/piaac/.

StatLink https://stat.link/mpbey1

Despite the high proportion of adults with less than upper secondary education, participation in remedial programmes is very low in Tlaxcala, with around 4 387 adults enrolled in a literacy programme in 2018. Out the total number of adults who lack literacy skills (29 229 in 2018) (INEGI, 2018[7]), 13% participate in literacy programmes. According to the most recent National Survey of Household Income and Expenses (Encuesta de Ingresos y Gastos de Los Hogares, ENIGH), only 3% of adults with less than upper secondary education were engaged in remedial education in 2018. This proportion is slightly lower than the national average (4%). Among those who attended remedial education, 24% obtained a primary certificate, 29% a secondary certificate and 37% an upper secondary certificate. Participation in remedial education is higher among adults aged 25-29 (9%) than those aged 40-64 (1%), which is consistent with the pattern of participation found across the OECD. The proportion of adults participating in remedial education in Tlaxcala is one of the lowest among Mexican states. For example, in 2019 only 2.7% of adults participated in remedial education, which is slightly above the enrolment rate of Sonora (2.6%) and Puebla (2.7%), which are at the bottom of the national ranking (see Figure 3.3) (INEGI, 2018[7]).

Figure 3.3. Proportion of adults participating in remedial education in Tlaxcala is one of the lowest among all the state in Mexico

The enrolment rate in remedial education of adults (25-65 years old) by state

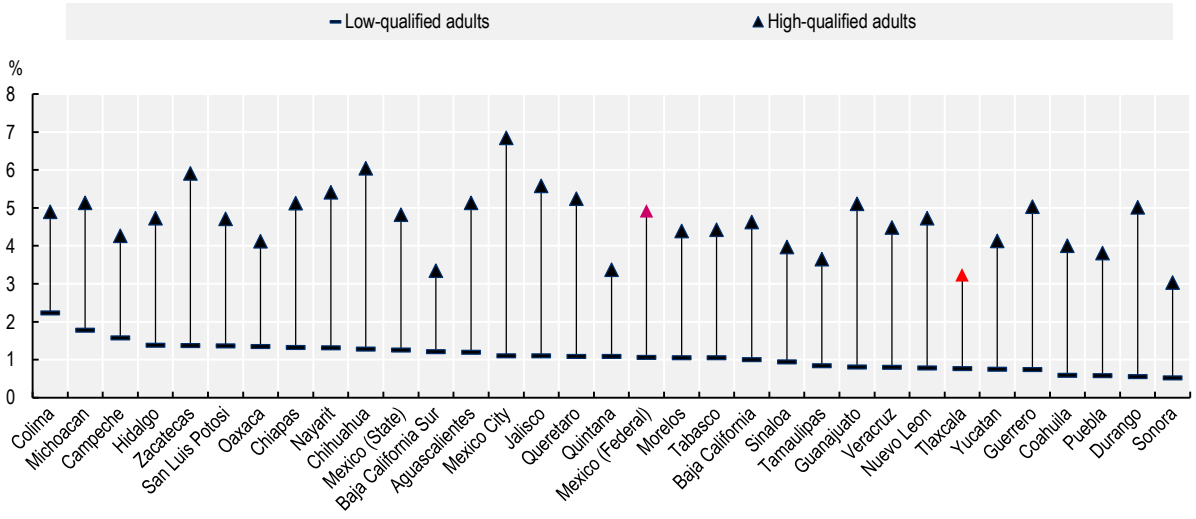


Note: To guarantee the statistical representativeness of the information at the state level, 2018 computations include samples from ENIGH waves in 2016 and 2018.
Source: OECD calculations based on INEGI (2018[7]), *National Survey of Household Income and Expenses (ENIGH)*, https://www.inegi.org.mx/programas/enigh/nc/2018/.

StatLink https://stat.link/ufnk9s

Although participation rates in adult learning in Tlaxcala are very low, as in all of Mexico, there are noticeable differences between adults with high and low levels of education, with high-educated adults much more likely to participate in adult learning than low-educated adults (see Figure 3.4). In Tlaxcala, this participation gap is one of the smallest among all Mexican states (2.1 percentage points). Over 3.5% of adults with a high level of education engage with adult learning, compared to under 1% of adults with a low level of education. One of the key reasons identified for this participation gap is that adults with low skill levels find it more difficult to recognise their learning needs and are therefore less likely to seek out learning opportunities (Windsch, 2015[15])

Figure 3.4. Participation rate of Tlaxcalan adults in adult education is comparatively low at all levels of education



Note: To guarantee the statistical representativeness of the information at the state level, 2018 computations include samples from ENOE waves in 2017 and 2019. Low-qualified refers to adults with less than upper secondary education. High-qualified adults refers to adults who have completed upper secondary education or more.
Source: OECD calculations based on INEGI (2019[14]), *National Survey of Occupations and Employment (ENOE) (2018)*, https://www.inegi.org.mx/programas/enoe/15ymas/#Documentacion.

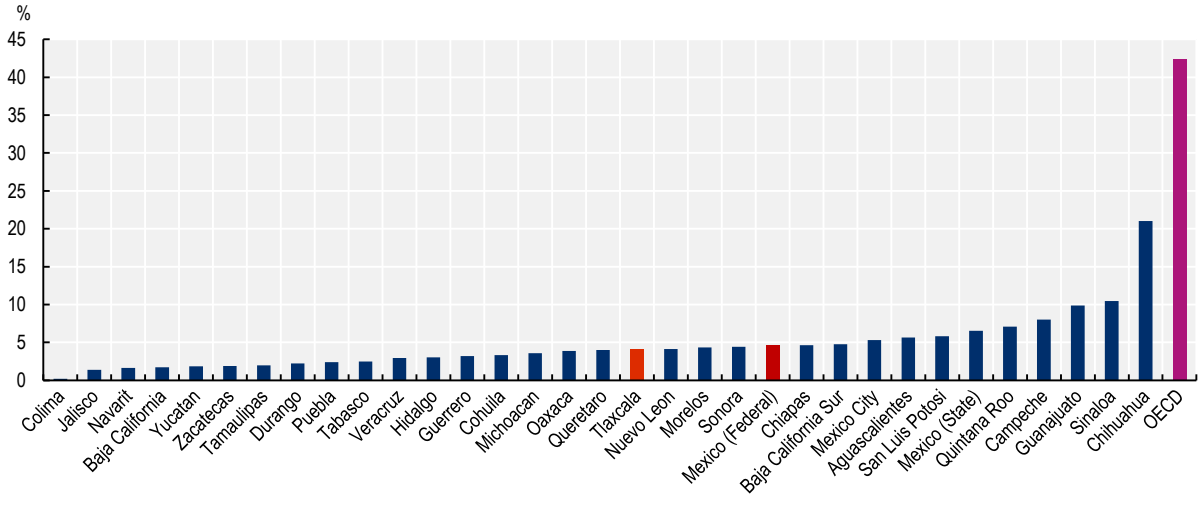
StatLink https://stat.link/rmo18y

Participation of Tlaxcalan adults in training programmes for employability

Despite the need to upskill the adult population in Tlaxcala, the participation rate in training programmes is lower than the national average. According to INEGI, only 4% of adults in Tlaxcala participated in training programmes in 2019, compared with the national average of 5% (see Figure 3.5). Comparing Tlaxcala's adult participation in training programmes with specific states and the OECD average reveals even greater disparities, for example the participation rate in Chihuahua is 21% and in Sinaloa is 10%, and the average across OECD countries is 42%, which means that adults in Tlaxcala participate in training programmes ten times less than the average for adults across OECD countries. Increasing the participation rate in Tlaxcala to match the national average would imply an extra 5 500 adults participating in training programmes every year (INEGI, 2018[7]).

Figure 3.5. Proportion of adults participating in training programmes in Tlaxcala is below the national average

Enrolment rate in training programme of adults (25-65 years old) by state



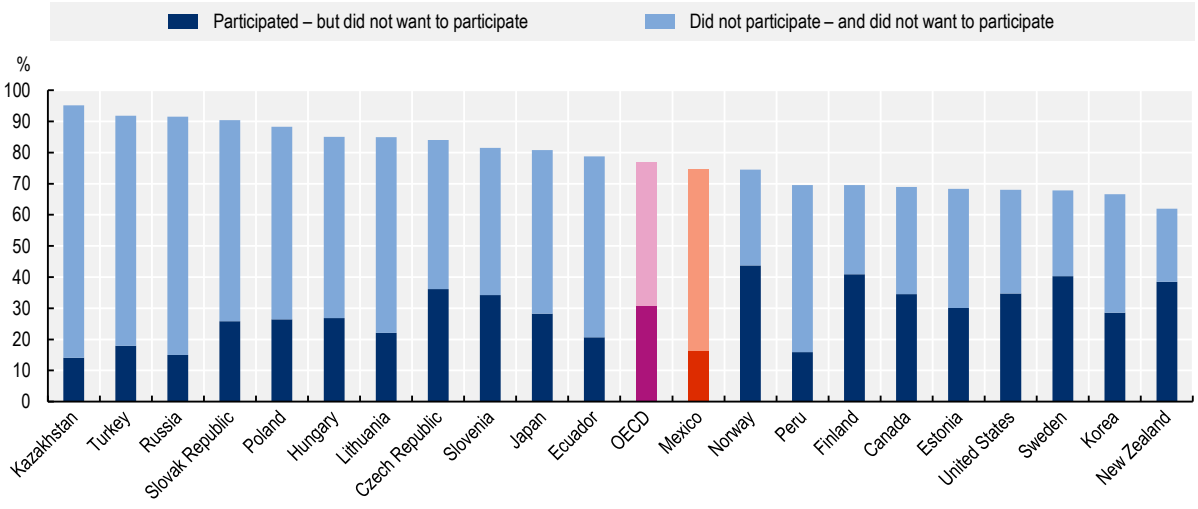
Note: Total adult population was computed using ENIGH (2018). To guarantee statistical representativeness of the information at the state level, 2018 computations correspond to samples from ENIGH waves.
Source: OECD calculations based on INEGI (2018[7]), *National Survey of Household Income and Expenses (ENIGH)*, https://www.inegi.org.mx/programas/enigh/nc/2018/;

StatLink https://stat.link/dw7l4k

Adults engage mostly in training opportunities provided by the public sector. Based on the National Survey of Occupations and Employment (INEGI, 2019[14]), almost 94% of training participants attend a public institution. The share of adult participants is higher for public institutions operated by the state (72%) than for federal public schools (21%). ICATLAX, as the main provider of training programmes in Tlaxcala, provided training for around 20 766 adults during 2019, which is equivalent to 88% of the total enrolment in training programmes. The participants in ICATLAX courses were mostly women (65%) and jobseekers (82%). Most (63%) were also beneficiaries of the Supérate cash-transfer programme through the productivity training component, which covers the full tuition fee. Since 2020, all ICATLAX courses have been offered online and at no cost due to COVID-19.

A lack of motivation can hamper participation in adult learning. Although there are no state-level data regarding motivation, the trends seen nationally in Mexico are reflected in Tlaxcala. According to data from the Survey of Adult Skills (PIAAC), the proportion of adults in Mexico who did not want to participate in adult learning in 2018 was 75% (see Figure 3.6). This percentage includes both individuals who did not participate and did not want to participate (58%), as well as individuals who participated but did not want to (16%). This rate is below OECD average (77%), but higher than the average of Latin American countries (72%).

Figure 3.6. Willingness to participate and participation in adult learning, Mexico and selected countries

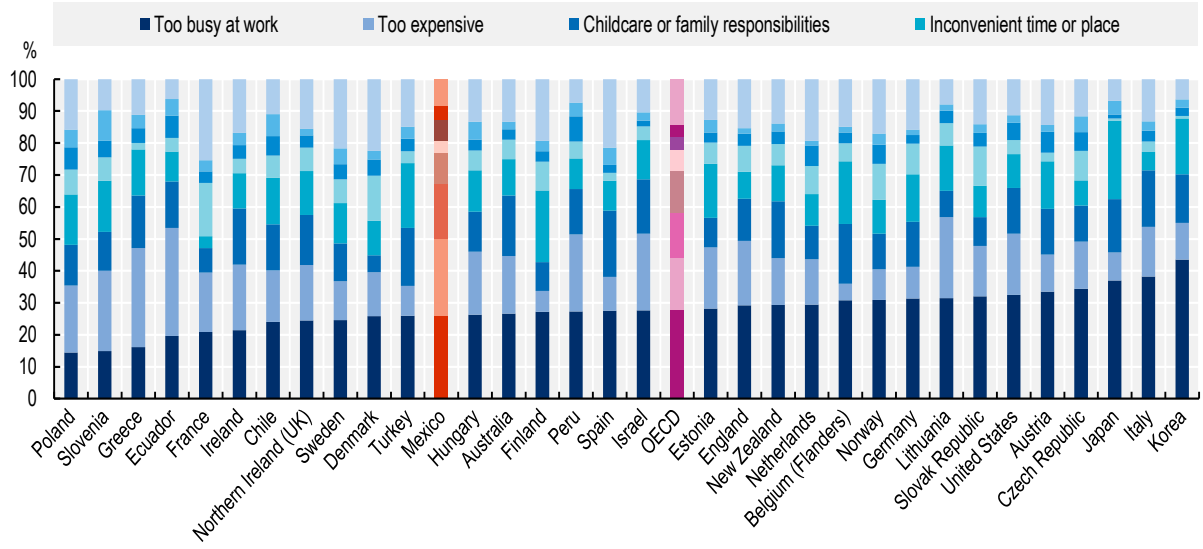


Source: OECD (2021[13]) *Survey of Adult Skills (PIAAC) (2012, 2015, 2017) (database)*, http://www.oecd.org/skills/piaac/.

StatLink https://stat.link/3lwog5

In Mexico, financial and time-related barriers are among the main reasons for not participating in learning opportunities. Around 25% of Mexicans who want to participate in training do not do so because of the perceived high costs (see Figure 3.7). This proportion is one of the highest among OECD countries. Regarding time constraints, 27% of adults state that they are not able to participate in adult learning because of work responsibilities, and 17% because of family responsibilities (OECD, 2021[13]). Under these circumstances, subsidies have been shown to play an important role, especially for low-income households. In Tlaxcala, the Supérate programme gives subsidies to cover training fees for adults located in municipalities with a high poverty index (CONEVAL, 2020[16]). Adults from these municipalities are more likely to participate in training courses (8%) than adults in municipalities with a low level of poverty (2%).

Figure 3.7. Reasons preventing participation in (more) adult learning, Mexico and PIAAC participating countries

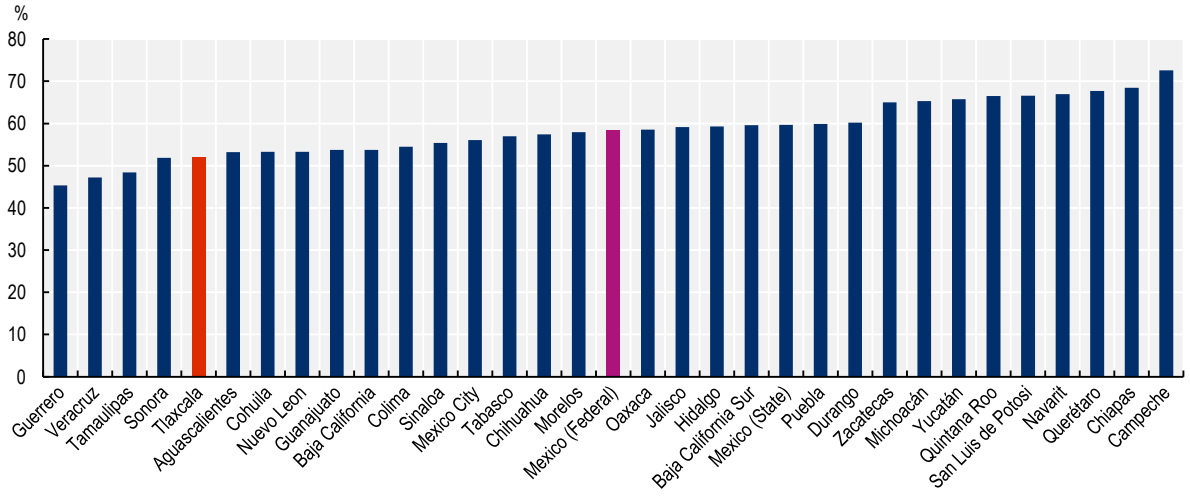


Source: OECD (2021[13]), *Survey of Adult Skills (PIAAC) (2012, 2015, 2017) (database)*, http://www.oecd.org/skills/piaac/.

StatLink https://stat.link/zwt3iy

The vast majority of firms do not offer job-related training in Mexico. According to the National Survey on Productivity and Competitiveness of Micro, Small and Medium Enterprises (Encuesta Nacional sobre productividad y Competitividad de las Micro, Pequeñas y Medianas Empresas, ENAPROCE), almost 15% of all firms, including large firms and small and medium-sized enterprises (SMEs), offer training programmes to employees (INEGI, 2018[17]). In Tlaxcala, this proportion is equivalent to 13%. For firms in strategic sectors, such as the textile industry and food production, Tlaxcala has one of the lowest proportions of job-related training across Mexican states (see Figure 3.8): almost 52% of these firms offer training programmes to employees, which is noticeably lower than the Mexico average (59%). At the same time, SMEs nationally are more likely to provide job-related learning than micro-enterprises: around 29% of SMEs offer training programmes compared to 3% of micro-enterprises. Some 59% of large enterprises provide job-related training (INEGI, 2018[17]).

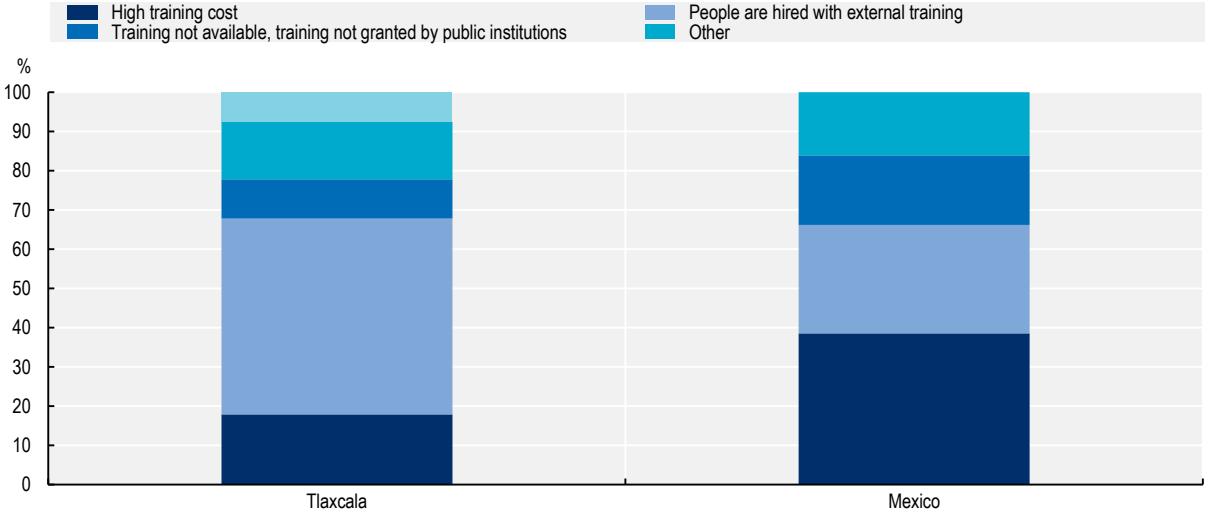
Figure 3.8. Percentage of firms from strategic sectors offering training programmes to employees in Tlaxcala is one of the lowest in Mexico



Note: Only firms from strategic sectors for each state are counted for this graph.
Source: Using tabulations from INEGI (2018[17]), *National Survey on Productivity and Competitiveness of Micro, Small and Medium Enterprises (ENAPROCE)*, https://www.inegi.org.mx/programas/enaproce/2018/.

StatLink https://stat.link/68rzq3

Figure 3.9. Main reasons for firms not offering training programmes to employees, Tlaxcala and Mexico average



Note: "Other" category includes "interruption of production" and "not tangible benefits as a result of the training" due to low frequency or value zero.
Source: Using tabulations from INEGI (2018[17]), *National Survey on Productivity and Competitiveness of Micro, Small and Medium Enterprises (ENAPROCE)*, https://www.inegi.org.mx/programas/enaproce/2018/.

StatLink https://stat.link/0kgots

There are several reasons for firms not providing job-related training programmes in Tlaxcala. Based on ENAPROCE data, around 74% of firms in strategic sectors consider that employees already have adequate knowledge and skills for the job (see Figure 3.9.). This proportion is similar to the national average (75%). Among firms that do not offer job-related training, almost 50% state that this is because they consider that new employees have been already trained or have the skills/qualifications required for the job. This finding is consistent with the fact that Mexico has high levels of over-qualification compared to other OECD countries (OECD, 2020[4]), which means that many employers can readily find adults with the skills they need and who would not require job-related training. Other firms report that training costs being too high (18%) or a lack of available training (9.9%) affect the provision of job-related training.

Opportunities to foster greater participation in adult learning in Tlaxcala

Based on the desk research of the OECD team, consultations with the Government of Tlaxcala and stakeholder interviews, the following opportunities for fostering greater participation in adult learning in Tlaxcala have been identified:

1. Increasing adults' motivation to participate in remedial education.
2. Providing incentives for adults to participate in training that responds to labour market needs.

Opportunity 1: Increasing adults' motivation to participate in remedial education

Remedial education plays an important role in providing basic skills (e.g. literacy and numeracy) to adults who were not able to attend formal education at an earlier stage of their life. Low literacy proficiency and the lack of learning skills constitute barriers to learning (OECD, 2019[12]). Many low-skilled adults may need to boost their basic skills first to take advantage of upskilling and reskilling opportunities. The low participation in remedial education of low-qualified adults can be detrimental for their professional and personal development, as such participation provides adults with basic skills to help them integrate into social life and employment, and enable them to acquire new specific skills and professional competences.

There is a strong need to increase adults' participation in remedial education in Tlaxcala, as well as in Mexico in general. However, low-skilled adults often lack the motivation to engage in learning programmes. As shown above (see Figure 3.6), 75% of adults in Mexico did not want to participate in adult learning in 2018. Mexico has one of the highest proportions of disengaged adults among Latin American countries: around 58% of adults did not participate and did not want to participate in adult learning, which is noticeably higher than the OECD average (46%) (OECD, 2021[13]) Stakeholders consulted for this project agree that this low motivation can be explained by the stigma and misperception of remedial education.

Unlike compulsory schooling, adult learning, including remedial education, is voluntary. Low-skilled adults must make an active decision to improve their skills, and if they are not motivated enough, they do not engage. Partly as a result of low motivation, only 4% of adults enrol in remedial education programmes in Mexico, and for Tlaxcala this proportion is even lower (3%). Low participation in remedial education is problematic, especially in the context of a high percentage of adults lacking basic skills and education.

Tlaxcala should take advantage of the benefit of increasing motivation and providing incentives to engage with remedial education by:

- Raising awareness of the importance of remedial education.
- Making remedial education more relevant for low-qualified adults.

Raising awareness of the importance of remedial education.

In order to increase participation in adult learning, raising motivation to learn is essential. Whether adults decide to learn for the sake of learning (intrinsic motivation) or because they perceive certain benefits or need to meet requirements (extrinsic motivation), motivation is considered to be key for successful learning engagement, and is even more a determinant in the decision to learn than socio-economic background (Carr and Claxton, 2002[18]; White, 2012[19]).

Adults' motivation to engage with learning opportunities can increase by providing information about available training and its benefits. Raising awareness about the potential returns of adult learning, including remedial education, is critical for fostering adult learning participation. This is particularly important among low-qualified adults, especially if they are older, as they tend to overlook the advantages of participating in remedial education, including improving their employment prospects and personal development (OECD, 2018[20]).

Presenting factual information to counteract the stigma associated with participation in remedial education may help to overcome negative attitudes and beliefs about learning basic skills. For many low-skilled adults, low levels of skills are a source of embarrassment and even shame, and a weakness to hide from others, including close friends and family. This can also be a major barrier to participation in adult learning opportunities.

There is evidence that media campaigns can reduce the taboo surrounding illiteracy, while at the same time informing the general population about the true extent of the problem and increasing attendance in adult remedial education courses (Carpentieri, 2014[21]). Mexico has already implemented a number of awareness-raising initiatives via online platforms (see Table 3.4). These initiatives provide individuals with information about different adult learning opportunities led by the federal and state government. Some websites are tailored to specific target groups or areas of knowledge, such as Join MEVyT Online (Únete al MEVYT Online), which is aimed at employed or unemployed adults looking for basic specific workshops under the framework of the Education for Life and Work Model (Modelo Educación para la Vida y el Trabajo, MEVyT). MEVyT is ran by SEP at the national level through INEA. There are also websites aimed at developing basic digital skills, such as Digital Club (Club Digital). In addition to offering video guides on particular digital skills, this website provides educational content to increase awareness of the value of acquiring digital skills.

Table 3.4. Adult learning awareness-raising initiatives in Mexico

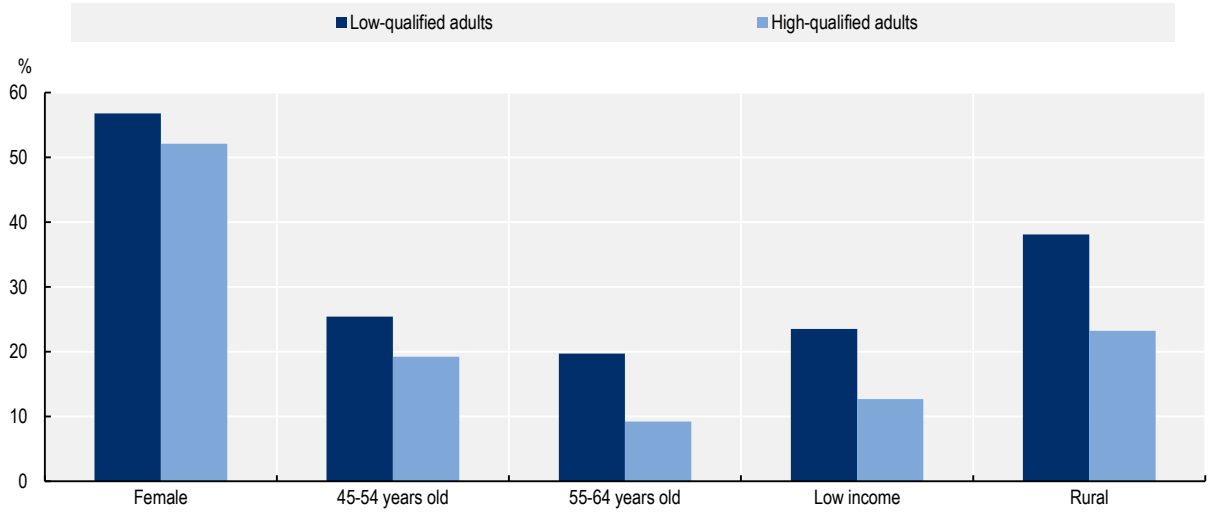
Initiative	Description
National Campaign for Literacy and Remedial Education (Campaña Nacional de Alfabetización y Abatimiento del Rezago Educativo) https://www.gob.mx/inea/	The National Institute for Adult Education (INEA) website compiles a list of courses in remedial education and literacy programmes offered by the federal government. The website includes video messages inviting people to enrol as students or as a volunteer-tutor. The site facilitates contact information to receive more detailed information about how the programme can be adjusted to the learners' needs.
"Learn" (Aprende) https://www.aprende.edu.mx/	The initiative "Learn" (Aprende) provides information about learning strategies for all family members, including adults. The aim is to involve more adults in lifelong learning activities and to promote learning from home.
Institute for Adult Learning of Tlaxcala (ITEA) http://iteatlaxcala.inea.gob.mx/	The ITEA website presents a list of the courses in remedial education and literacy programmes offered by the state government. It also lists all the initiatives implemented in each regional office of the state and provides information on the requirements to enrol in any programmes and to certify the completion of any level of education.
Join MEVIT Online (Únete al MEVyT Online) http://www.cursosinea.conevyt.org.mx/	The MEVyT website explains in detail how the model works and how learners can customize the modules content to their needs. It also facilitates contact with an e-consultant for educational advice and mentoring.
TLX ITEA mobile application	This application keeps a record of a participating adult learner's performance to help them follow their academic progress. It also provides detailed information on the programmes offered by ITEA, materials (books, workshop books, etc.) and different modules available.

Tlaxcala has made limited use of awareness-raising campaigns to effectively disseminate information about the benefits of remedial education. Most campaigns are led by ITEA using television, radio and any other local broadcaster, but they are limited to informing the public about the availability of remedial education programmes and registration processes. Recently, ITEA has developed a mobile application, TLX ITEA, to make information on the modules and materials needed more accessible to potential students. The federal government, through INEA and in co-ordination with ITEA, have led the National Campaign for Literacy and Remedial Education. However, the scope of the campaign has been limited to inviting potential tutors and literacy teachers to participate in the provision of remedial education and literacy programmes.

Tlaxcalan stakeholders agree that there is a need to re-evaluate the aims and strategies of awareness-raising campaigns to promote remedial education. Most campaigns in the state are targeted at specific groups, particularly adults aged 65+. However, adults of all ages with low qualifications could benefit from remedial education given that over 26% of low-qualified adults are aged 45-54 and 20% are aged 55-64 (see Figure 3.10). Looking at different socio-demographic characteristics, there is a correlation between income and qualification level, with low-income adults more likely to be low qualified (23%) than high qualified (12%). Women are also slightly more likely to be low qualified (56%) than high qualified (53%). Similarly, adults in rural areas are more likely to be low qualified (38%) than high qualified (23%).

Figure 3.10. Low-qualified adults in Mexico are distributed across different groups.

Proportion of low-qualified vs. high-qualified adults in Mexico, by socio-demographic characteristic



Note: Low qualified refers to adults with less than upper secondary education. High qualified refers to adults who have completed upper secondary education or more. Low income relates to households that are in bottom quartile in the households' income distribution. Percentages as a proportion of total low-qualified adults or high-qualified adults.
Source: OECD calculations based on INEGI (2018[7]), *National Survey of Household Income and Expenses (ENIGH)*, https://www.inegi.org.mx/programas/enigh/nc/2018/.

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Tlaxcala should target awareness-raising campaigns about remedial education at all individuals with low qualification levels, rather than selected age groups. Such efforts can contribute to increasing engagement in remedial education among women and adults from disadvantaged socio-economic backgrounds, as long as the messages to the respective groups are well targeted.Table 3.5 shows the content of targeted adult learning awareness-raising campaigns in eight OECD countries.

Table 3.5. Public awareness-raising campaigns and their focus, selected OECD countries

	Focus					
	General adult learning	Specific programmes	Specific target groups	Basic skills	High-demand skills	Firms
Estonia: Back to school Again (Jällel Kooli)	x	x	x	x		
Germany: Future Starter (Zukunftsstarter; Courage, Nur Mut)		x	x	x		x
Hungary: Night of Vocations (Szakmák Éjszakája)		x				
Ireland: Take the first step		x	x	x	x	
Korea: Vocational Skill Month		x			x	x
Portugal: Qualifica	x	x		x		
Slovenia: Lifelong learning week	x	x	x	x		
Switzerland: Simply better (*Simplement mieux*)	x	x	x			

Source: OECD (2019[22]), *Getting Skills Right: Future-Ready Adult Learning Systems*, https://doi.org/10.1787/9789264311756-en.

To reduce the stigma surrounding illiteracy and low levels of education, Tlaxcala should disseminate factual information about remedial education in more creative ways. For example, Ireland has had success with television and radio-based campaigns and provision (Box 3.3). In the United Kingdom, the "Gremlins" campaign has contributed to large increases in uptake of provision (NAO, 2008[23]). In Tlaxcala, campaigns have been undertaken; however, the content of the media messages are limited to information about the supply of programmes.

Most awareness-raising activities in Tlaxcala are led by the public sector, and social partners do not seem highly involved. ITEA appears to be the only institution that promotes an awareness-raising campaign in partnership with other organisations and employers. In 2019, ITEA signed eight agreements with companies and workers organisations to promote the importance of remedial education among employers and employees. Social partners that ITEA has an agreement with include Victoria council and the APTIV Contract Service, local. Nevertheless, social partners in Tlaxcala could have a more active role in raising awareness of remedial education, as seen in other OECD countries, such as the UK's Festival of Learning (Box 3.3).

Box 3.3. Relevant international examples: Targeted awareness-raising campaigns promoting remedial education and adult learning

Ireland – Take The First Step

The National Adult Literacy Agency's (NALA) Take the First Step is a national public information campaign to encourage those who have difficulties with literacy and numeracy to contact NALA or their local education and training board to get the help they need to improve their skills. The campaign is a joint initiative between Education and Training Boards Ireland (ETBI), SOLAS (the further education and training authority) and NALA. The opportunity is free and open to all, with participants able to choose when, where and what they want to learn.

Take the First Step aims to encourage the learning participation of adults who have difficulties with reading, writing, mathematics or technology. Often people who have returned to education say the hardest part was making the first call or taking the first step into an adult education centre (Take the First Step, 2021[24]). NALA's campaign aims to overcome these hurdles through the use of radio and digital advertising and by featuring people from different parts of the country talking about how returning to education has changed their lives, and encouraging others to also try.

Source: Take the First Step, (2021[24]) Take the First Step website, www.takethefirststep.ie

United Kingdom – Festival of Learning (adult learner's week)

The Learning and Work Institute is an independent policy research and development organisation dedicated to lifelong learning, full employment and social inclusion. Together with the National Institute of Adult Continuing Education (NIACE) and the Centre of Economic and Social Inclusion, the Learning and Work Institute develops and implements programmes aimed at increasing adult learning take up, increasing opportunities to learn life skills (English, mathematics, financial, digital and other related skills), particularly among under-represented groups of society, and expanding the provision of adult learning.

The institute runs a number of campaigns to raise the demand of learning and skills and to celebrate outstanding achievements. The Festival of Learning (adult learner's week) is the UK's largest and longest running festival of learning. It celebrates learning and learners and aims to inspire people of all ages and backgrounds to get back to learning. The festival highlights the benefits of learning to work, including informal learning and learning for personal development. The initiative was supported by the European Social Fund, the Department for Business, Innovation and Skills, Next Steps, the BBC, the Open University and Pearson PLC. All organisations involved in adult learning from all sectors also participate in the event. Evaluation of the programme has shown that networks and engagement of social partners has led to increasing participation in learning, especially among socially disadvantaged groups (European Commission, 2012[25]).

Source: Festival of Learning (2020[26]), *Festival of Learning website*, https://www.festivaloflearning.org.uk/; European Commission, (2012[25]), *Strategies for improving participation in and awareness of adult learning*, https://www.ab.gov.tr/files/ardb/evt/1_avrupa_birligi/1_9_politikalar/1_9_4_egitim_politikasi/ec_guide_adult_learning.pdf; http://www.niace.org.uk.

Recommendations for raising awareness of the importance of remedial education

3.1 Strengthen existing awareness-raising campaigns to promote the benefits of remedial education. The Government of Tlaxcala, together with municipal authorities and social partners, should reinforce current campaigns to raise awareness of the benefits of remedial education. First, ITEA should focus its campaigns on showcasing the individual and social value of remedial education, as well as the impact on learners' lives, rather than focusing solely on the availability of programmes and registration processes. Second, ITEA and schools from the subsystem of Open Schooling for Upper Secondary Education could solicit external support to deliver strategic messages about the value of remedial education during the campaign. The messages should be tailored to effectively reach different ages and vulnerable groups (women, individuals from disadvantaged socioeconomic backgrounds, etc.), as well as individuals from different geographical regions. For examples of targeted awareness-raising campaigns on remedial education, Tlaxcala could look to examples from other OECD countries (see Box 3.3).

3.2 Involve social partners in awareness-raising events to promote the benefits of remedial education. ITEA should co-ordinate with social partners to launch a regular (e.g. annual) awareness-raising event to which all stakeholders and the general population would be invited. During this event, ITEA could promote activities and host talks and exhibitions to raise awareness about the benefits of remedial education and literacy programmes. Social partners (e.g. employers, unions, community groups) could showcase successful real-life experiences of adults who have participated in remedial education. Such an event could draw inspiration from the UK's adult learner's week, the Festival of Learning (see Box 3.3). Municipal authorities and municipal social partners should also take advantage of this space to strengthen alliances and extend networks regarding remedial education.

Making remedial education more relevant for low-qualified adults

Promoting awareness of the benefits of remedial education alone will be insufficient to encourage adults to engage in learning. The content of remedial education programmes must also respond to the needs of adults to advance their professional and personal development. This is particularly relevant for low-skilled adults, who are more likely to engage with learning when it is practical and problem-oriented (OECD, 2019[12]). International evidence confirms that low-skilled adults are more motivated to engage in learning by extrinsic motivators (e.g. career progression, better job opportunities) than by intrinsic motivators (e.g. desire of learning something new) (Dæhlen and Ure, 2009[27]; Merrifield, 2012[28]) .

Remedial education in Tlaxcala is offered at all levels of general education, from primary to upper secondary education. Primary and secondary remedial education is offered by ITEA, based on the modular structure of MEVyT. This modular structure allows learners to adapt the programme content to their skills needs and interests and includes two type of module: basic modules, which cover basic skills in the curricula; and diversified modules, which supplement basic modules with content more oriented to respond to adults' personal and professional interests (see Table 3.6).

Table 3.6. Curricula of basic and diversified modules of remedial education programmes

Module type	Curricula
Basic	Language and communication - Learning how to read (*Saber leer*) - Reading and writing (*Leer y escribir*) - Speaking people understand (*Hablando se entiende la gente*) - Let's write! (*Vamos a escribir*) Mathematics - The numbers (*Los números*) - Useful accounts (*Cuentas útiles*) - Figures and measurements (*Figuras y medidas*) - Information and graphics (*Información y gráficas*) - Advanced operations (*Operaciones avanzadas*) Sciences - Let's get to know each other (*Vamos a conocernos*) - Let's live better (*Vivamos major*) - Mexico, our home (*Mexico, nuestro hogar*) - Our planet, earth (*Nuestro planeta, la tierra*)
Diversified	- Addiction awareness (*Aguas con las adicciones*) - Education with our sons and daughters (*La educación con nuestros hijos e hijas*) - Our documents (*Nuestros documentos*) - Being parents and shared experience (*Ser padres una experiencia compartida*) - Youth sexuality (*Sexualidad juvenil*) - Home without violence (*Un hogar sin violencia*)

Source: INEA (2020[29]), *MEVyT Courses and Materials*, http://www.cursosinea.conevyt.org.mx/.

Remedial upper secondary education is offered by the Open Schooling for Upper Secondary Education subsystem, which aims to provide distance education. However, Open Schooling for Upper Secondary Education only offers general education strands that prepare learners for higher education, it does not include technical courses or offer specialties that can lead a vocational education and training (VET) degree, as can be done through vocational or combined strands offered by general upper secondary schools.

Interviewed stakeholders in Tlaxcala mentioned that primary and lower secondary remedial education lack content that is practical and relevant to the learner's context, which may partially explain the low motivation of adults to engage in such programmes. For example, courses aim to develop basic and job-relevant skills (INEA, 2020[30]), but this objective, as reported by stakeholders, is not always fulfilled. In particular, diversified modules aim to provide courses with more practical content, but the current offer is highly concentrated in general topics and specific basic skills only, as shown in Table 3.6. These modules are less likely to cover topics relevant for adults. To help increase the attractiveness of remedial education, stakeholders also agree on the need to expand the course offer to provide market-relevant skills and competences, as well as basic skills.

The options are even more limited for remedial upper secondary education, which does not follow a modular structure (such as MEVyT), thus making adult learning time consuming and less flexible. Evidence suggests that low-skilled adults are less willing to participate in time-intensive training than high-skilled adults (Fouarge, Chils and De grip, 2013[31]). Aligned with the international evidence, stakeholders in Tlaxcala mentioned that unemployed young adults (aged approximately 18-22) were more willing to engage in remedial upper secondary education than older adults. Lower interest among older adults can be partially due to time constrains, as well as the lack of relevant programme content. In addition, the general strand in open schooling education only offers a fixed portfolio of general courses (e.g. sciences, mathematics), which may not be entirely of interest to adults, especially older adults. A vocational or combined strand may be more suited to adult learners, particularly those interested in obtaining a

short-cycle degree (technical or technological degree) that can better support their integration into the labour market (as discussed in Chapter 2).

Although ITEA has developed partnerships with companies to facilitate the participation of low-qualified adults, the involvement of social partners in offering additional courses relevant for adults is limited. Stakeholders consulted mentioned that there are already multiple institutions and programmes in the state that could take part in such an effort. For example, ICATLAX and CECATI could offer training courses included as part of MEVyT's diversified courses. ITEA could potentially take inspiration from Norway's SkillsPlus programme (see Box 3.4).

Box 3.4. Relevant international example: Making remedial education more relevant for low-educated adults

Norway – SkillsPlus programme

The aim of the SkillsPlus programme is to give adults the opportunity to acquire the basic skills they need to keep up with the demands and changes in modern working life and civil society. The programme concentrates mainly on developing reading, writing, numeracy and digital skills. Since 2014, the programme has also included oral communication in combination with other more technical competences. The basic courses offered comply with the following criteria: 1) training combines job-related skills and basic skills; 2) course content is similar to participant's interest; 3) courses respond to the competence goals stated in Norway's Framework for Basic Skills developed by the Ministry of Education and Research.

There are a range of training providers, including study associations and public and private providers, that participate in SkillsPlus programme. Special efforts are made to include SMEs and to encourage applications from industries employing people with relatively low formal skills. To help providers deliver basic skill programmes, and to ensure the quality of the provision, SkillPlus has developed competence goals, profiles for basic jobs skills, tests and educational tools.

The programme was established in 2006 and the number of participants has increased yearly, with the total number who have received training now exceeding 30 000.

Source: Skills Norway (2020[32]) *Skills Norway website*, https://www.kompetansenorge.no/.

Recommendations for making remedial education more relevant for low-qualified adults

3.3 Establish partnerships to offer technical and practical training programmes to adults in remedial education. In primary and lower-secondary remedial education, ITEA should widen the supply of courses, including basic work-related training programmes, to low-educated adults. The courses could either be 1) integrated into the current offer of diversified modules; or 2) offered separately as supplementary content. To do this, ITEA should strengthen partnerships with adult training providers such as ICATLAX and CECATI, where low-educated adults could access basic skills training directly linked to labour market needs or relevant to the learner's main activity. The completion of such training should be certified.

3.4 Provide vocational and combined streams in upper secondary remedial education to help adults earn a formal VET qualification. SEP Tlaxcala should support Open Schooling for Upper Secondary Education in expanding the offer of upper secondary remedial education to include combined and/or vocational strands. SEP Tlaxcala's support should be oriented in two directions: 1) provide guidance on the implementation of combined/vocational upper secondary remedial education strands targeting adults; and 2) engage institutions providing vocational/combined upper secondary strands (e.g. CONALEP or COBAT-TBC) to provide guidance to upper secondary remedial schools. SEP Tlaxcala should allow upper secondary remedial schools to award a formal VET qualification to adults on the basis of the satisfactory completion of vocational/combined education strands.

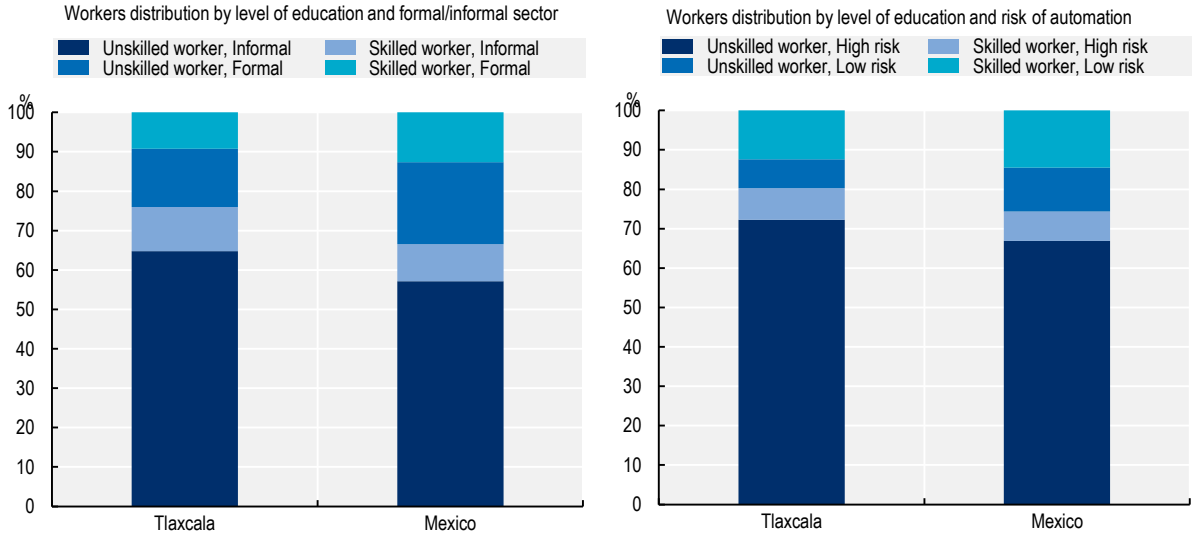
Opportunity 2: Providing incentives for adults to participate in training that responds to labour market needs

Digitalisation, globalisation and population ageing are having a profound impact on the type and quality of jobs available, and the type of skills required to perform these jobs (OECD, 2019[12]). In order to take advantage of all these changes, adult learning, including training programmes, have a key role. The need for upskilling and reskilling is imperative to meet the needs of a rapidly changing labour market. According to OECD estimates, almost one in two workers may lose their jobs or see it change significantly because of automation in the coming decades (Nedelkoska and Quintini, 2018[33]). Adults will need more complex skillsets to do the jobs available in a context of transformation due to automation and offshoring.

Incentives are needed to encourage greater participation in adult learning generally, particularly in areas where there are skills imbalances. As mentioned in Chapter 2, skill imbalances are costly for both the individual and society as a whole, especially when they are persistent. Well-targeted financial incentives and support, including information and guidance, can encourage the greater participation of adults in labour market relevant training programmes.

The need to boost participation in labour market relevant training is particularly important in the case of Tlaxcala, where a high proportion of adults are facing deteriorating labour market prospects, and where over 80% of adults work in a job with a high risk of automation. In addition, most of these workers (72%) have low levels of education, which is 6 percentage points higher than the national average (66%) (see Figure 3.11). A similar pattern is found with respect to informality: in Tlaxcala, 76% of adults work in the informal sector, and most workers in this sector have a low level of education (65%). Low-qualified workers with outdated skills have the greatest need for education and training, especially to upskill or reskill, both of which would improve employability prospects.

Figure 3.11. In Tlaxcala, unskilled adult workers face a high risk automation and more likely to work in the informal sector.



Note: For panel A, the definition of informal used is "all remunerative work (i.e. both self-employment and wage employment) that is not registered, regulated or protected by existing legal or regulatory frameworks, as well as non-remunerative work undertaken in an income-producing enterprise. Informal workers do not have secure employment contracts, workers' benefits or social protection" INEGI (2018[7]). For panel B, the level of automation risk was imputed to the occupation groups in ENOE. The level of automation by occupation was taken from the OECD (Nedelkoska and Quintini, 2018[33]).

To guarantee statistically the representativeness of the information and its disaggregation at the state level, 2019 computations include samples from ENOE 2018.

Source: OECD calculations based on INEGI (2019[14]), *National Survey of Occupations and Employment (ENOE) (2018)*, https://www.inegi.org.mx/programas/enoe/15ymas/#Documentacion; Nedelkoska and Quintini (2018[33]), *Automation, skills use and training*, https://doi.org/10.1787/2e2f4eea-en.

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Tlaxcala can provide incentives for adults to participate in training that responds to labour market needs by:

- Strengthening career guidance to increase adults' participation in training that responds to labour market needs.
- Strengthening support for informal workers to participate in training.

Strengthening career guidance to increase adults' participation in training that responds to labour market needs

Career guidance, an umbrella term for career education, career information and career counselling (see Box 3.5), has three important functions. First, it provides individuals with information about education, training and employment opportunities, and makes this information more easily digestible by helping with its interpretation. Second, it helps individuals reflect on their interests, strengths and weaknesses, facilitating a more informed integration into the labour market. Third, it provides tailored advice, empowers individuals to make better decisions about their lifelong career development and learning, and encourages individuals to participate in training. The latter is particularly important in Mexico, where despite the elevated risk of job automation and rapidly changing skills needs, a high proportion of adults lack the motivation to engage in learning.

Box 3.5 Main components of career guidance

Career education is part of the curriculum and aims to help groups of individuals develop competencies to manage their career development. This includes exploring the world of work, partly through work experience, work shadowing, work visits and work simulations such as mini-enterprises – i.e. less than ten workers. It also includes self-awareness and the development of skills for making decisions and managing transitions, both now and in the future.

Career information, which is provided in various formats (increasingly web-based), is concerned with information on courses, occupations and career pathways to support career and learning choices. This includes labour market information, such as employment rates and salary levels for occupations, as well as current job opportunities and education/training programmes for entry into professions.

Career counselling, which is conducted on a one-to-one basis or in small groups, focuses on the distinctive career issues faced by individuals. Counselling assists with self-assessment and self-analysis to help individuals best match their aptitudes, skills and interests with various professions, and thereby informs their choices about careers pathways and career development.

Source: OECD (2021[34]), *Career Guidance for Adults in a Changing World of Work*, https://doi.org/10.1787/9a94bfad-en.

In Tlaxcala, the provision of career guidance for adults is very limited. Most career guidance and counselling activities are provided to students through formal education (upper secondary and higher education institutions), which is covered in detail in Chapter 2. Outside formal education there are few sources of career guidance for adults. The National Employment Service of Tlaxcala (SNET) provides career guidance from five offices: three regional offices in Apizaco, Tlaxcala and Zacatelco, a local unit in Calpulapan, and one central office. The focus of the guidance is jobseekers only and there are a total of 25 employment advisors (*consejeros laborales*). SNET's career and guidance services aim to accompany adults in their job search efforts, which involves profiling individuals' background, providing information on vacancies, teaching job search skills, giving referrals to other services, and supporting job search and interview preparation. ICATLAX and CECATI, the state's main training providers, do not provide career guidance or any similar service, instead they have official agents in charge of providing detailed information on their programmes and supporting the enrolment of students on training courses.

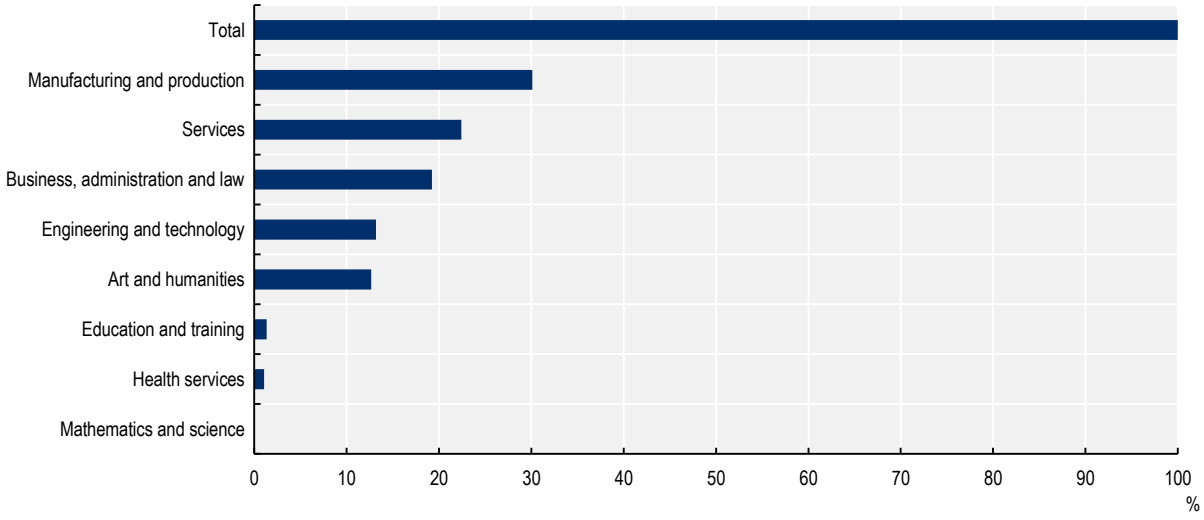
Based on focus group discussions and meetings with relevant stakeholders, two challenges regarding career guidance were identified: 1) the limited provision of relevant career guidance services for all adults; and 2) the lack of training for employment advisors.

With respect to the limited provision of relevant career guidance services for all adults, Tlaxcalan adults can currently only access career guidance services through SNET, which mainly provides services to jobseekers. Other relevant vulnerable groups of adults, such as low-qualified adults or informal workers, have limited access to this career guidance service.

The career guidance services that SNET provides to unemployed adults are also limited in scope. Adults are informed about the job opportunities, requirements to apply for a job, and training that employers provide for the given job opening. They also receive support during the job application process (e.g. curriculum elaboration guidance, interviews tips). However, they receive limited information about generally available labour market relevant training options beyond the firm-specific training required to fill a position. Adults in Tlaxcala could particularly benefit from better information about what training they should participate in to boost their employability. In Tlaxcala, enrollment in training programmes is highly concentrated in areas that already face high skills surplus, such as manufacturing and production or

engineering and technology (see Figure 3.12 and Figure 3.13). On the other hand, enrollment in areas that face high skills shortages is very low (e.g. education and training and health services).

Figure 3.12. Enrolment in ICATLAX training programmes, by field of study (2019)



Note: For comparison purposes, the areas of concentration were classified based on the classification of field of studies used in Skills for Jobs database (https://www.oecdskillsforjobsdatabase.org/).
Source: Information provided by ICATLAX for the purpose of this project.

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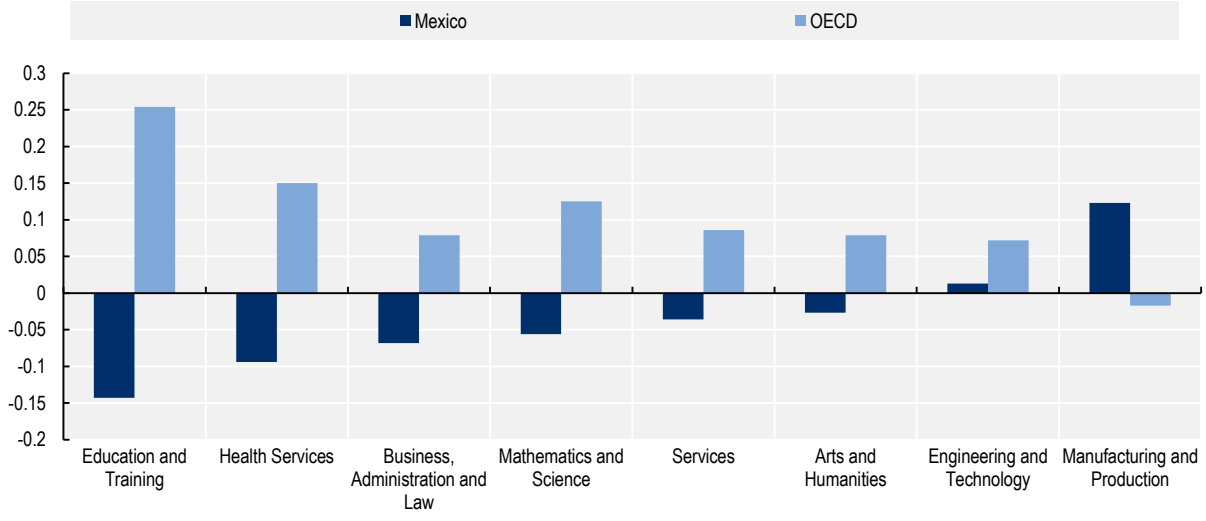
Figure 3.13. Skills' surpluses and shortages, Mexico and OECD average



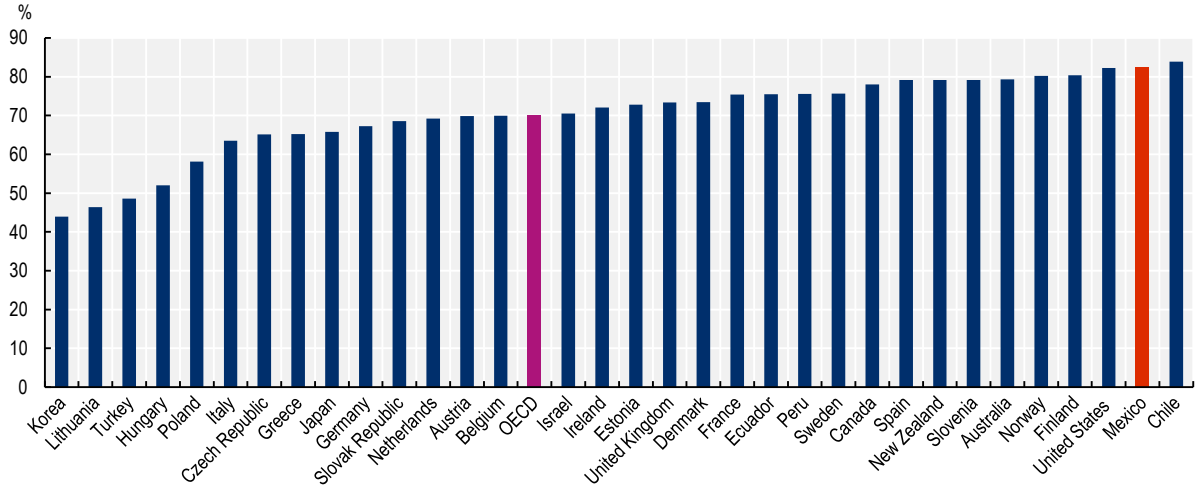
Note: Results are presented on a scale that ranges between -1 and +1. The maximum value reflects the strongest shortage observed.
Source: OECD (2018[35]) Skills for Jobs: Where are the skill imbalances? Country Note: Mexico.
https://www.oecdskillsforjobsdatabase.org/data/country_notes/Mexico%20country%20note.pdf

StatLink https://stat.link/nvimbr

The fact that career guidance in Tlaxcala merely supports adults to connect with immediate job opportunities means that not all of its potential benefits are being exploited. In Mexico, a comparatively high proportion of adults (82% versus an OECD average of 73%) acquire their skills informally (i.e. learning by doing or from colleagues) (see Figure 3.14). To have the abilities and skills developed throughout life outside of formal education formally recognised, adults must approach relevant state entities providing recognition, validation and certification of competences (RVCC) services. Career guidance can be instrumental in connecting individuals with entities providing RVCC processes, which can also encourage adults to engage in the relevant supplementary training required to earn a formal qualification. In Tlaxcala, career guidance services could actively inform adults about the RVCC processes administered by CONOCER, and encourage adults to get their skills formally recognised.

Figure 3.14. Participation in informal learning, Mexico and OECD member and partner economies

Percentage of workers who participate in informal job-related learning



Note: Informal learning is defined as learning from others, learning by doing, or keeping up-to-date with new products or services at least once per week.
Source: OECD (2021[36]), *Dashboard on priorities for adult learning*, https://www.oecd.org/els/emp/skills-and-work/adult-learning/dashboard.htm.

StatLink https://stat.link/herqo3

The second challenge for career guidance is related to the lack of training for employment advisors to help them increase the effectiveness of their work. “Career guidance advisor” is not a regulated profession, meaning that there is no legislation specifying which certificate, license or registration is required. However, to work as employment advisors in some countries, certain minimum training and qualifications are still needed (OECD, 2021[34]). In Mexico, employment advisors should hold a university degree in business administration or psychology, and must complete internal introductory training. According to SNET officials, employment advisors participate in the training, but only some have a university degree in the required field of study. Advisors who lack qualifications may not automatically negatively affect the quality of the career guidance provided, as long as regular training, certifications and information sessions are provided (OECD, 2021[34]). However, SNET does not provide any supplementary training for employment advisors, who only participate in short workshops such as stress management, leadership and Excel courses.

Tlaxcala needs to provide effective career guidance to support adult learning participation in market relevant training. Tlaxcala could expand the scope of the current career guidance offered by SNET by

informing adults about the relevant training programmes required in the labour market beyond the firm-specific courses already offered by companies to fill a job position, which can actually hinder adults' labour mobility (OECD, 2018[20]). In this regard, Tlaxcala could follow the example of the Qualifica centres in Portugal, which provide information, guidance and the referral of candidates for training options (see Box 3.6). SNET career guidance services can support adults in identifying their skills and abilities, and promote the certification of competences, especially those that are market relevant. To benefit other vulnerable groups, Tlaxcala could provide career guidance services in collaboration with training providers. This support could include the provision of information and guidance about training programmes that better respond to labour market needs. Career guidance services provided Qualifica centres in Portugal also support adults in the validation of non-formal and informal learning processes (see Box 3.6).

Tlaxcala could offer training to employment advisors to improve career guidance services. Given that most employment counsellors do not meet the qualifications required, such work-related training is necessary. Through this training, employment advisors could learn counselling techniques to help them reach different vulnerable groups. In this regard there are some good international examples, such as Germany's counselling techniques module, which is generally offered to counsellors during their bachelor's degree as independent training. Ireland's public employment services also offer ongoing training focused on client interaction skills (see Box 3.6).

Box 3.6. Relevant International examples: Strengthening career guidance to increase adults' participation in training that responds to labour market needs

Expanding the scope of career guidance services

Portugal's Qualifica centres, funded by the European Social Fund and the state, take a lifelong guidance perspective and provide free information, diagnosis and guidance to everyone in the country. Qualifica centres (currently 303 in the country) are specialised in adult qualifications and in providing information and guidance to adults (and young adults) with low educational attainment who are seeking a qualification. These centres provide information, guidance and the referral of candidates for training options, as well as referral for the validation of non-formal and informal learning processes. In 2017, Qualifica centres guided 97 085 candidates to education and training courses/certified modular training, or to processes for the recognition of prior learning.

Provision of training for career advisors

The **German** Federal Employment Agency trains career guidance professionals at the University of Applied Labour Science in a dedicated bachelor's study course (Career Guidance for Education, Career and Employment). Modules include intensive training in counselling techniques for different target groups, as well as training on the labour market and education system, recent trends, and sociology. These modules are also offered to career counsellors independently of the bachelor programme as a training course.

Case workers of **Ireland**'s public employment service can only complete training through the Department of Employment Affairs and Social Protection or through the National College of Ireland, which provides a certificate in employability services. Case workers participate in in-service training throughout the year. This training leads to no formal qualifications and covers a range of administrative and procedural aspects of their work, as well as client interaction skills.

Source: OECD (2021[34]), *Career Guidance for Adults in a Changing World of Work*, https://doi.org/10.1787/9a94bfad-en.

Recommendations for strengthening career guidance to increase adults' participation in training that responds to labour market needs

3.5 Expand the information and guidance provided by SNET career guidance services. SNET could collaborate with ICATLAX and CECATI to supplement the content of the guidance provided with information related to the training offer in Tlaxcala. For this, ICATLAX and CECATI should share regular reports with SNET career guidance co-ordination offices about the training offered. This report should include pre-requisites, course content overview and training profile. SNET could collaborate with ICATLAX to provide information to adults about the certification of skills and competence process. It should also include in its procedure manual guidance on how to advise on training and learning opportunities. This updated manual should be disseminated to employment advisors.

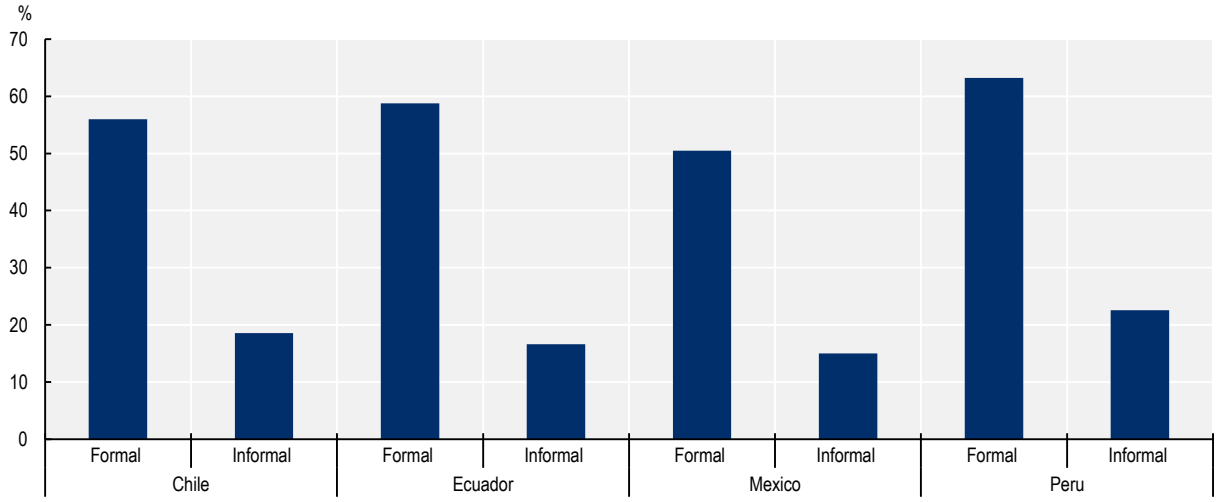
3.6 Improve the training provided to employment advisors. Tlaxcala, through SNET with ICATLAX support, should provide regular training to employment advisors as a supplement to the workshops they usually attend. This training should focus on improving advising skills and providing counselling techniques for different targeted groups. Regarding the content of the modules, Tlaxcala can follow the example of Germany and Ireland (Box 3.6). SNET should also provide information sessions where the different training providers could present information related to the training programmes. One session should inform employment advisors about the changes to the career guidance services recommended above.

Strengthening support for informal workers to participate in training

Financial constraints can prevent individuals from participating in training. These constraints are especially significant for Mexican workers from the informal sector who face limited opportunities for employer-sponsored training, or who alternate between work and periods of unemployment (OECD, 2020[4]). Most informal workers come from disadvantaged socio-economic backgrounds, have low disposable income to spend in other activities (such as training), and face high opportunity costs associated with not working (ILO, 2020[37]). As a consequence, informal workers might not participate in training without targeted government financial support (OECD, 2017[38]). Government financial support can also be essential to steer participation towards training opportunities that are relevant for the labour market and/or that contribute to the development of entrepreneurship projects (see Chapter 4).

Adult participation in training in Mexico is low compared to other Latin American countries, and is even lower for workers declaring to be employed without a formal contract (i.e. working informally) (see Figure 3.15). Only 16% of informal workers in Mexico participate in training, the lowest proportion among Latin American countries participating in PIAAC (OECD, 2020[4]). The challenge of low training participation rates of informal workers is particularly magnified in Tlaxcala, which has the highest share of informal workers (73% in 2019) across Mexican states.

Figure 3.15. Training participation of formal and informal workers, Mexico and selected other Latin American countries



Source: OECD (2020[4]), *Effective Adult Learning Policies: Challenges and Solutions for Latin American Countries*, https://doi.org/10.1787/f6b6a726-en.

StatLink https://stat.link/sef58q

Financial barriers to participating in training are arguably the most relevant for Tlaxcalan informal workers. According to data from the National Survey of Occupation and Employment (ENOE), around 38% of informal workers in Tlaxcala come from disadvantaged socio-economic backgrounds. Informal workers' average salary per hour is MXN 18.2 (Mexican pesos), which is 58% lower than formal workers' average hourly wage (MXN 43.2), and even lower than the minimum wage (MXN 21) in Tlaxcala.

Direct costs of training are not particularly high in Tlaxcala. For example, the tuition fees of training courses offered by ICATLAX is MXN 250, on average, which corresponds to 18% of the monthly minimum wage. However, as emphasised by stakeholders, there are significant indirect training costs, such as transportation and study materials, which can seriously discourage participation. Furthermore, informal workers face higher opportunity costs of training than formal workers. As most informal workers do not receive any type of support from their employers, foregone earnings may further discourage informal workers from participating in training. The opportunity cost associated with foregone earnings is even higher for those self-employed, who typically have only one source of income. Self-employed individuals account for 24% of Tlaxcalan informal workers, which is 4 percentage points higher than the national average (INEGI, 2019[14]).

Tlaxcala's offer of state-sponsored training for informal workers is limited. The two main programmes sponsored by the state are the Training Support for Employability Programme (ACE), managed by SNET (Diario Oficial, 2017[39]), and the training supplied by ICATLAX through the Supérate programme.

Until 2018, SNET used to offer three types of support through the ACE programme; however, since 2021 only one mixed training programme (*entrenamiento mixto*) has remained due to limited funding coming from Federal government. The mixed training programme offers a scholarship to support jobseekers' participation in mixed leaning (work and classroom based). Jobseekers enrol in a training course and are matched with employers, with whom they work for the duration of the programme. Participants receive a scholarship equivalent to one to three months' salary at the monthly minimum wage to cover tuition fees, as well as a stipend for transport expenses when needed. Employers may provide additional support to cover materials and health insurance. However, the mixed training programme only targets jobseekers,

who are a minority of the workforce (6% in 2020). Until 2018, SNET also offered training for self-employed individuals (*entenamiento para el autoempleo*) and training for the certification of competences (*entrenamiento para la certificación de compentencia*) (see Table 3.7). When these training courses ended, informal self-employed workers were left with significantly reduced training opportunities.

Table 3.7. Training Support for Employability Programme (ACE)

Modalities/ sub-programmes	Characteristics	Current state of the sub-programme
Mixed training	Practical courses oriented to jobseekers that aim to provide new skills to help adults upskill or reskill. These courses are requested by employers who require personnel trained in a specific occupation, activity or position, and who are willing to provide their facilities for the training. Location of training: Where employers determine. Duration: 1-3 months. Scholarship: 1-3 months' minimum wage salary during the time that participants attend the training. The main cost is covered by the employment office. Employers cover materials, insurance and the trainer.	Still in operation. Until 2019, the programme was covered jointly by the federal and state government. From 2020, the programme is fully covered by the state government.
Training for self-employment	Training courses that aimed to provide or strengthen the skills of jobseekers unable to be placed in a job who had the potential to develop their own productive activity. Location of training: Training centre, external institution. Duration: 1-2 months. Scholarship: 1 minimum wage salary during the time that participants attended training. The employment office covered the main cost, materials, insurance and trainers.	Cancelled in 2018. Programme used to be partially covered by the federal government and state government.
Training for the certification of competences	Training programme offered to jobseekers and workers. Co-ordinated jointly with employers that use competency standards and are willing to support with financial resources and participate in the evaluation process. Certification of beneficiaries to facilitate access to a job opening. Place for the training: Where employers determine. Duration: 1-3 months. Scholarship: 1 minimum wage salary during the time that participants attended training. The employment office covered the main cost, materials, insurance and trainers. The employment office also covered 50% of the assessment cost. The difference was covered by the employer.	Cancelled in 2018. Programme used to be partially covered by the federal government and state government

Source: SNE (2020[40]) Employment programs and services. National Employment Service. https://www.empleo.gob.mx/sne/programas-servicios-empleo.

The state also provides training to informal workers through the productive training component of the Supérate programme – the state's largest poverty alleviation programme (see Box 3.7). Supérate provides targeted support to adults living in extreme poverty, including job-related training. Beneficiaries of Supérate receive a fee waiver to enrol in selected training courses offered by ICATLAX (see Box 3.7). Only courses identified as developing skills in demand by local labour markets are eligible. Supérate also sponsors training for self-employed individuals and entrepreneurs (see Chapter 4), such as the "Transfer of assets to develop productive activity" initiative (see Box 3.7). However, since the Supérate programme only targets adults in extreme poverty, the majority of informal workers (77% according to ENIGH, 2018) are not eligible to participate in the sponsored training options.

Box 3.7. Relevant national examples: Strengthening support for informal workers to participate in training

Tlaxcala: Supérate, productive training component

Supérate is a conditional cash transfers programme aimed at reducing extreme poverty in Tlaxcala. The programme is divided into six components, one of which is the productive training component, which aims to improve the skills of members of selected households who actively participate in the labour market, and consequently increase their chances of receiving a higher income in the medium term. The training is provided to all members of a selected household aged 15-64. Beneficiaries have tuition fees and the materials required for the training covered, and receive transportation aid when needed.

The beneficiaries of Supérate can choose a training programme from a predefined list based on the regional and labour perspective of the UNDP, Supérate identifies the priority sectors for local development to create this list. Supérate relies on ICATLAX for the provision of the training, and identifies which ICATLAX courses most respond to the development of priority sectors. Training topics cover several areas such as “financial education: savings and microfinance strategies”, “training for formal employment in activities connected to strategic sectors for the state”, “micro-business entrepreneurship and “agricultural activities”.

Tlaxcala: Supérate, “Transfer of assets to develop productive activity” initiative

If beneficiaries of this initiative complete relevant training they receive funding or productive assets (e.g. livestock, seeds) according to their business or agricultural project idea. They are also accompanied throughout the development of the productive project. This support includes specific guidance to bolster beneficiaries’ productive project.

The objective of this component is to promote productive activities with the greatest potential to increase the level of income in each household. For some households, the productive activity supported by Supérate is the main source of income.

Source: SUPÉRATE (2021[41]), Qué es Supérate, https://www.Supératetlaxcala.mx/que-es-Supérate.

Recommendations for strengthening support for informal workers to participate in training

3.7 Allow informal workers to benefit from the training provided by SNET's ACE (mixed training) programme. To increase informal workers' participation in training, SNET could consider including informal workers (both employed and self-employed) among the beneficiaries of the ACE (mixed training) programme, which currently targets jobseekers only. While it would not be required to match workers with employers as part of the programme, workers could still be allowed to participate in the training provided in the run-up to the employer-trainee matching process. To help informal workers shoulder the ancillary costs of participation they should be eligible for the stipend for transportation expenses provided by SNET under the umbrella of the programme, in addition to a scholarship to cover tuition fees.

3.8 Support informal workers' participation in training sponsored by Supérate. Tlaxcala should consider relaxing the income threshold for informal workers (both employed and self-employed) to participate in Supérate-sponsored training, which at present targets individuals in extreme poverty only. As a first step, Tlaxcala could extend Supérate's productive training component, which aims to support the development of labour market relevant skills (see Box 3.7), to informal workers. In order to effectively tailor the design of the training, Supérate, in co-operation with ICATLAX, could gather and analyse different sources of information (e.g. surveys, administrative data) to better understand informal workers' skills gaps. Following completion of the training, SNET should be encouraged to provide targeted career guidance services to support informal workers in transitioning to formal job opportunities.

Overview of recommendations

Policy directions	Recommendations	Responsible parties
Opportunity 1: Increasing adults' motivation to participate in remedial education		
Raising awareness of the importance of remedial education	3.1 Strengthen existing awareness-raising campaigns to promote the benefits of remedial education.	ITEA Municipal authorities Social partners (unions, chambers of commerce, etc.)
	3.2 Involve social partners in awareness-raising events to promote the benefits of remedial education.	ITEA Municipal authorities Social partners (unions, chambers of commerce, etc.)
Making remedial education more relevant for low-qualified adults	3.3 Establish partnerships to offer technical and practical training programmes to adults in remedial education.	ITEA ICATLAX CECATI
	3.4 Provide vocational and combined streams in upper secondary remedial education to help adults earn a formal VET qualification.	SEP Tlaxcala Open Schooling for Upper Secondary Education schools Upper secondary schools VET
Opportunity 2: Providing incentives for adults to participate in training that responds to labour market needs		
Strengthening career guidance to increase adults' participation in training that responds to labour market needs	3.5 Expand the information and guidance provided by SNET career guidance services	SNET ICATLAX CECATI
	3.6 Improve the training provided to employment advisors.	SNET ICATLAX

Policy directions	Recommendations	Responsible parties
Strengthening support for informal workers to participate in training	3.7 Allow informal workers to benefit from the training provided by SNET's ACE (mixed training) programme	SNET
	3.8 Support informal workers' participation in training sponsored by Supérate.	Supérate ICATLAX

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4 Using people's skills more effectively to raise productivity in Tlaxcala, Mexico

Skills use matters for fostering productivity gains in Tlaxcala. When skills are effectively put to use, workers, employers and the broader economy all benefit. Giving people opportunities to participate in the labour market and putting skills to effective use in workplaces improves individual well-being and strengthens economic growth. This chapter provides tailored policy recommendations for two opportunities regarding using people's skills more effectively to boost productivity: 1) fostering entrepreneurship and supporting small and medium-sized enterprises (SMEs); and 2) promoting the adoption of high-performance workplace practices (HPWP).

Introduction: The importance of the effective use of skills in Tlaxcala

Skills development policies will only achieve desired productivity gains if they are accompanied by simultaneous actions to boost the effective use of skills (OECD, 2019[1]). When skills are effectively put to use, workers, employers and the broader economy all benefit. Making use of people's skills both in the labour market and in workplaces has therefore been identified as one of the pillars of the OECD Skills Strategy Framework (OECD, 2019[1]).

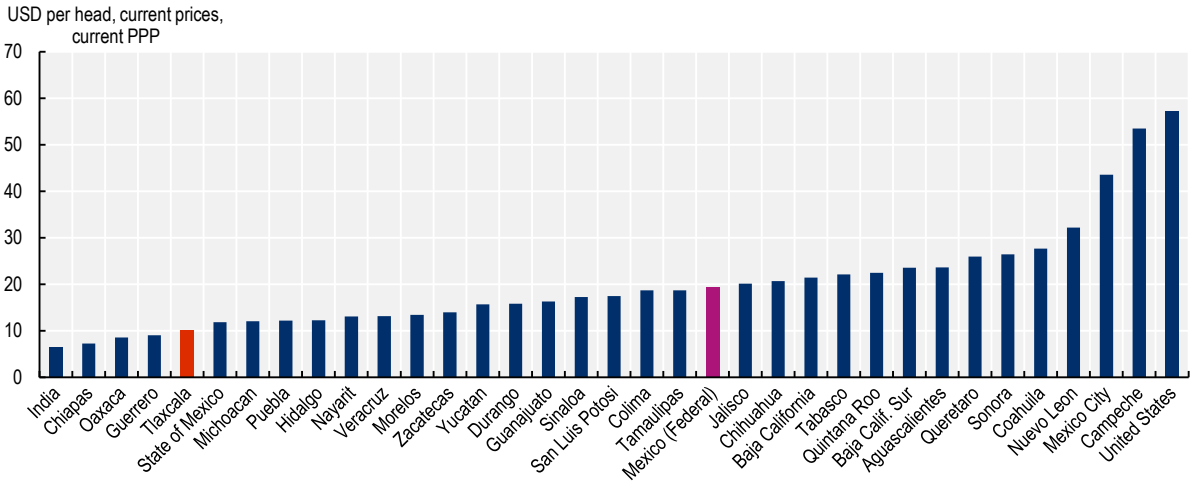
Giving people opportunities to participate in the labour market improves individual well-being and strengthens economic growth. Putting skills to effective use in workplaces through the implementation of innovative organisational and management practices builds on labour participation benefits and helps to improve business innovation, employee job satisfaction and performance, and productivity. Overall, effective skills use raises the return on the initial investment in the development of skills, and limits the depreciation and obsolescence of acquired but unused skills (OECD, 2019[1]).

Skills use matters for fostering productivity gains in Mexico, especially in the context of demographic changes compounded by the effects of the COVID-19 pandemic and the renegotiated United States-Mexico-Canada Agreement (USMCA). Mexico's old-age dependency ratio is set to increase from 9.8 in 2015 to 29.2 in 2050 (meaning that there will be almost 30 individuals aged 65 and over for every 100 persons of working age) (OECD, 2019[2]). The projected decline in the working-age population will likely decrease Mexico's employment levels, negatively affecting labour utilisation and making productivity an even more important driver of economic growth. Mexico's gross domestic product (GDP) contracted by 9.2% in 2020 due to the COVID-19 pandemic (OECD, 2020[3]). Sustained productivity will be key to help Mexico meet USMCA requirements. For example, the agreement establishes that between 40 and 45% of auto content must be manufactured by workers earning at least USD 16 per hour. Therefore, Mexican companies will need sustained productivity gains to reach this threshold and take advantage of the agreement. In this context, the effective use of skills could play an important role in aiding Mexico achieve productivity gains and restore its economic growth to pre-pandemic levels.

As with Mexico as a whole, Tlaxcala faces some significant challenges. Tlaxcala's GDP per capita growth averaged just above 0% between 2003 and 2013, placing the state among the lowest at the national level in terms of GDP per capita (see Figure 4.1). Tlaxcala also faces challenges in fostering a dynamic domestic economy, despite geographical and infrastructural advantages, which is reflected in low female labour force participation and high rates of informality.

Figure 4.1. Tlaxcala's GDP per capita is among the lowest in Mexico

Regional GDP per capita, thousands of PPP-adjusted USD, 2016



Source: OECD (2019[2]), *OECD Economic Survey Mexico 2019*, https://doi.org/10.1787/a536d00e-en.

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Evidence suggests that Tlaxcala's business environment could be improved. On the National Index of Science, Technology and Innovation (Índice Nacional de Ciencia, Tecnología e Innovación), Tlaxcala ranked 23 out of 32 Mexican states. However, this near-average ranking hides discrepancies within the state: while cities in Tlaxcala with more than 1 million inhabitants were categorised as having medium to high economic competitivity, cities with fewer than 1 million inhabitants were categorised as having below average economic competitivity. The state's population is largely concentrated in urban environments (more than 60%).

Similarly, the World Bank's Doing Business in Mexico 2016 study ranked Tlaxcala in the lower half of Mexican states in terms of ease of setting up and running a business. Tlaxcala ranked last among states in terms of notaries per capita, meaning that it can be difficult to get legal documents authorised. This adds to the cumbersome processes of procuring construction permits or registering property, which are also cited as issues of their own. These challenges make the formalisation process too expensive for Tlaxcala's many SMEs and discourage entrepreneurship.

To foster entrepreneurship, improve the business environment and achieve productivity growth, Tlaxcala will need to take full advantage of its citizens' skills. This chapter presents two opportunities for mobilising Tlaxcala's pool of skills and cultivating a more dynamic, business-friendly economy: 1) fostering entrepreneurship and supporting SMEs, with a focus on female entrepreneurs; and 2) promoting the adoption of high-performance workplace practices (HPWP), including by developing managers' skills.

The chapter starts by providing an assessment of the state's labour productivity performance. Regarding the two abovementioned opportunities, available national and international data are analysed, key actors are mapped, relevant national and international policies and practices are evaluated, and tailored policy recommendations are proposed.

Overview and performance

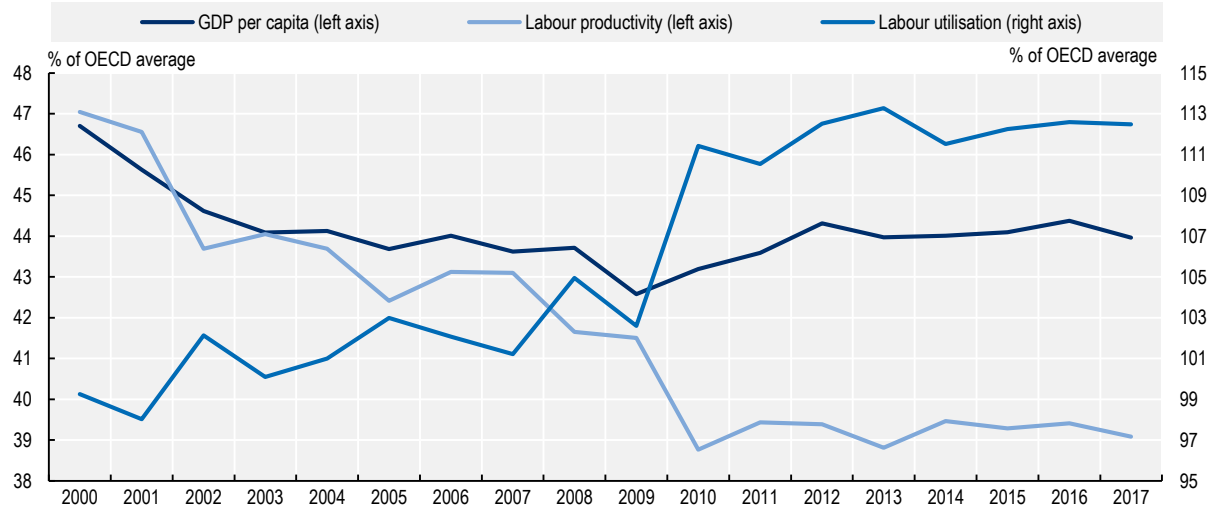
Labour productivity in Tlaxcala

When examining productivity in Tlaxcala, and Mexico as a whole, the effects of the 1982 financial crisis can still be felt. Although annual growth in GDP per capita has brought Mexico towards the OECD average, the growth rate itself has not exceeded 2% since the 1982 crisis. Beneath the economy's lacklustre growth lies one dominant issue: poor productivity.

The productivity gap between Mexico and OECD countries has widened since the early 2000s. In contrast, labour utilisation has increased by more than 10% in the same period. The recent growth in GDP per capita is thus explained by an expanding workforce rather than increases in the contribution of each worker (see Figure 4.2). Mexico's ageing population, however, means that the once easy option of expanding the labour force to boost GDP is no longer available. This further highlights the need to increase productivity to grow the economy.

Figure 4.2. Productivity in Mexico is lagging behind other OECD countries

GDP per capita, labour productivity and labour utilisation, 2000-2017



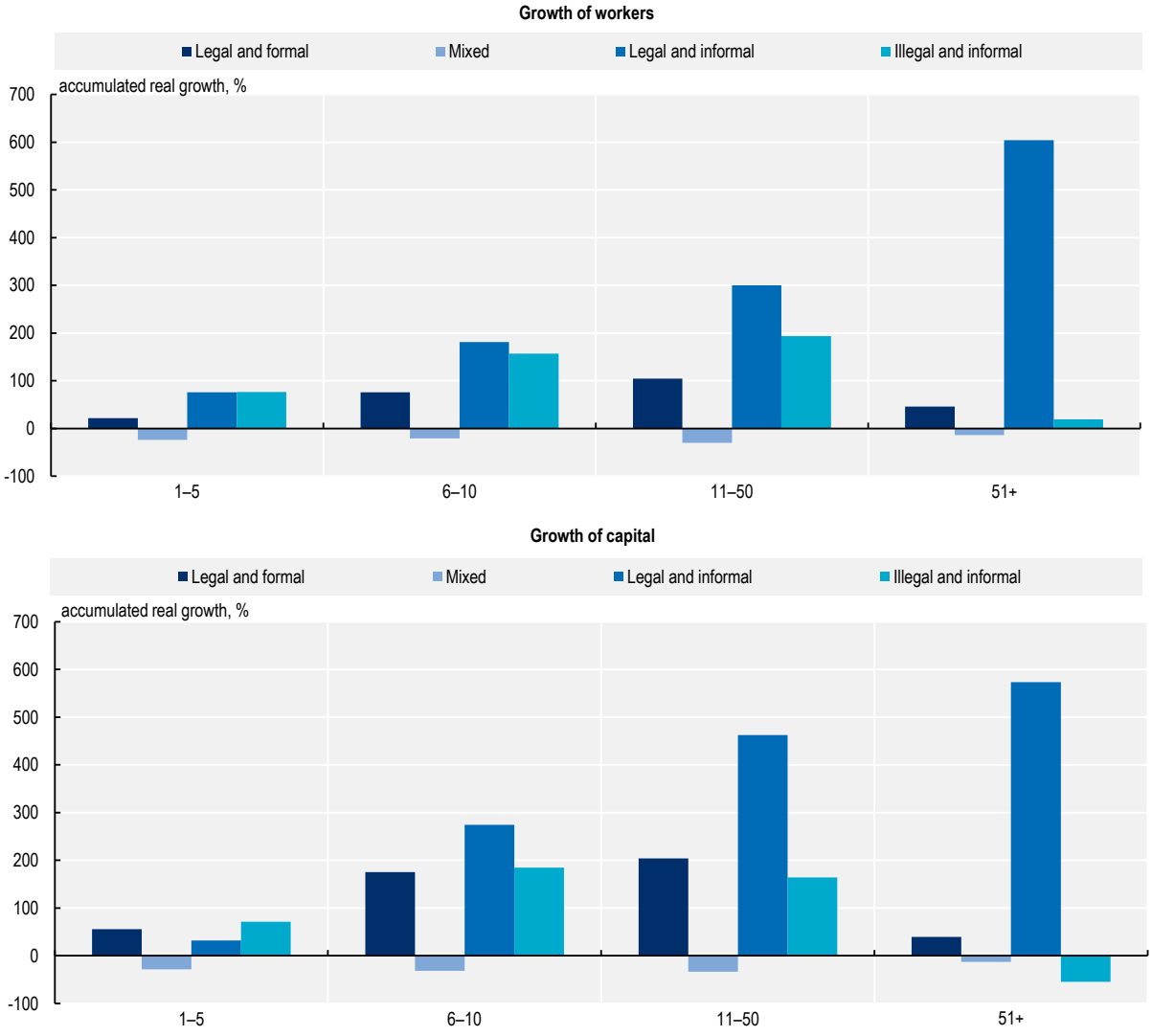
Note: GDP per capita and labour productivity relative to the OECD average in constant PPP-adjusted USD terms (left axis). Labour productivity is GDP per hour worked. Labour utilisation is hours worked per capita (right axis).
Source: OECD (2019[2]), *OECD Economic Survey Mexico 2019*, https://doi.org/10.1787/a536d00e-en.

StatLink https://stat.link/e5ir2z

Total factor productivity (a measure that isolates economic efficiency from input growth) has performed similarly poorly since 2009, dampening growth by -0.4% annually (OECD, 2019[2]). This contrasts with the appearance of recent growth in both the number of workers and the capital stock shown in Figure 4.3. Across firms of various sizes and levels of formality (whether firms pay salaries and observe labour and taxation laws), both the stock of capital and number of workers have tended to increase. The fact that GDP per capita only grew incrementally in light of these increases further highlights that the shortcoming for the Mexican economy is firms' productivity.

Figure 4.3. While productivity in Mexico falls, firms continue expanding their capacity

Growth of workers and capital, by firm size (no. of workers) and type, 1998-2013



Note: "Legal and formal" firms employ only legal, salaried workers. "Mixed" firms employ some legal, salaried workers and some non-salaried, informal workers. "Legal and informal" firms employ non-salaried, informal workers. "Illegal and informal" firms hire illegal salaried workers.
Source: OECD (2019[2]), *OECD Economic Survey Mexico 2019*, https://doi.org/10.1787/a536d00e-en.

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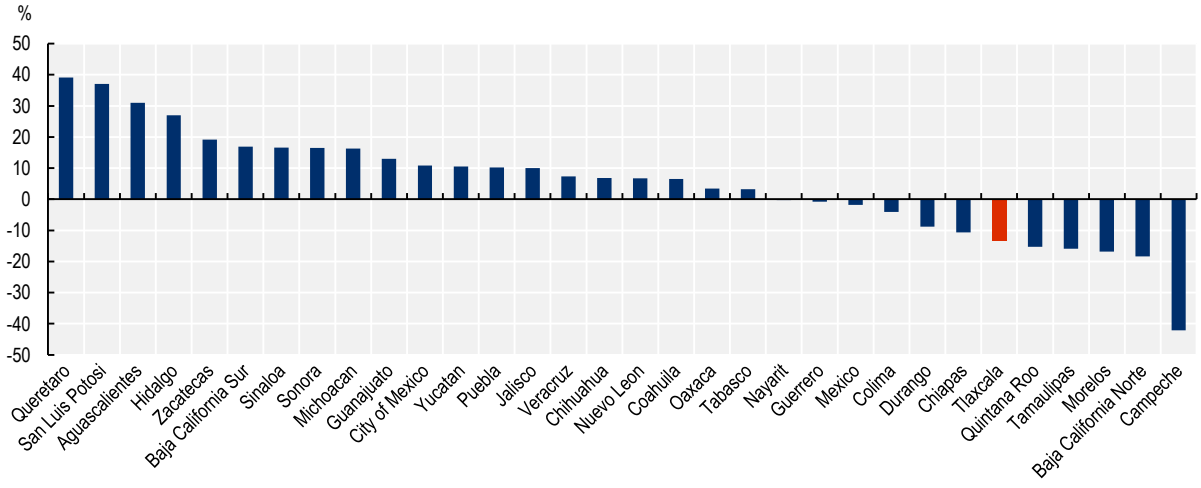
The productivity trends in Mexico as a whole can also be seen in Tlaxcala. While in some states, such as Querétaro, Potosí and Aguascalientes, productivity rose by roughly 2% per year between 2003 and 2018, Tlaxcala's productivity growth as a whole was among the lowest in Mexico, contracting 1% annually (Figure 4.4). Tlaxcala also had one of the lowest gross value added per worker in Mexico, a further attestation to the state's low productivity.

Figure 4.4. Tlaxcala has one of the lowest productivity growth rates in all of Mexico

Change in GDP per worker (%), 2003-2018



Source: OECD (2018[4]), *Regions and Cities at a Glance - Mexico*, https://www.oecd.org/regional/MEXICO-Regions-and-Cities-2018.pdf; OECD (2017[5]), *Entrepreneurship at a Glance 2017*, https://doi.org/10.1787/entrepreneur_aag-2017-en.

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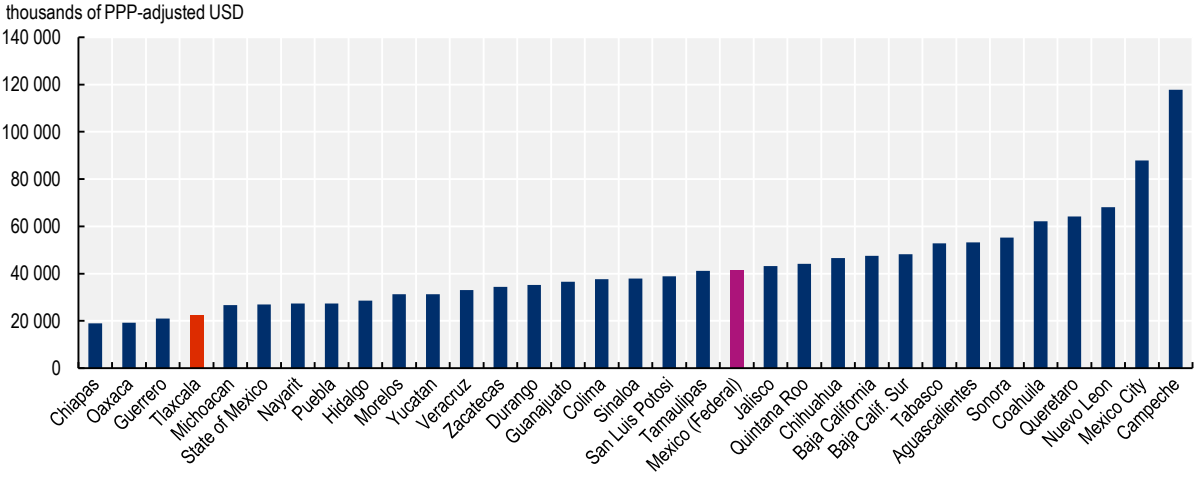
Tlaxcala's low productivity growth has various consequences. Low labour productivity implies little marginal return on labour for firms, with per worker production a particular weakness. The compounded annual growth rate of gross value added from 2010 to 2015 was 2.7%, placing Tlaxcala in the lower half of Mexican states (Moody's Analytics, 2021[6]). This means that firms in Tlaxcala increase the value along the supply chain only marginally. Manufacturing accounted for 29% of gross value added in 2012 (OECD, 2017[7]). Tlaxcala has one of the lowest values in the country of gross value added per worker (a measure of productivity and the development of value chains).

Figure 4.5. Tlaxcala's workers fail to add large value chains

Regional gross value added per worker, 2016 or latest available year



Source: OECD (2019[2]), *OECD Economic Survey Mexico 2019*, https://doi.org/10.1787/a536d00e-en.

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Informality (failing to register business activities with relevant authorities) and illegality (non-compliance with business regulations and/or engaging in criminal activities) are dominant in Tlaxcala's economy due to factors that hinder firms' productivity and force them to cut costs. The costs associated with starting a business in Tlaxcala are higher than in many other Mexican states.

The World Bank found Tlaxcala to be one of most difficult states in Mexico for conducting business due to poor access to financial services, inadequate physical communication routes, and the limited use of technology and communication (World Bank, 2016[8]). Most challenging to businesses, however, was the difficulty of enforcing contracts, which were found to be the most difficult to enforce in Mexico: in 2018, only 58.1% of contracts in Tlaxcala were completed compared to a national average of above 70%. Regarding commercial disputes, in the states of Campeche and Guanajuato these required an average of 160 and 178 days, respectively, to settle, whereas similar disputes averaged 455 days in Tlaxcala. In terms of court cases, other states delegate proceedings to one specialised court, whereas Tlaxcala requires two courts to simultaneously hear the same case. A process that takes two or three months in other states can take ten months in Tlaxcala (World Bank, 2016[8]).

Low economic complexity may also be a factor in Tlaxcala's productivity struggles. Tlaxcala does not house the dynamic export industries of some northern Mexican states, instead producing for the domestic market. In a study of Chiapas, another non-export-oriented Mexican state, low economic complexity entailed little economic capacity, low private investment and low productivity, as potential returns were minimal. Given that retail trade and wholesale trade accounted for 56% of Tlaxcala's GDP in 2018 (41% and 15% respectively), low economic complexity could also be an issue deterring private investment, which could be exacerbating existing issues in access to financial services (INEGI, 2021[9]).

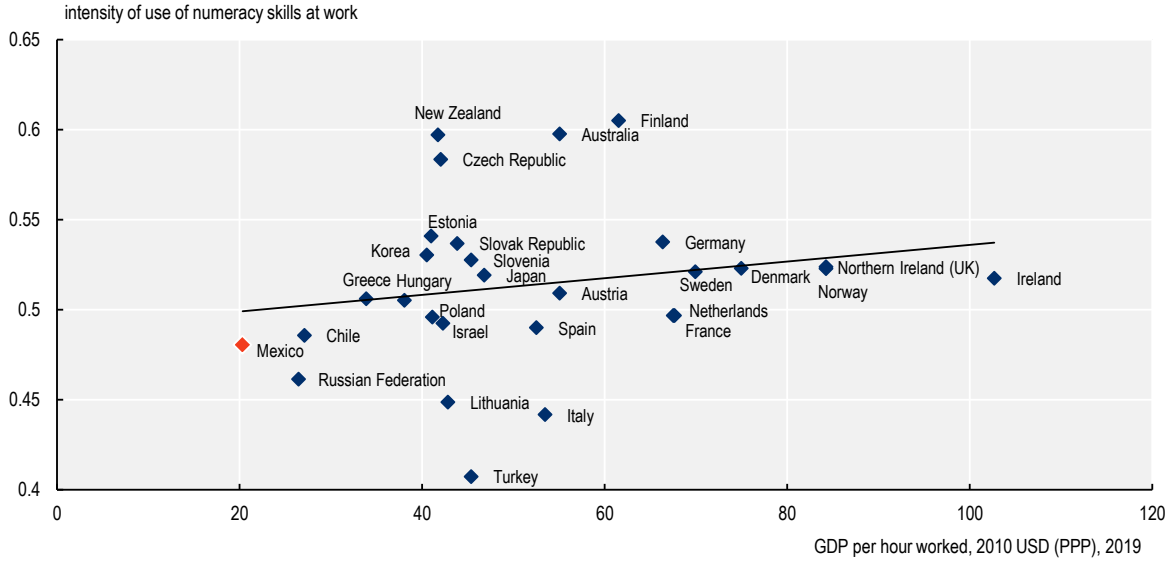
Despite these challenges, Tlaxcala has immense potential. In 2013, it was Mexico's top performer in terms of paved roads per 100 square kilometres (41.2 kilometres paved). This is important as infrastructure is vital to modern value chains, and Tlaxcala could benefit from a strong foundation in this regard (Hausmann, Espinoza and Santos, 2015[10]). The Rapid Business Opening System (El Sistema de Apertura Rápida de Empresas, SARE) has aimed to raise productivity in Tlaxcala, for example through simplifying the municipal process of licensing to start a business (directly addressing one of the state's main problems). Although various SARE projects have run their two-year course, the momentum from such projects should be continued. Prior to SARE, between 2014 and 2016 there was only one state implemented reform, which addressed the difficulties in obtaining construction permits. The state should take note from SARE reforms and continue striving to address endemic issues.

Skills use and productivity in Tlaxcala

There is evidence that effective skills use is one of the key drivers of productivity gains. Results from the OECD Survey of Adult Skills, a product of the Programme for the International Assessment of Adult Competencies (PIAAC), demonstrate a strong link between the effective use of skills and productivity. Figure 4.6 shows that the more intensively workers use their numeracy skills at work, the higher the GDP per hour worked they produce. The same positive relationship can be observed between productivity and the use of reading skills at work (OECD, 2020[11]; OECD, 2019[12]; OECD, 2020[13]).

Figure 4.6. There is a positive correlation between skills use and productivity

Correlation between productivity and skills use, PIAAC participating countries



Source: Calculations based on OECD (2021[14]), *Survey of Adults Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/; OECD (2021[15]), *GDP per hour worked (indicator)*, https://doi.org/10.1787/1439e590-en.

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Tlaxcala is currently foregoing significant productivity gains by not making full use of the skills of its population. First, women are overburdened by unpaid housework and there is low female labour force participation, which means that there is significant untapped potential in Tlaxcala's female pool of skills. While many activities that females engage in within the household could be scaled into business opportunities, Tlaxcala's prospective female entrepreneurs face barriers related to lack of experience and confidence, and little leveraging power when seeking financing.

Second, while SMEs dominate Tlaxcala's economy and employ the majority of Tlaxcala's talent, they are not adequately supported. Insufficient financing and high bureaucratic burdens, as well as weak support institutions and institutional frameworks, are barriers to the development and modernisation of Tlaxcalan SMEs.

Finally, Tlaxcalan businesses, especially SMEs, could better organise their workplaces to use the skills of their employees more effectively. The uptake of HPWP and innovative organisational and management practices that positively affect the performance of employees and businesses lags behind the OECD average in Tlaxcala and in Mexico as a whole. Interviewed stakeholders further highlighted that a general culture of innovation and strong managerial skills, which could support the implementation of HPWP, are underdeveloped in Tlaxcala.

Opportunities to improve the use of skills in Tlaxcala

Based on the desk research of the OECD team, consultations with the Government of Tlaxcala and stakeholder interviews, the following opportunities for improving the use of skills in Tlaxcala have been identified:

1. Fostering entrepreneurship and supporting SMEs.
2. Promoting the adoption of high-performance workplace practices (HPWP).

Opportunity 1: Fostering entrepreneurship and supporting SMEs

Entrepreneurship is at the heart of Tlaxcala's economic activity. Micro, small and medium-sized enterprises (MSMEs) represent more than 99% of firms in Tlaxcala and employ nine out of ten workers. Entrepreneurship is an important driver of innovation, productivity and economic growth. It helps create jobs and boost local economic activity. By starting their own businesses, people are able to use their skills and fulfil their potential in ways that might not be possible through traditional employment. For these reasons, fostering entrepreneurship and supporting SMEs should be at the centre of Tlaxcala's development strategy.

Tlaxcala should take advantage of the benefits offered by entrepreneurship activities and foster a dynamic entrepreneurial environment by:

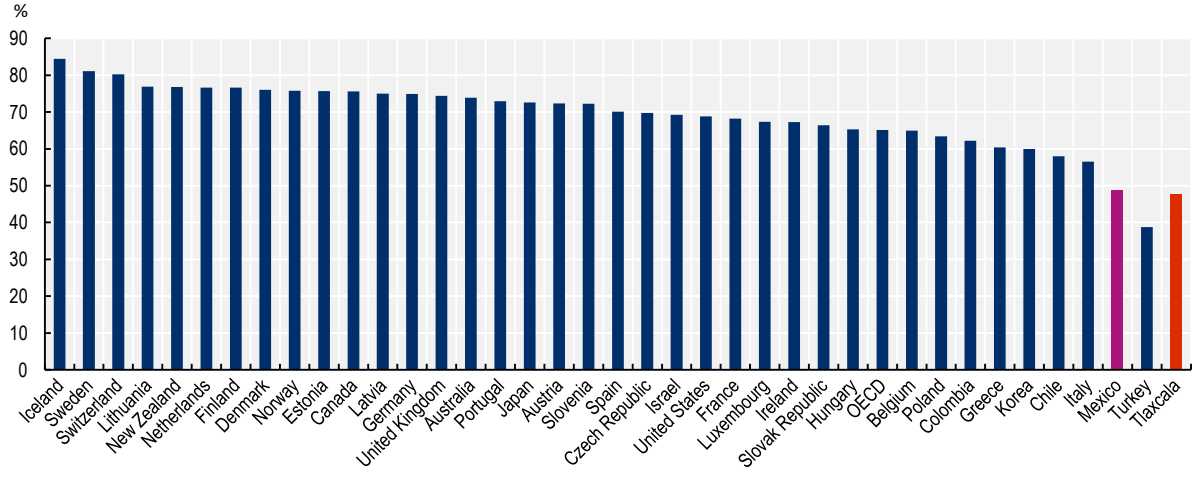
- Supporting female entrepreneurship.
- Enabling the full utilisation of skills through strengthening support to SMEs.

Supporting female entrepreneurship

Despite a continual rise throughout the last decade, female labour force participation in Mexico remains below the OECD average of 64% (see Figure 1.4.). Among women aged 20 to 64, 47% are active in the labour force, compared to 82% of their male counterparts. Women account for 42% of Tlaxcala's labour force, or 44 464 female employees compared to 61 471 male.

Figure 4.7. Women's skills could contribute more to Tlaxcala's local economy and productivity

Female labour force participation rate, 2019



Source: OECD (2021[16]), *Labour force participation rate (indicator)*, https://data.oecd.org/emp/labour-force-participation-rate.htm; INEGI (2020[17]), *Methodological scope of the national occupation and employment survey: ENOEN*, https://www.inegi.org.mx/contenidos/programas/enoe/15ymas/doc/enoe_n_nota_tecnica_0820.pdf.

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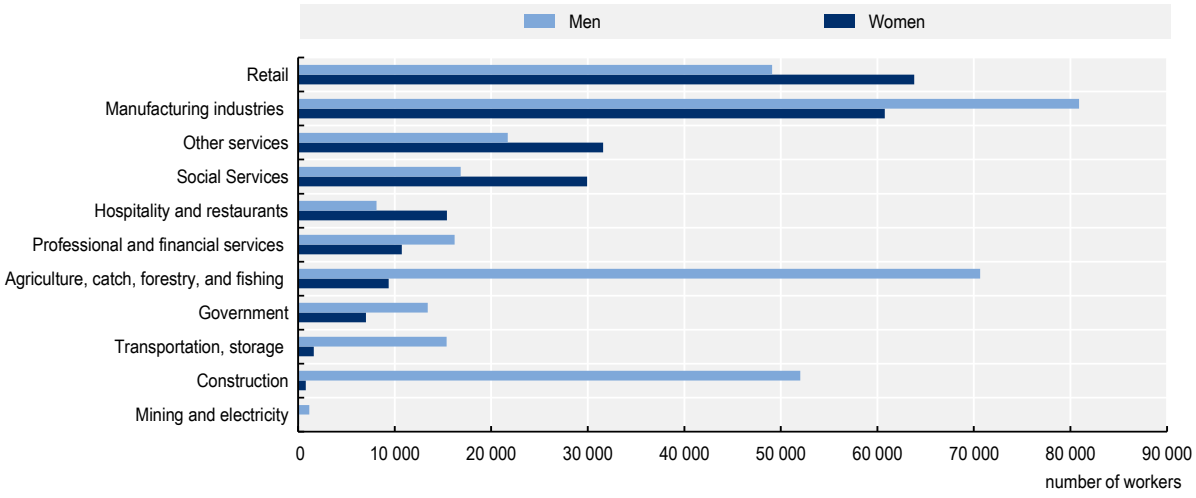
As shown in Figure 4.8, female workers are likely to work in Tlaxcala's key sectors of retail (27% of total female employment) or manufacturing industries (26%). After this, other services employ 13% and social services employ 12% of the women in Tlaxcala. Some sectors do not necessarily employ a large percentage of the total female workforce in Tlaxcala, but are highly reliant on female labour: health and social assistance services (83%), education (70%), food and beverage (55%) and financial services (52%) all have a greater share of female employees than male.

Figure 4.8. Females in Tlaxcala are spread across economic sectors

Total female and male employment in Tlaxcala, by economic sector



Source: INEGI (2021[9]), *Data*, https://en.www.inegi.org.mx/datos/.

StatLink https://stat.link/fmhdb7

A variety of factors can prevent or discourage women in Mexico from entering the labour force. The average gender wage gap is 16%, but is higher for educated workers (33%) and self-employed (44%). Lower marginal returns on education for females can be an important driver of low female labour participation.

Mexican law does not prohibit employers from asking about family status, nor does it commit firms to grant flexible working hours to parents. This could result in discriminatory hiring practices. The World Bank's Doing Business study in Mexico reported that simply "getting a job" is the most formidable obstacle to women's economic participation in Mexico (World Bank, 2016[8]).

Security is also a concern at the national level, with Mexico having one of the lowest percentages among OECD countries of women who report feeling safe walking home alone at night. However, Tlaxcala defies this trend and is among the safest states in Mexico, with one of the lowest crime rates (4.5 crimes per 1 000 inhabitants) in the country. This comparative security is one factor in favour of increased female labour force participation (OECD, 2017[18]; World Bank, 2019[19]).

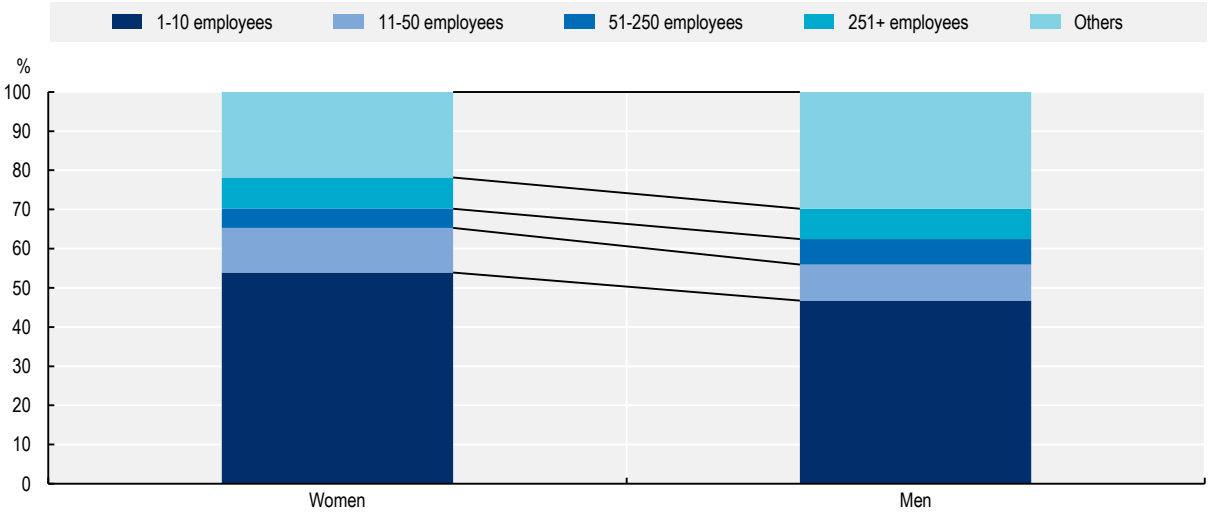
Women in Mexico undertake 75% of unpaid housework and childcare, and an average of four hours per day more domestic work than men (Outhand Consulting, 2019[20]). This inadvertently bars women from certain industries. In 2014, the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI) found that employees of firms in consumable goods, shipping, textiles, construction inputs, tourist services and plastics averaged over 50 hours of work a week, more often ranging between 60 and 70 hours. This may incentivise women to turn to either entrepreneurship or SMEs as they may be more conducive to flexible schedules than large firms. Women do find success in SMEs, and hold 45.6% of all jobs created by these firms nationally. Within SMEs, women tend to occupy specific roles such as working in human resources or business operations (Flores and Cuahquentzi, 2018[21]).

Figure 4.9 shows the distribution of female employment by firm size in Tlaxcala. Micro enterprises account for the dominant share of female employment (54% of total female employment is in enterprises with ten employees or fewer). The large share of women working in SMEs (78.1%) is further indicative of where jobs are available and accessible, and the ability of women in Tlaxcala to create opportunities through

entrepreneurship. However, employment in large firms is also important to women's economic welfare, accounting for 21% of total female employment. Jobs with large firms are most often in manufacturing sectors.

Figure 4.9. Female employment in Tlaxcala is concentrated in small firms

Share of jobs by firm size and gender, 2020



Note: The "other" category includes government and farming.
Source: INEGI (2021[9]), *Data*, https://en.www.inegi.org.mx/datos/.

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Given that women in Mexico are often burdened with housework, and thus potentially in need of flexible work schedules, entrepreneurship is an attractive option to advance female economic empowerment in the country. When uninvolved in the formal labour force, many women engage in a variety of activities domestically that could potentially be scaled into a business. Supporting female entrepreneurship is thus a feasible way for Tlaxcala to leverage the state's existing economic structure and encourage women to formally enter the labour force.

There is a high potential return to scaling up female-headed SMEs. Working women in Mexico allocate 70% of their earnings towards community and family development, while the share allocated by men is between 30% and 40% (Outhand Consulting, 2019[20]). Supporting female entrepreneurship in Mexico, therefore, also supports human development.

Women in Mexico face an array of challenges when trying to start their own business, including a lack of experience, confidence and opportunity. A lack of collateral and credit history also hamper female entrepreneurs in need of financing; however, given that female entrepreneurs in Mexico remunerate their debt 99% of the time this should not be an issue (Outhand Consulting, 2019[20]). For married women, houses, cars, or bank and credit accounts may be under the name of their husband for cultural reasons. Women in this situation are left with little leveraging power when seeking financing, which explains why women in Mexico are more likely to rely on immediate social networks for financing (Johns Hopkins University and Women Lead, 2019[22]). Only 16.9% of working-age women in Mexico use formal credit products.

The same cultural norms that assign women to domestic work also create expectations that work against women in entrepreneurship. In various surveys, women report feeling less capable of starting a business than men. This can stem from cultural norms, but also the fact that women are less likely to have previous experience in self-employment, smaller business networks and potentially few managerial skills (OECD, 2017[18]). As a result, only 11.2% of women in Mexico start their own business, which equates to 19% of entrepreneurs nationwide. This is below levels of other Latin American countries such as Peru, where 29% of women are involved in entrepreneurship (OECD, 2012[23]). Female entrepreneurs in Mexico are unmarried 53% of the time and are split evenly between the ages of 18-34 and 35-54.

Most states in Mexico have either a secretariat or decentralised agency dedicated to the advancement of gender equality. Tlaxcala is the only state where the Institute for Women (Instituto Estatal de la Mujer de Tlaxcala) is entirely dependent on the governor's office, meaning that its institutional capacity is limited by having to constantly seek approval from the governor's office. Furthermore, Tlaxcala has one of the lowest percentages among Mexican states of municipalities possessing their own office dedicated to women's affairs (40%).

Nevertheless, various programmes and initiatives are currently attempting to combat these institutional gaps and encourage female entrepreneurship. Supérate plays the largest role in this regard. Supérate is a government programme unique to the state of Tlaxcala that focuses on poverty alleviation. It surveys almost 600 000 people to identify beneficiaries of the two-year aid programme, and its work is extensive and uniquely far-reaching beyond urban Tlaxcala. Although the programme's mission statement centres on poverty alleviation, this includes support for female entrepreneurs.

Supérate's latest census relied on women as the contact point for 96% of households. Many of Supérate's potential beneficiaries have entrepreneurial ideas, 75% of which are related to commercial retail such as selling clothes or cosmetic services. Supérate distributes financial aid to its beneficiaries twice during the two-year programme, and provides education sessions. In the first session, a representative from the Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado de Tlaxcala, ICATLAX) teaches basic financing (e.g. keeping revenue streams separate, developing savings habits); sessions after this focus on resolving illiteracy. The education sessions are not mandatory to receive aid; however, the programme's impact could be strengthened by making financial aid conditional on the completion of the educational component. Making Supérate's financial aid conditional on participation in literacy and finance workshops could increase household learning and help female entrepreneurs to succeed.

Box 4.1. Relevant international examples: Encouraging female entrepreneurship

Developing skills for female entrepreneurs: The Women's Entrepreneurship Plan (*Plan Entrepreneuriat des femmes*) – France

The Women's Entrepreneurship Plan was launched in 2013 as a multi-ministry effort to increase the proportion of women in new business start-ups by 33% within four years. There are three main pillars of support: 1) improve information dissemination to women entrepreneurs regarding available public support; 2) provide individual support to entrepreneurs (e.g. mentoring, networking); 3) improve access to finance.

Two of the three pillars focus on skills development. The first pillar aims improve communication about entrepreneurship by strengthening entrepreneurship in the education system, supporting promotional events such as the Entrepreneurship Awareness Week and the launch of a new website which provides information and links to available support programmes (e.g. training, mentoring). The second pillar boosts individual support for women entrepreneurs, especially those in rural France, with the creation of 14 regional support networks that provide mentoring to women entrepreneurs.

The third pillar involves building a partnership with the Deposits and Consignments Fund (Caisse des Dépots et Consignations), two banks (BPCE and BNP Paribas) and financial networks (France Active and Initiative France), which organise breakfast meetings and networking events for entrepreneurs and financial institutions. The programme has succeeded in doubling the number of promotional events and has achieved increased assistance and job creation for women in France. A key to the programme's success is its integrated approach that provides tools for entrepreneurs at all stages (pre-start-up, start-up, and business development).

Source: Bpifrance Création (2021[24]), *They (women) do business (Elles entreprennent)*, https://bpifrance-creation.fr/elles-entreprennent.

Empowerment beyond financing (Pro Mujer – Mexico)

Pro Mujer is a microfinance non-governmental organisation (NGO) founded in Bolivia, but now operating throughout Latin America. Launched in 1990, Pro Mujer seeks to empower women through financing, education and health. Pro Mujer Mexico began in 2001 in the state of Hidalgo, and now supports over 22 000 women in more than 41 communities throughout Mexico, particularly in Oaxaca, Puebla and Tlaxcala.

Pro Mujer has 26 branches in Mexico. The organisation exemplifies digitalised support. Its website is clear and informative, with numerous links to initiatives and registration. These links can also switch over to WhatsApp, which ensures that communication between potential clients and Pro Mujer staff can also take place on a familiar platform. The full outline of Pro Mujer's programmes are available on the website.

Pro Mujer demonstrates an encompassing scope, focusing on much more than micro-finance. The organisation works with women in Mexico on education and health issues. Educationally, Pro Mujer offers courses on self-empowerment, financial organisation, and other topics that translate into skills necessary for entering the workforce and/or starting a business. Regarding health, Pro Mujer has an entire business dedicated to improving health outcomes for Pro Mujer beneficiaries (Ami Cuidado).

Pro Mujer thus exemplifies not only the need for female-specific entrepreneurship initiatives, but also the need for a broad scope. Bankrolling is not the same as empowering female entrepreneurs. To ensure sustained success and formal economic integration, attention must be paid to the education and health of women.

Source: Pro Mujer (2021[25]), *Who are we (Quiénes somos)*, https://mexico.promujer.org/quienes-somos/.

Recommendations for supporting female entrepreneurship

4.1. Expand the oversight of Supérate and the frequency of its guidance through increased communication between programme officials and beneficiaries. Supérate funding must be accompanied by diligent oversight (it currently only meets with recipients twice over the course of two years). Supérate can accomplish this by working to increase points of contact with beneficiaries through digital means (e-mail, telephone, etc.). A more fluid dialogue between programme officials and beneficiaries could allow Supérate to provide guidance in areas such as healthy financial habits and business organisation throughout the course of the year, rather than only when aid funding is distributed.

4.2. Utilise the existing census to collect better information on entrepreneurism in Tlaxcala, and identify where obstacles for female entrepreneurs tend to arise. Supérate should leverage its extensive state census to gather more data specific to entrepreneurism. This would help construct a clearer image of entrepreneurship in Tlaxcala and better identify where entrepreneurs, and women in particular, face challenges. Information on how entrepreneurs allocate revenue, their financial organisation, and typical growth strategies, as well as more external factors such as the local density of financial institutions, the number of enterprises a house undertakes, and a household's distance from public transport stations and urban centre, would be helpful in identifying the impediments to female entrepreneurship and where future efforts should be directed.

4.3. Create industry-specific channels for communication to help female entrepreneurs create business networks and integrate with existing supply chains. With a better understanding of the distribution and development of female entrepreneurs across Tlaxcala, Supérate and the state government could take on a matchmaking role by creating channels for communication. Industry conferences or fairs for entrepreneurs would create a lasting outlet (physical and digital) for enterprises to communicate best practices and relevant aid opportunities, as well as assess industry challenges and construct business networks. Helping entrepreneurs congregate could also forge linkages between young businesses and existing supply chain actors.

Enabling the full utilisation of skills through strengthening support to SMEs

MSMEs are dominant in Tlaxcala's economy (see Table 4.1). Only 1 out of 1 000 businesses in Tlaxcala employ more than 250 employees, meaning that almost all of the state's businesses qualify as MSMEs. Based on the INEGI 2018 Economic Survey, SMEs account for 34% of the state's total employment. Micro enterprises play the largest role, accounting for 21% of total employment in Tlaxcala (INEGI, 2021[9]).

Table 4.1. Enterprises in Tlaxcala, by number of employees

Firm size	Firms	Employment	Share of total employment (%)
Micro (1-10 employees)	68 128	286 736	67.6%
Small (11-50 employees)	1 313	58 658	13.8%
Medium (51-250 employees)	205	33 627	7.9%
Large (251+ employees)	69	45 293	10.7%
Total	69 715	424 314	100%

Note: The number of firms corresponds to the "economic unit" reported in the Economic Census. Total employment comprises formal and informal jobs, and excludes job in government and farming.
Source: INEGI (2021[9]), *Data*, https://en.www.inegi.org.mx/datos/.

If Tlaxcala can remove certain barriers to SMEs that raise the costs of their doing business, such as ensuring affordable, formal financing and simplifying business registration processes, it could increase the productivity of SMEs and allow them to employ more workers formally. The success of existing SMEs could attract more entrepreneurs and mobilise underutilised human capital from within the state and from the states surrounding Tlaxcala.

Poor productivity and high failure rates of SMEs in Tlaxcala stand in the way of this goal. If the state wishes to bring more workers into the formal labour force, and thus better utilise its human capital, it must remove financial and bureaucratic barriers to SME growth. Through targeted reforms aimed specifically at alleviating administrative burdens, ensuring diverse sources of financing and facilitating the spread of knowledge on available opportunities, Tlaxcala can reduce the fixed costs associated with doing business and help keep SMEs afloat financially. Excessive financial overheads and poor awareness of available financing results in SMEs that minimise labour costs through either informality or under-employment. This translates into the minimal use of skills and can exacerbate poor productivity.

SMEs in Mexico tend to be significantly less productive than large firms. Considering that Tlaxcala had the lowest overall productivity growth among Mexican states between 2010 and 2016, its SMEs are likely subject to the national trend of poor productivity (OECD, 2018[4]). SMEs in Tlaxcala exhibit high failure rates. In a representative sample group of SMEs from Tlaxcala and Puebla, 45% failed in the first two years; the failure rate increased to 80% when extending the time period to five years (Paredes, Cruz de los Ángeles and Elías, 2019[26]).

Low productivity amongst SMEs deprives Tlaxcala's population of the ability to use their skills. Total unemployment in Tlaxcala was 4.1% in 2019, slightly above the national average of 3.7%. Unemployment in Tlaxcala among secondary school graduates, however, was 20% (Paredes, Cruz de los Ángeles and Elías, 2019[26]). Without a sufficiently high level of skills, people in Tlaxcala have trouble entering the labour force. This could also reflect the tendency of less-educated citizens to find more opportunities in the informal sector or entrepreneurship, whereas highly educated citizens with specialised skills find employment in the few established and productive firms.

Tlaxcala has taken a number of steps to facilitate the growth of SMEs. The state's partnership with the Secretariat for Economic Development (Secretaría de Desarrollo Económico, SEDECO) demonstrates the type of engagement that should be increased. SEDECO is a state government organisation that serves as the conduit between the Tlaxcala's government and local entrepreneurs. It targets entrepreneurs working in innovation and technology to "develop suppliers", i.e. to help co-ordinate integrating arrangements between entrepreneurs and larger companies with specific supply chain needs. SEDECO believes value can be added to Tlaxcala's economy by simply matching compatible businesses.

SEDECO also uses its federal funding to offer an array of services, such as subsidies and training, the latter in tandem with universities and higher education institutions. Training is intended to teach entrepreneurs how to formalise their business, register patents or intellectual property (if necessary), and search for further funding.

Through SEDECO, the Government of Tlaxcala signed the Entrepreneur Support Network (Red de Apoyo al Emprendedor), a co-ordinating agreement to develop more competitive SMEs. Located in four municipalities and comprised of seven institutions and organisations, the Entrepreneur Support Network offers programmes in business development and entrepreneur financing for SMEs. An example is the Innovation Stimulus Programme, which offers funding for SMEs and large enterprises engaged in scientific research and technological development (SEDECO, 2021[27]).

The Tlaxcala Youth Institute (Instituto Tlaxcalteca de la Juventud, ITJ), in conjunction with the Macro Fund for the Internal Development of Tlaxcala (Fondo Macro para el Desarrollo Integral de Tlaxcala, FOMTLAX), offers another example of an SME-targeted programme. Aimed specifically at entrepreneurs age 18 to 30, ITJ and FOMTLAX offer grants of up to MXN 40 000 (Mexican peso) (just below USD 2 000) to entrepreneurs. These grants cover up to 90% of project costs for young entrepreneurs and come with a 6% interest rate that must be paid within two years. Outside of its project with the ITJ, FOMTLAX focuses on established businesses and is a source of credit for economic actors.

Although the above arrangements are encouraging, many challenges remain in facilitating the growth of SMEs. Inadequate financial support is still a problem in Tlaxcala, with only half of enterprises accessing financial funding such as loans or access grants; the other half of enterprises are entirely self-financed. Although this means that enterprises do not accumulate debt, it also indicates that financial resources are too difficult to access. The most cited reason for not procuring external financing among Tlaxcala enterprises is the absence of sufficient guarantees or collateral (Government of Tlaxcala, 2017[28]). Demanding financial collateral for aid effectively bars most firms from receiving financing, and grants access only to the firms least in need. A limp financial system with high borrowing costs constrains young enterprises in need of financing. For the half of enterprises that access financial funding, the formal financial system is only the second most used source, clients and suppliers were more frequent sources of financing (Government of Tlaxcala, 2017[28]).

Compared to other Mexican states, Tlaxcala has comparatively few support institutions (Agora, 2021[29]), which partially explains the scarcity of project follow-up. The poor monitoring of programme implementation is an often cited concern among those involved in the growth of Tlaxcala's SMEs. While offering grants and educational opportunities for SMEs is positive, these resources are wasted when not accompanied by continual oversight and monitoring. Without these measures, public funds may be misused or directed at programmes that have relatively low impact.

Tlaxcala should consider expanding the scope of current SME business support programmes, which currently do not affect activities at the level of the workplace. Tlaxcala should provide further resources and/or mentoring and coaching specifically dedicated to supporting SMEs in adopting innovative workplace practices, such as HPWP (see Opportunity 2). There is a strong association between the adoption of HPWP and skills use (see Figure 4.10), and between higher skills use and higher productivity (see Figure 4.6), Given that Tlaxcalan SMEs could greatly benefit from productivity improvements, support for adopting HPWP and transforming workplaces into environments conducive to innovation should be considered. Box 4.2 provides an example of a Finnish business programme supporting workplace innovation in SMEs, as well as examples of improving managerial capacity and matchmaking SMEs with supportive intermediaries in Mexico and Denmark.

Box 4.2. Relevant national and international examples: Support measures for SMEs

Improving managerial capacity (Innovations for Poverty Action – Puebla, Mexico)

Innovations for Poverty Action (IPA**)** is a research and policy non-profit that works globally to alleviate poverty. IPA launched in Mexico in 2013, where it focused on the large role SMEs assume in both Mexico's business landscape (99.8% of all businesses were SMEs in Mexico at the time) and in employing Mexicans (SMEs account for 72.3% of total employment). In Puebla, 150 randomly selected SMEs were offered highly subsidised consulting and mentoring services for one year.

Of the 150 SMEs offered subsidised services, only 80 chose to proceed (the most cited reason for not participating was insufficient funds). However, the 80 SMEs that did partake in the consulting services saw significant boosts in productivity and were able to expand hiring. Productivity increased for SMEs in terms of sales, accounting for number of employees and asset stock. Hiring improved for SMEs within a five-year examination period. SMEs that received consulting services hired 5.7 more employees (57% growth relative to the control group) and increased wages paid by 72% (roughly USD 125)

Source: IPA (2021[30]), *Boosting Firms' Productivity in Mexico with Consulting Services*, https://www.poverty-action.org/study/impact-consulting-services-msmes-mexico.

Matchmaking for growth (Growth Houses – Denmark)

In 2007, the Danish government established five "Growth Houses" (GHs) to accelerate the growth of SMEs, regardless of their size or sector. As part of this programme, advisors assessed an SME's potential and provided a tailor-made growth plan. Based on advisors' conclusions, SMEs were put in touch with relevant public institutions, private firms and general investors that might be interested in accelerating their growth.

The GH services were free, while the services offered by the intermediaries were not. The GH programme succeeded in supporting more than 14 000 companies between 2007 and 2012. Employment, turnover and exports all grew for programme beneficiaries, relative to similar firms.

Source: OECD (2017[31]), Supporting SME Competitiveness in the Eastern Partner Countries: Strengthening SME Capabilities Through a Sustainable Market for Business Development Services in Belarus, https://www.oecd.org/eurasia/competitiveness-programme/eastern-partners/Peer_Review_Note_Business_Development_Services_Belarus.pdf.

Workplace innovation (Business Finland – Finland)

Business Finland is the Finnish government's organisation for innovation funding and trade, travel and investment promotion. Business Finland's 600 experts work in 40 offices globally and in 16 regional offices around Finland. Business support in the form of funding and expert services in a plethora of programmes has a clear separation between support programmes for start-ups and SMEs and programmes for large-scale enterprises and research organisations. The idea is that businesses will gain access to different and more services as businesses progress on their growth path according to their goals.

Source: OECD/ILO (2017[32]), *Better Use of Skills in the Workplace: Why It Matters for Productivity and Local Jobs*, https://dx.doi.org/10.1787/9789264281394-en; Business Finland (2021[33]), *Business Finland website*, https://www.businessfinland.fi/en/.

The final challenge regarding Tlaxcala's SMEs lies in the state's institutional framework. Due to various administrative burdens, doing business in Tlaxcala is not easy. A medium-sized firm (51-250 employees) needs on average 241 hours a year to prepare, file and pay taxes and social security contributions. Obtaining a VAT refund typically requires 42 weeks (OECD, 2019[2]). These times are among the longest in Mexico.

Within a sample of 366 SMEs in Tlaxcala, 58% reported that they do not issue their fiscal receipts for tax purposes (Paredes, Cruz de los Ángeles and Elías, 2019[26]). Costly and cumbersome processes encourage firms to avoid formal tax filing and hire informal, non-salaried workers. This explains Tlaxcala's high rate of informality (the fifth highest rate in the country) (OECD, 2013[34]). State wide, 66.7% of jobs suffer from low wages and/or poor labour conditions (Paredes, Cruz de los Ángeles and Elías, 2019[26]). Other costs associated with starting a business in Tlaxcala stem from the state's bureaucracy. Tlaxcala has the fewest notaries per capita, making any paperwork necessary to starting and registering a business difficult to accomplish. This may dissuade an informal enterprise or entrepreneur from formally entering the state's economy. Another deterrent to potential businesses in Tlaxcala is the difficulty of contract enforcement, in which Tlaxcala ranks last among all Mexican states. This leaves SMEs wary of their ability to protect their rights and property in court proceedings. Without a guarantee of completion of contracts, some may choose simply to avoid such formal proceedings. Inadequate contract enforcement also exacerbates issues regarding the costs of financial support. Low enforcement means that lenders must demand more collateral to cover their interests, ultimately excluding SMEs from credit services.

In a survey of 366 SMEs in Tlaxcala, 63% reported having at least one other income stream outside of their business to support themselves (Paredes, Cruz de los Ángeles and Elías, 2019[26]). While revenue remains insufficient to support median households, and entrepreneurs must simultaneously direct attention towards other revenue streams, SMEs will fail to specialise, invest and utilise Tlaxcala's human capital. Simultaneously, the share of self-employed females in Mexico who payroll employees has failed to rise since 2005, and is stuck between 2.2% and 2.3% (OECD, 2021[35]). This stagnation of female entrepreneurs payrolling employees highlights how the SME business environment benefits other, less marginalised actors. If women's progress is limited, the measures outlined above must be amplified in their accessibility. Low productivity leads to low profitability, hence the need for alternative income streams. Given that female entrepreneurship has stagnated for over a decade, the accessibility of aforementioned programmes (SEDECO, FOMTLAX) is a concern.

Recommendations for enabling the full utilisation of skills through strengthening support to SMEs

4.4. Broaden the scope of SEDECO's business support programmes to include SMEs from more sectors, and offer support for the development of managerial skills and HPWP. SEDECO should broaden the scope of its operations to include SMEs from more sectors, as its business support programmes are currently restricted to SMEs working in innovation and technology. The organisation's valuable financial and educational resources and its connections with higher education institutions could be leveraged to help develop SMEs across sectors. SEDECO should expand beyond its current support, which is focused on registering patents, formalising businesses, etc., to address managerial skills. In order to accomplish this, SEDECO could use its connections with educational institutions and past beneficiaries that have found success and connect them with current SMEs. In the same vein, coaching SMEs on proven HPWP could further address the current low productivity of Tlaxcala's SMEs (see Opportunity 2 for details).

4.5. Expand the geographic coverage of SEDECO to alleviate connectivity issues and extend SME support to rural or marginalised municipalities. SEDECO only has one physical presence (in the state's capital), and its entrepreneur support network reaches only four of the state's 60 municipalities. Establishing a greater physical presence throughout the state's municipalities, either permanently or through announced visits to existing municipal institutions, would help raise awareness of SEDECO's operations and help SMEs in poorly connected municipalities access support.

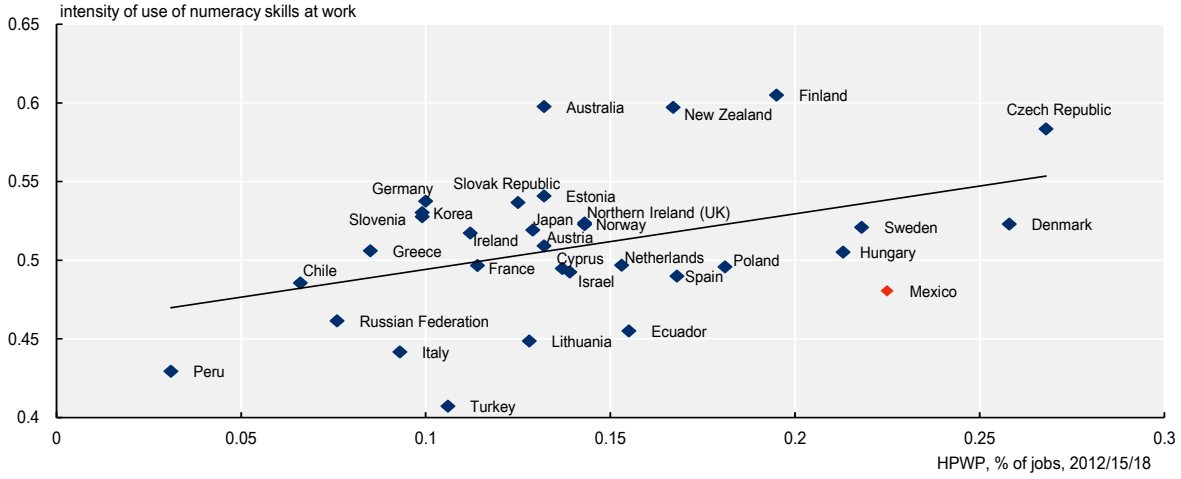
Opportunity 2: Promoting the adoption of high-performance workplace practices (HPWP)

Expanding the formal labour force pool by supporting female entrepreneurship and fostering the growth of SMEs holds great potential for strengthening the effective use of skills in Tlaxcala. At the same time, it is important to pay attention to how effectively Tlaxcalan firms are using the skills of their employees.

In many OECD countries, skills are not being used as effectively as they could be due to how workplaces are organised (OECD, 2019[12]; 2020[13]; 2020[11]). HPWP (*high-performance workplace practices*/*las prácticas de alto rendimiento en recursos humanos*) are key to the organisation of innovative workplaces in a way that is conducive to effective skills use. Although there is no consensus on the exact definition of HPWP in academic literature, they can be broadly defined as the collection of: 1) employee flexibility and autonomy at work; 2) teamwork and information sharing among colleagues; 3) on-the-job training and development; and 4) performance management practices, benefits and career progression options (OECD, 2020[13]; 2020[11]). There is evidence that adopting HPWP can drive the effective use of skills in workplaces and foster productivity and innovation. The latter two are crucial for helping Tlaxcala restore its economic growth to pre-pandemic levels. The OECD Survey of Adult Skills (PIAAC) shows that there is a strong link between the adoption of HPWP and the intensive use of skills in workplaces (Figure 4.10).

Figure 4.10. There is a positive correlation between skills use and the adoption of HPWP

Correlation between HPWP and skills use, PIAAC participating countries



Note: HPWP refer to planning one's own activities, organising one's own time on a daily basis, and having a large degree of flexibility to decide how to do one's work.

Source: Calculations based on OECD (2021[14]), *Survey of Adults Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/; OECD (2021[15]), *GDP per hour worked (indicator)*, https://doi.org/10.1787/1439e590-en.

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Tregaskis et al. (2013[36]) found that the implementation of HPWP is associated with sustained improvements in productivity and safety performance, based on their experiment conducted at a heavy engineering plant. Jensen and Vinding (2007[37]) demonstrated that manufacturing and service firms likely to adopt HPWP show higher probabilities of developing products/services new to the company, as well as higher probabilities of introducing products/services new to the market.

Tlaxcala should take advantage of the benefits of HPWP and promote their adoption among Tlaxcalan firms by:

- Raising awareness of the benefits of high-performance workplace practices.
- Fostering the effective implementation of high-performance workplace practices by managers.

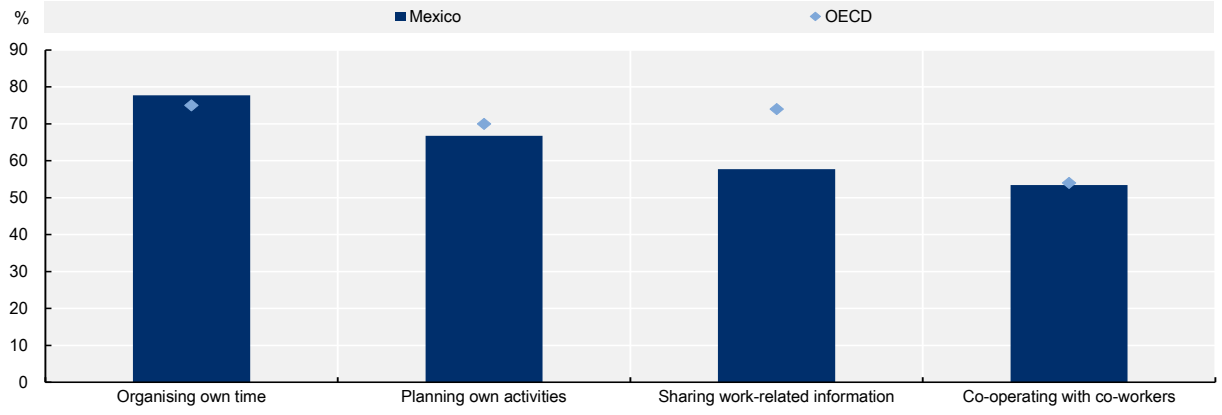
Raising awareness of the benefits of high-performance workplace practices

On policy makers' lists of skills priorities, the effective use of skills in the workplace is typically overshadowed by topics related to skills development. The relative lack of consideration given to using skills effectively in workplaces is driven by several factors. First, measures and practices impacting workplace organisation and the management of firms' human resources have been traditionally viewed as the exclusive responsibility of employers and businesses. Until recently, there has been little public intervention at the level of the workplace except in terms of employment protection, equality legislation, or health and safety. Public entities seeking to advise firms on human resource management policies, workplace relations, or the structure and design of work often face a credibility gap (OECD/ILO, 2017[32]). Second, the direct or indirect determinants of skills use in the workplace are not always clear, and policy makers might not be aware of the levers that can be used to influence skills use (OECD/ILO, 2017[32]).

A lack of awareness regarding innovative workplace solutions for more effective skills use, such as HPWP, can be reflected in the low uptake of such solutions (OECD/ILO, 2017[32]). In Mexico, the share of workers who report frequently (at least once a week, but not every day) engaging in certain HPWP, such as planning their own activities or sharing work-related information with their colleagues, is below the OECD average (Figure 4.11).

Figure 4.11. Uptake of certain HPWP in Mexico is lower than the OECD average

Percentage of workers who report engaging in particular organisational and management practices at least once a week, but not every day



Source: Calculations based on OECD (2021[14]), *Survey of Adults Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.

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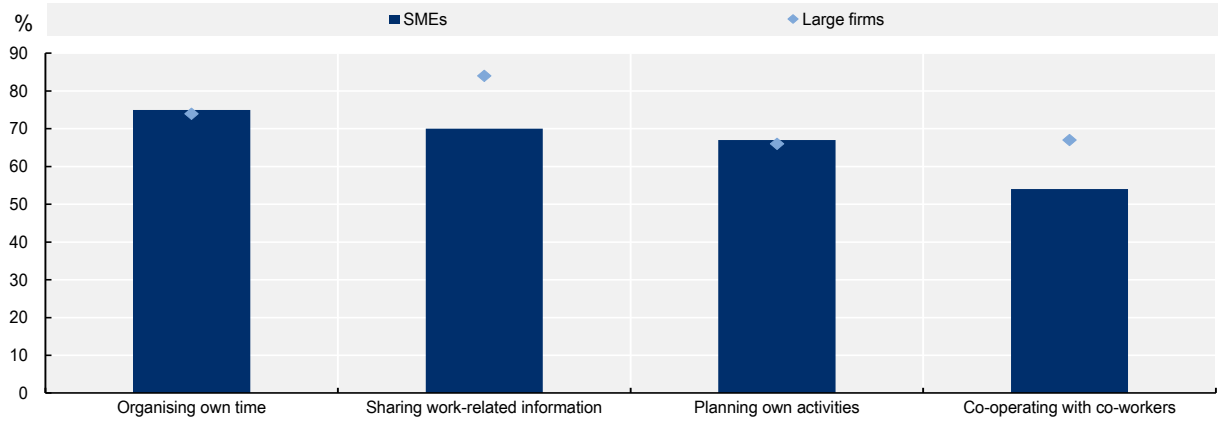
Examining the uptake of HPWP by firm size in Mexico reveals lower adoption rates in SMEs than in large firms (Figure 4.12). Although workers in Mexican SMEs tend to be significantly less engaged in practices related to sharing work-related information and co-operation with co-workers, the share of SME workers reporting frequently organising their own time and planning their own activities is roughly the same as in large firms (Figure 4.12).

Figure 4.12. Large firms in Mexico perform better in HPWP adoption than SMEs

Percentage of workers who report engaging in particular organisational and management practices at least once a week, but not every day



Source: Calculations based on OECD (2021[14]), *Survey of Adults Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.

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Interviewed stakeholders commented that there is limited awareness of HPWP and their benefits among employers and policy makers in Tlaxcala, which is connected to the lack of a more general "culture of innovation". As mentioned in the Introduction section, according to the latest National Index of Science, Technology and Innovation, which assesses the "state of innovation" in Mexico, Tlaxcala ranked 23 out of the 32 Mexican states (Centre for Analysis in Research and Innovation, 2018[38]). On one of the index's twelve pillars, "innovative companies", Tlaxcala ranked 28, indicating that Tlaxcalan companies were the fifth least innovative in Mexico (Centre for Analysis in Research and Innovation, 2018[38]).

The Tlaxcalacan government has recognised the challenges it faces regarding lagging business innovation and the state's ability to encourage the take-up of innovative approaches in firms. Tlaxcala's flagship strategy for economic and social development, the State Development Plan 2017-2021 (Plan Estatal de Desarrollo 2017-2021, PED), includes a sub-chapter on "Competitiveness and promotion of entrepreneurship" (*competitividad y fomento al emprendedurismo*), where innovation is identified as one of Tlaxcala's key weaknesses. In order to address this challenge, the PED (Objective 1.5 of the plan) pledges to promote scientific and technological advances, innovation, and the development of talent within firms (Government of Tlaxcala, 2017[28]). Although the concrete steps under Objective 1.5 foresee the establishment of an institutional framework for technological development and innovation, and the development of tech firm incubators (Government of Tlaxcala, 2017[28]), there is no reference to HPWP and their associated benefits.

Given the links between HPWP adoption and gains in innovation, productivity and effective skills use in the workplace (see Introduction section), HPWP present a source of untapped potential for fostering business innovation in Tlaxcala, and should be included in Tlaxcala's strategies for developing and using

skills. In order to encourage the more intensive adoption of HPWP and address the lagging innovation in Tlaxcalan firms, Tlaxcala should also take further steps to make the benefits of HPWP widely known.

First, Tlaxcala could raise awareness about the concept of HPWP and its associated benefits through targeted information campaigns. Tlaxcala's government and stakeholders could promote the benefits of HPWP through existing websites or social media channels. To motivate employers, managers and entrepreneurs to adopt these practices, information about HPWP should be concrete, applicable and relatable, and the outlined benefits should be tangible and clear (OECD, 2019[12]). Public employment services (PES) and employer/employee associations that interact with representatives of firms on a daily basis are well positioned to actively support Tlaxcala's HPWP information dissemination strategies.

Second, Tlaxcala could consider launching public recognition awards, which are incentive tools used by public actors to reward winners (e.g. firms) of a public competition on the basis of outstanding performance in a specific area (e.g. innovation). In the United States, the number of such awards supported by federal agencies and departments has been sharply rising since 2010 (Liotard and Revest, 2019[39]). Liotard and Revest (2019[39]) argue that awards can help spur innovative approaches among firms through *ex ante* and *ex post* channels. *Ex ante*, the competitive dynamics and related benefits of awards (e.g. funding, publicity, recognition and prestige) exert a strong incentive effect on firms to implement innovative strategies that can help them become the recipients of the final award. *Ex post*, the awards can produce favourable spillovers, inspire other companies to innovate by demonstrating the concrete benefits of successfully implemented innovative practices, and support participating and/or winning firms in raising private capital (Liotard and Revest, 2019[39]). Box 4.3 provides examples of contests and innovation prizes awarded to firms in Mexico and the United States.

Box 4.3. Relevant national and international examples: Innovation public recognition awards in Mexico and the United States

Mexico's National Award for Technology and Innovation

Every year since 2000, Mexico's federal government, through the Secretariat of Economy (Secretaría de Economía, SE) and the National Council of Science and Technology (Consejo Nacional de Ciencia y Tecnología, CONACyT), awards the National Award for Technology and Innovation prize (Premio Nacional de Tecnología e Innovación, PNTI) to selected Mexican companies.

The goal of the PNTI is to demonstrate to society the importance of innovation for achieving competitive advantage in the market, and the impact that investment in science and technology can have on economic development and societal welfare.

In an annual call for applications, companies can submit their applications for free, and experts can apply to serve as judges on the panel. There are four categories in which companies can compete for the most innovative approach: 1) product and service; 2) process; 3) business model; and 4) prototype and technology management. Among other criteria, the expert panel evaluates companies' investment and research and development (R&D) efforts related to human resource improvement.

The SE publishes the names and short descriptions of companies' innovative approaches on its website in a dedicated blog post. The winners are also featured across PNTI's social media accounts, such as Facebook and Twitter.

United States – Challenge.gov

The Challenge.gov website is the official hub for prize competitions and challenges organised by US federal government agencies, and is part of the Challenge.gov programme. The website is run by the US General Services Administration.

Challenge.gov works on the basis of crowdsourcing. US government agencies can use the website to post, at no cost, prize competitions that seek to advance the goals related to their missions. All companies and members of the public can participate in the publicised contests. For example, in 2019 the US Small Business Administration offered a total of USD 3 million in cash prizes under the Growth Accelerator Fund Competition to support and recognise the most innovative accelerators in the United States that help high-tech entrepreneurs apply for government R&D funding. Applications consisted of a short, 12-slide presentation and an optional two-minute video. The website clearly outlined the eligibility rules for participating in the competition, accompanied by application instructions.

The Challenge.gov website also provides a rich repository of best practices and case studies on running public sector prize competitions, and features insights from prize experts across the US government.

Source: Government of Mexico (2018[40]), *Mexican companies receive the National Technology and Innovation Award (PNTI)*, https://www.gob.mx/se/articulos/reciben-empresas-mexicanas-el-premio-nacional-de-tecnologia-e-innovacion-pnti?idiom=es; US General Services Administration (2021[41]), *Challenge.gov website*, https://www.challenge.gov/.

Tlaxcala's public recognition awards could focus on publicly recognising companies that have successfully implemented HPWP and other innovative workplace practices. They would help raise awareness of the benefits of applying innovative solutions in the workplace and share examples of best practices and lessons learned. The most innovative companies could be awarded a monetary or non-monetary prize (e.g. distinction, medal, official recognition) during public ceremonies (Liotard and Revest, 2019[39]), while the winning firm's innovative solutions and strategies promoting effective skills use could be widely shared through relevant departments' (*secretaría*) official communication channels.

Announcements of the winners of the public recognition awards, together with details of their innovative workplace approaches and information promoting the adoption of HPWP disseminated by the government and stakeholders, should be centralised in a single online information portal (OECD, 2020[13]). Tlaxcala's proposed one-stop shop, the Skills Needs Portal (see Chapter 5), could be adapted to include information on HPWP in a dedicated section. This section would offer space to provide greater detail on the key messages diffused through government and stakeholder information campaigns. The portal's HPWP section should facilitate swiftly finding information on HPWP and easily learning about the practices and their application in more depth. It should feature detailed descriptions of successful examples of HPWP implemented in practice by innovative Tlaxcalan companies, as well as provide information on existing public support for innovation and entrepreneurship, with links to relevant calls for applications. Tlaxcala could also consider including an HPWP self-assessment tool for firms, allowing them to assess the extent to which their workplaces are implementing HPWP. The self-assessment tool could take the form of an online survey, and award firms an overall HPWP adoption score upon completion, based on responses to questions covering all the practices broadly included in the HPWP concept (see Introduction to Opportunity 2).

Recommendations for raising awareness of the benefits of high-performance workplace practices

4.6. **Disseminate information on the benefits of HPWP through strategies, targeted campaigns and public recognition awards**. Tlaxcala should make use of various channels to disseminate information and good practices related to the adoption of HPWP. First, HPWP and their beneficial impacts on the use of skills in the workplace, innovation and productivity should be acknowledged in Tlaxcala's next State Development Plan 2022-2026. The plan should also delineate concrete actions for fostering HPWP adoption, accompanied by measurable indicators for monitoring and evaluating implementation. Second, Tlaxcala's government and stakeholders should disseminate HPWP-related information and concrete examples of best practice through existing websites and social media channels. Given their frequent interactions with Tlaxcalan employers, the following actors should be engaged in the HPWP dissemination strategy: 1) Tlaxcala's public employment service (Servicio Nacional de Empleo Tlaxcala, SNET); 2) employer associations and chambers, such as the National Chamber of Commerce, Services and Tourism (Cámara Nacional de Comercio Servicios y Turismo, CANACO) and the National Chamber of the Manufacturing Industry (Cámara Nacional de la Industria de la Transformación, CANACITRA); and 3) the proposed Future Skills Needs Committee (see Chapter 5). Finally, Tlaxcala should consider launching public recognition awards to recognise Tlaxcalan companies that have successfully integrated innovative workplace solutions into their business models. Tlaxcala should decide whether to opt for awards with monetary or non-monetary prizes, drawing on examples of innovative public recognition awards in Mexico and the United States (Box 4.3).

4.7. **Centralise information on HPWP in Tlaxcala's new Skills Needs Portal.** Tlaxcala should centralise key information on the concept of HPWP and the associated benefits in one place, such as an online portal, that is easily accessible to the public. A dedicated section on HPWP could be integrated within Tlaxcala's proposed one-stop shop, the Skills Needs Portal (see Chapter 5 for details). The portal's HPWP section should offer more granular HPWP information than is communicated through information campaigns (see Recommendation 4.6), complemented by rich, practical examples of successful and unsuccessful implementation strategies and lessons learned. The portal's HPWP section should also include information on innovation and entrepreneurship public support measures, explain how HPWP are linked with the goals of these programmes, and facilitate companies' applications to open calls for funding. Tlaxcala could also consider including an HPWP self-assessment tool within the portal's HPWP section that would allow Tlaxcalan firms to assess how advanced they are in their uptake of HPWP.

Fostering the effective implementation of high-performance workplace practices by managers

It is essential that employers and entrepreneurs in Tlaxcala become more aware of HPWP and their benefits in order to strengthen their motivation to adopt such practices. Equally, it is important that individuals responsible for workplace organisation and the implementation of innovative solutions are equipped with the right skills to implement HPWP effectively and efficiently. Even those who have "bought in" to the benefits of HPWP may lack the know-how to concretely put them into practice in the workplace (OECD/ILO, 2017[32]). In larger firms, individuals responsible for the implementation of innovative workplace practices often work at the management level, while in SMEs they tend to be the entrepreneurs themselves. In SMEs, the challenge of effectively implementing HPWP in practice may be especially

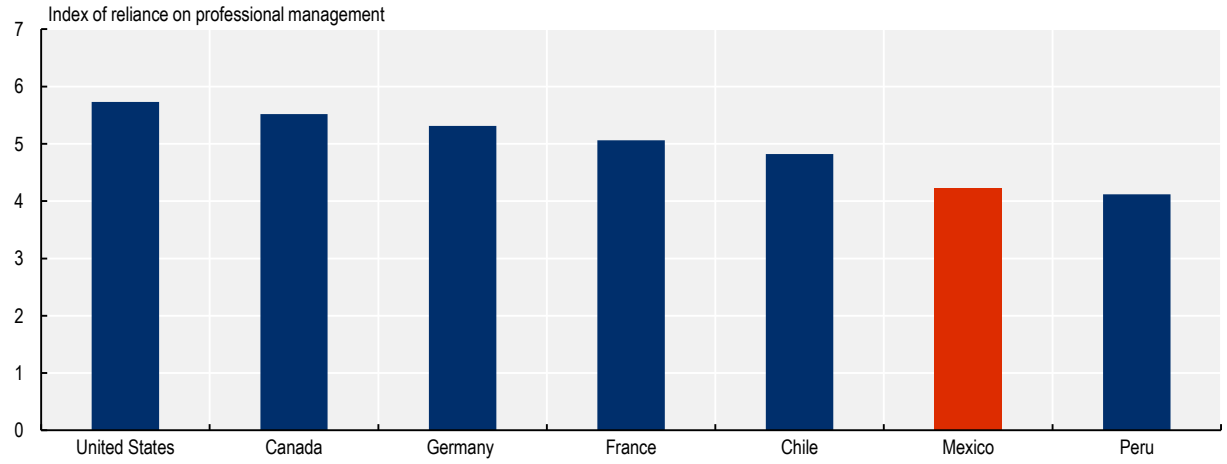
prevalent as they often lack dedicated human resource staff, and the quality of management tends to be lower (OECD/ILO, 2017[32]).

There is evidence that robust managerial skills developed by firms' managers increase the likelihood of firms innovating in terms of their products and adopting innovative solutions. Chief executive officers (CEOs) who acquire general managerial skills over the course of their professional careers help spur innovation in the workplace, while the firms they lead tend to produce more patents (Custódio, Ferreira and Matosc, 2019[42]). There is a strong and significant relationship between managerial capability (i.e. decision making, management style, people development and succession planning), adaptive capability (i.e. horizon scanning, change management and resilience) and organisational innovation in SMEs (Ali, Sun and Ali, 2017[43]). Therefore, for the effective implementation of HPWP and related innovative workplace solutions into practice, strong managerial skills are indispensable.

Interviewed stakeholders in Tlaxcala suggested that low levels of managerial skills among Tlaxcalecan managers and entrepreneurs were a significant barrier to the successful implementation of HPWP in Tlaxcalan workplaces. There is evidence that the share of firms in Mexico with professional managers (i.e. chosen for merit and qualifications) occupying senior management positions is comparatively low (Figure 4.13), suggesting that managers of Mexican firms are not always adequately skilled and qualified.

Figure 4.13. Managers in Mexico are not always adequately skilled and qualified

Reliance on professional management, Mexico and selected countries, 2019



Note: Score based on responses to the question: "In your country, who holds senior management positions in companies? [1 = usually relatives or friends without regard to merit; 7 = mostly professional managers chosen for merit and qualifications]".
Source: World Economic Forum (2019[44]), *Global Competitiveness Report 2019: How to end a lost decade of productivity growth*, https://www.weforum.org/reports/how-to-end-a-decade-of-lost-productivity-growth.

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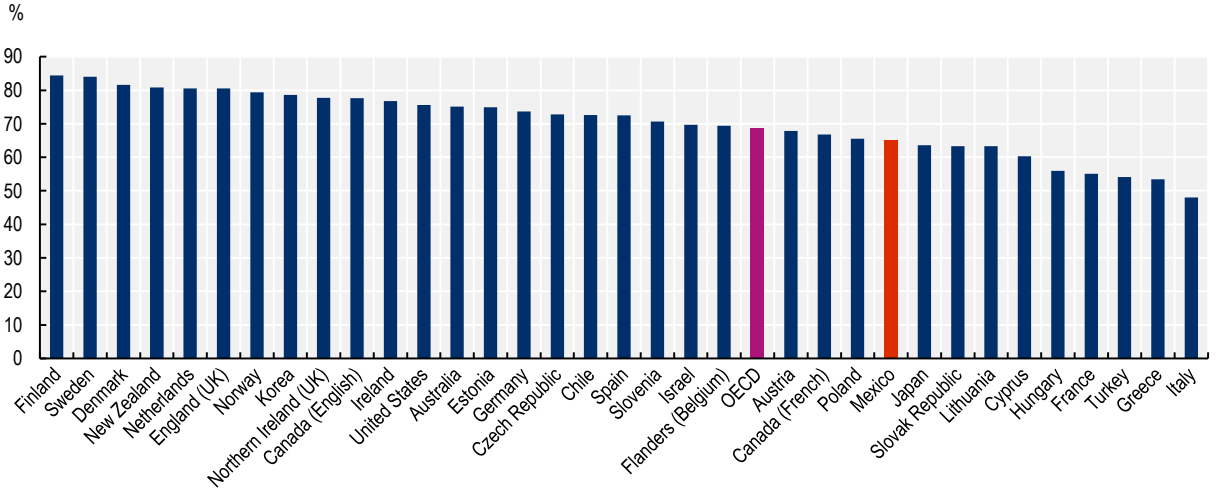
Given the comparatively low skill levels of Mexican managers, it is crucial that they participate in relevant training. However, the training participation of managers in Mexico lags behind the OECD average: 69% of managers reported participating in education training in the last 12 months in the OECD on average, compared to 65% in Mexico (Figure 4.14).

Figure 4.14. Training participation of managers in Mexico lags behind OECD

Percentage of managers who reported participating in education training in the last 12 months



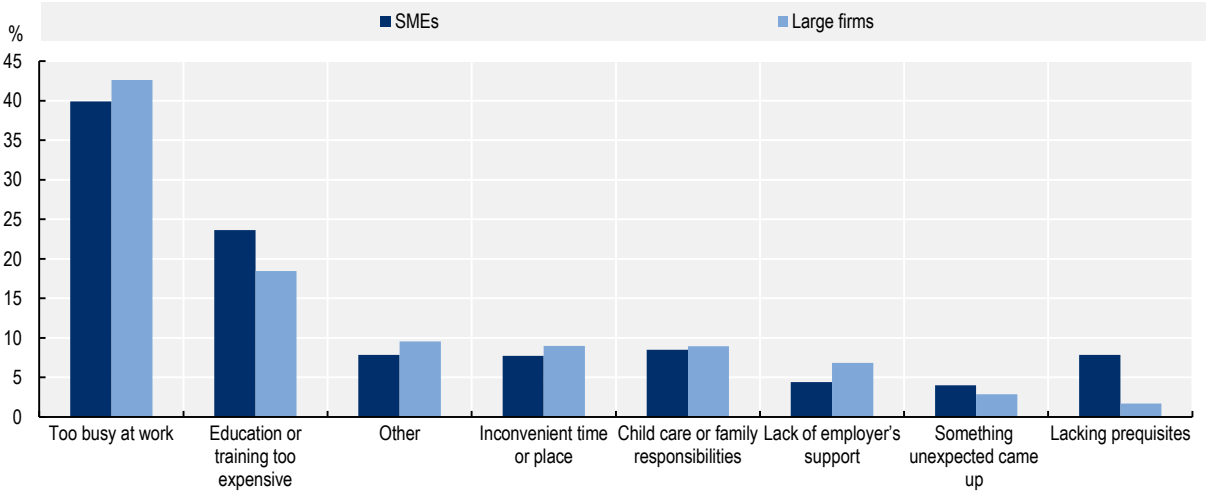
Source: Source: Calculations based on OECD (2021[14]), *Survey of Adults Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.

StatLink https://stat.link/98pt6k

Managers in Mexico are prevented from participating in training by different barriers depending on whether they manage SMEs or large firms. While more managers reported being prevented from training participation due to being too busy at work in large firms than in SMEs, more SME managers than large firm managers reported struggling with the cost of training (Figure 4.15).

Figure 4.15. Managers of large firms and SMEs in Mexico face different barriers to training participation

Percentage of managers who reported participating in education training in the last 12 months



Source: Calculations based on OECD (2021[14]), *Survey of Adults Skills (PIAAC) (2012, 2015, 2018) (database)*, www.oecd.org/skills/piaac/.

StatLink https://stat.link/ewpz2f

Tlaxcala's offer of courses that could help managers develop stronger managerial skills is limited, while the geographical coverage of training is uneven. Training in management (*administración*) is provided through the training units (*unidad de capacitación*) of Tlaxcala's state Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado, ICATLAX). However, ICATLAX runs its training units in only 10 out of Tlaxcala's 60 municipalities, which limits training options for Tlaxcalans living in regions far removed from a training unit. Additionally, out of ICATLAX's ten training units, only six offer options for adults to specialise in management. As a result, individuals interested in participating in managerial training living far from these six municipalities have a significant disadvantage.

Managerial training offered by ICATLAX's training units is provided through three training modalities: 1) regular courses (*cursos regulares*); 2) extension courses (*cursos de extensión*); and 3) accelerated targeted training (*capacitación acelerada específica*, CAE). Regular courses, which require between 40 and 600 hours to complete, seek to furnish adults with a basic level of skills, knowledge and competences in a selected specialisation to boost their on-the-job performance or employability. Extension courses, which require at least 15 hours to complete, aim to deepen the knowledge of individuals enrolled in or graduated from regular courses, as well as the general population requiring training that can be completed over a shorter period of time. Accelerated targeted training targets firms and organisations looking to upskill their workers in a field tailored to the firm's needs in agreement with ICATLAX (ICATQR, 2021[45]).

The depth and diversity of the management training offer differs greatly across the six ICATLAX training units that provide managerial training. As Table 4.2 shows, only three training units (Calpulalpan, Chiautempan and Zitlaltepec) offer managerial training as part of regular courses, whereas individuals keen on honing their managerial skills in Huamantla, San Pablo del Monte and Tepetitla can only do so through much shorter extension or CAE courses. At the same time, the diversity of managerial training modules differs. For instance, while the Tepetitla training unit offers six managerial training modules through extension and CAE courses, including "micro and small business management" (*administración en la micro y pequeña empresa*) and "effective communication" (*comunicación efectiva*), Huamantla's managerial training offer is constrained to CAE courses in "warehouse management" (*administración del almacén*) (Table 4.2). In comparison, many OECD countries offer a rich variety of upskilling programmes for managers that cater to a wide variety of managerial needs (Box 4.4 shows examples from Ireland and Poland).

Table 4.2. Depth and diversity of managerial training differs widely across ICATLAX training units

Managerial training offer provided through regular courses, extension courses or accelerated targeted training

	Regular courses	Extension courses	Accelerated targeted training courses
Calpulalpan	Micro and small business management Customer service and communication Telephone service and telemarketing Management of auditing tools	Entrepreneurship and business management Basic accounting Family businesses and strategic alliances in microenterprise	n/a
Chiautempan	Micro and small business management Customer service and communication Telephone service and telemarketing Management of auditing tools	Entrepreneurship and business management Basic accounting Reading and writing workshop	n/a

	Regular courses	Extension courses	Accelerated targeted training courses
Huamantla	n/a	n/a	Warehouse management
San Pablo del Monte	n/a	Micro and small business management	Basic Accounting Sales processes
Tepetitla	n/a	Introduction to Marketing Customer Service Micro and small business management Marketing and sales strategies in the organisation	Effective communication Introduction to finance
Zitlaltepec	Management in Micro and Small Businesses Customer service and communication Customer service and telemarketing Management of auditing tools	n/a	n/a

Source: ICATLAX (2021[46]), *Find the training unit closest to your community*, http://sepol-sepuede-icatlax.gob.mx/unidades.html.

Box 4.4. Relevant international examples: Ireland's and Poland's upskilling programmes for managers

Management development programmes of Skillnet Ireland

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

Management development programmes of the Polish Agency for Enterprise Development

The Polish Agency for Enterprise Development (PARP) has a number of programmes targeting managers. For instance, the SME Manager Academy finances training and advisory support for managerial staff in SMEs in the area of business management, including human resources. The academy aims to: 1) diagnose the needs of SMEs and the skills gaps of owners and managers; and 2) train managers of enterprises from the SME sector. Financial support covers up to 80% of projects, while the remaining 20% is covered by the SME. PARP has also introduced the PARP Academy, which is an e-learning platform that offers 50 free-of-charge online training sessions tailored to the needs of the SME sector. The sessions are in four thematic areas related to setting up and running a business. Since 2006, over 180 000 participants have benefited from PARP Academy training.

Source: PARP (2021[47]), *Polish Agency for Enterprise Development website*, https://en.parp.gov.pl/; Skillnet Ireland (2021[48]), *Skillnet Ireland website*, www.skillnetireland.ie/.

With the COVID-19 pandemic and associated social distancing measures underlining the importance of e-training and learning, Tlaxcala should be prepared to provide managerial skills training at distance. However, ICATLAX's distance training offer (*cursos de capacitacíon a distancia*) for 2021 does not include managerial skills courses (ICATLAX, 2021[49]). The lack of distance managerial training constitutes a further obstacle to equipping Tlaxcala's managers with strong managerial skills that are conducive to the adoption of innovative workplace solutions.

The managerial training offer of Tlaxcala's Training Centre for Industrial Work (*Centro De Capacitación Para El Trabajo Industrial,* CECATI) is similarly constrained. Across Tlaxcala, CECATI runs three training centres (in Apizaco, Xaloztoc and Xicohténcatl) that offer vocational qualification courses. Due to the COVID-19 pandemic, these courses are provided virtually. Out of CECATI's three training centres, two offer only one training module in management (Apizaco offers sales strategies and Xaloztoc offers accounting). With six training modules offered under the "management" specialisation, only CECATI's training centre in Xicohténcatl offers Tlaxcalans a relatively more varied management training option.

Recommendations for fostering the effective implementation of high-performance workplace practices by managers

4.8. Strengthen the provision of managerial skills training to support the adoption of HPWP. Tlaxcala should consider bolstering the diversity and depth of the managerial skills training offer and ensure accessibility across all regions. First, ICATLAX should encourage the provision of managerial training as part of regular courses in all of its ten training units. Second, the diversity of managerial extension courses should be improved across all of ICATLAX's training units. Third, CECATI should similarly encourage the provision of managerial courses by all of its training units. The provision of managerial skills training should be widely advertised by ICATLAX and CECATI to increase the courses' visibility and foster wide participation. Finally, ICATLAX should consider including managerial skills courses within its distance training offer for 2021 to support the provision of relevant training for managers, even under pandemic conditions. These efforts would act as an effective complement to SEDECO's business support programmes, the scope of which could be expanded to cover managerial skills and support for HPWP (See Opportunity 1 for details).

4.9. Support managers of SMEs and large firms to participate in training that takes into account their specific needs. Managers in SMEs and large firms in Mexico face different obstacles that prevent them from participating in training, which limits the uptake of innovative workplace solutions. While managers in large firms are mainly prevented from taking part in training by lack of time due to other work commitments, the biggest barrier faced by SME managers is their ability to shoulder the cost of training. Tlaxcala should pay attention to managers' varying obstacles to participation in training. Given that SMEs make up the majority of Tlaxcala's business structure, financial incentives (e.g. tax exemptions or credits, subsidised training schemes) for supporting the training participation of managers of Tlaxcalan SMEs should be considered.

Overview of recommendations

Policy directions	Recommendations	Responsible parties
Opportunity 1: Fostering entrepreneurship and supporting SMEs		
Supporting female entrepreneurship	4.1 Expand the oversight of Supérate and the frequency of its guidance through increased communication between programme officials and beneficiaries.	Supérate ICATLAX
	4.2 Utilise the existing census to collect better information on entrepreneurism in Tlaxcala, and identify where obstacles for female entrepreneurs tend to arise.	Supérate ICATLAX
	4.3 Create industry-specific channels for communication to help female entrepreneurs create business networks and integrate with existing supply chains.	Supérate ICATLAX
Enabling the full utilisation of skills through strengthening support to SMEs	4.4 Broaden the scope of SEDECO's business support programmes to include SMEs from more sectors, and offer support for the development of managerial skills and HPWP.	SEDECO Higher education institutions
	4.5 Expand the geographic coverage of SEDECO to alleviate connectivity issues and extend SME support to rural or marginalised municipalities.	SEDECO Municipalities
Opportunity 2: Promoting the adoption of high-performance workplace practices (HPWP)		
Raising awareness of the benefits of high-performance workplace practices	4.6 Disseminate information on the benefits of HPWP through strategies, targeted campaigns and public recognition awards.	SNET ICATLAX Selected employer associations
	4.7 Centralise information on HPWP in Tlaxcala's new Skills Needs Portal.	SEP and STPS (Tlaxcala) departments with strong technical and ICT expertise
Fostering the effective implementation of high-performance workplace practices by managers	4.8 Strengthen the provision of managerial skills training to support the adoption of HPWP.	ICATLAX CECATI SEDECO
	4.9 Support managers of SMEs and large firms to participate in training that takes into account their specific needs.	ICATLAX CECATI SEDECO

Note: SEP refers to Secretariat of Public Education (Secretaría de Educación Pública), and STPS refers to Secretariat of Labour and Social Welfare (Secretaría de Trabajo y Protección Social).

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5 Strengthening the governance of the skills system in Tlaxcala, Mexico

Effective governance arrangements are essential to support Tlaxcala's performance in developing and using people's skills. In the context of structural changes induced by the COVID-19 pandemic and the ratification of the United States–Mexico–Canada Agreement, Tlaxcala will need to swiftly respond to shifting skills demands. Designing and implementing skills policies on the basis of robust governance arrangements, in collaboration with an array of governmental and non-governmental actors, will be key to help Tlaxcala thrive in rapidly changing circumstances. This chapter provides tailored policy recommendations related to two important opportunities for strengthening the governance of Tlaxcala's skills system: 1) increasing co-ordination in adult learning across the whole of government; and 2) maximising the potential of skills data to strengthen skills assessment and anticipation exercises.

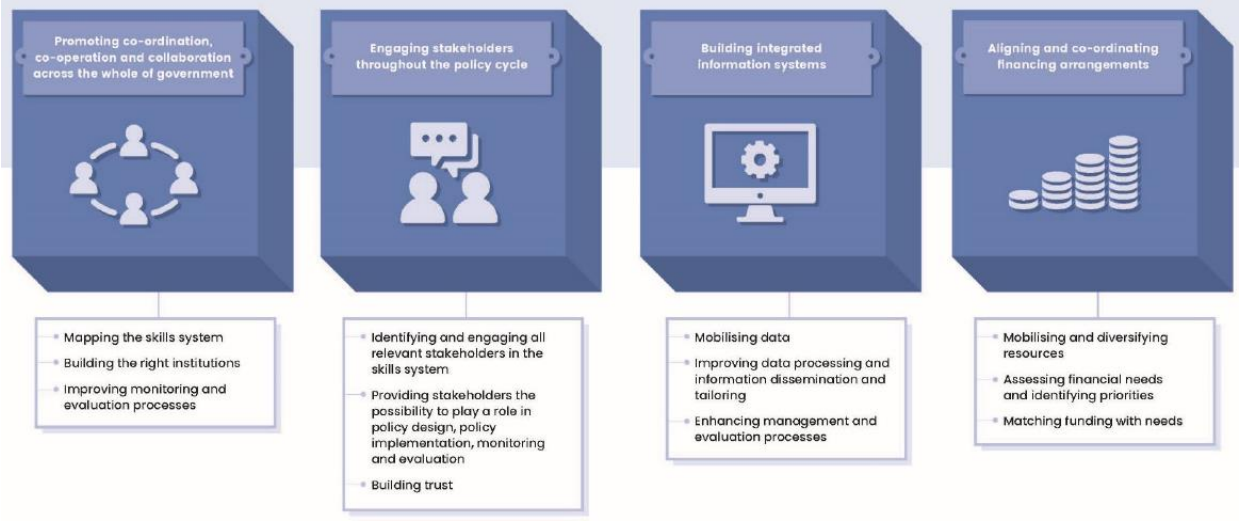
Introduction: The importance of strengthening the governance of the skills system in Tlaxcala

Strong governance arrangements are essential for well-functioning skills systems and better skills outcomes. Governing skills systems effectively and efficiently can help reduce potential policy gaps and overlaps, facilitate the efficient allocation of resources, and increase the likelihood of successful policy implementation (OECD, 2019[1]). Policies that aim to strengthen the skills of youth, foster greater participation in adult learning, or make better use of people's skills can only realise their full potential if accompanied by robust governance arrangements.

Skills policy is inherently complex as it falls at the intersection of multiple policy fields, including education, labour market, innovation, industrial and migration policy (OECD, 2019[1]). Therefore, the governance of skills policies necessitates the involvement of a wide variety of actors, including ministries from across the whole of government and at different levels of government, as well as an array of non-governmental stakeholders (OECD, 2020[2]) including employers, employees, associations, unions, teachers, training providers, career guidance services and students. Skills policies are developed in the realm of substantial uncertainty as they are significantly impacted by megatrends such as automation, digitalisation and globalisation, which have all been recently reinforced by the COVID-19 pandemic.

To help policy makers and countries navigate the complex dynamics of the governance of skills policies, the OECD Skills Strategy 2019 (OECD, 2019[1]) identifies four important buildings blocks to govern skills systems effectively: 1) promoting co-ordination, co-operation and collaboration across the whole of government; 2) engaging stakeholders throughout the policy cycle; 3) building integrated information systems; and 4) aligning and co-ordinating financing arrangements (Figure 5.1). Together, these building blocks establish a strong basis upon which policies for developing and using skills can be built.

Figure 5.1. The four building blocks of strong skills systems governance



Source: OECD (2019[1]), *OECD Skills Strategy 2019: Skills to Shape a Better Future*, https://doi.org/10.1787/9789264313835-en.

Promoting co-ordination, co-operation and collaboration across the whole of government is central to minimising inefficiencies in skills policy making. This involves fostering a shared conviction about the importance of skills in terms of effectively recovering from the COVID-19 crisis, mapping skills systems, and promoting and sharing the results of monitoring and evaluation processes to support evidence-based policy making. Effectively engaging stakeholders throughout the policy cycle can bring further benefits and

allow policy makers to tap into stakeholders' on-the-ground expertise and insights regarding the real-world effects of skills policies and regulations (OECD, 2020[2]). Being able to rely on integrated information systems and a rich, consolidated foundation of skills data facilitates the assessment and projection of current and future skills needs, which is crucial for helping policy makers build more resilient education and training systems and for individuals to make more informed labour market choices. In the context of constrained budgets, such evidence-based policy making can also help strategically target investments and generate higher returns on skills investments. Aligning and co-ordinating financing arrangements is necessary to ensure sufficient skills funding and the sustainability of skills investments.

COVID-19 has had a profound impact on the Mexican economy and has considerably affected labour markets, with significant implications for equity and sustainable growth. Tlaxcala is not immune to these challenges. The health crisis has translated into high unemployment rates and widening skills gaps between high- and low-skilled workers, fuelled by accelerating rates of automation and digitalisation. As a result of COVID-19, Tlaxcala is the fourth most vulnerable state in Mexico in terms of job loss (Bank of Mexico, 2020[3]), and is experiencing significantly constrained budgets. In addition, the ratification of the United States-Mexico-Canada Agreement (USMCA) is expected to reshape demand for labour in Tlaxcala, intensifying the need for effective upskilling and reskilling. Tlaxcala's economic recovery and sustained competitiveness will depend on the capacity of Tlaxcalan policy makers to put in place governance arrangements that promote the adaptability and resilience of the state's skills system.

This chapter targets two opportunities to improve the governance of skills policies. These opportunities are identified by the OECD and the Government of Tlaxcala as having the largest room for improvement and as being key to improving the adaptability and resilience of Tlaxcala's skills system. They are: 1) co-ordination in adult learning across the whole of government; and 2) maximising the potential of skills data to strengthen skills assessment and anticipation exercises. First, the co-ordination and evaluation of adult learning policies are under-developed in Tlaxcala, which raises concerns about the state's preparedness to devise effective policy responses to rapidly changing labour market needs. Second, as Tlaxcala's ability to foresee and adapt to the implications of shifting economic and labour market developments continues to grow, it will be important to maximise the potential of available skills data to assess and anticipate the state's current and future skills needs.

The chapter starts by providing an overview of Tlaxcala's current arrangements and performance in relation to the co-ordination of its adult learning policies, as well as the structure and functioning of its skills data infrastructure. For each of the two abovementioned opportunities, available national and international data are analysed, key actors are identified, relevant national and international policies and practices are presented, and concrete recommendations are proposed.

Overview of Tlaxcala's selected governance arrangements

This section describes the performance of Tlaxcala's governance arrangements in relation to: 1) supporting co-ordination across the whole of government in adult learning; and 2) building integrated information systems for skills data.

Co-ordination across the whole of government in adult learning

A multitude of actors are involved in the provision of adult learning in Mexico at the federal, state and municipal levels, as introduced in Chapter 3. At the federal level, the Secretariat of Public Education (Secretaría de Educación Pública, SEP) is responsible for the delivery of adult learning in higher education institutions and vocational education and training (VET) institutions through public job training centres (*centros de formación para el trabajo*). The General Directorate of Work Training Centres (Dirección General de Centros de Formación para el Trabajo, DGCFT), established by SEP, provides vocational training through the Training Centre for Industrial Work (Centro de Capacitación para el Trabajo Industrial, CECATI) at the federal level, and through Institutes for Job Training (Institutos de Capacitación para el

Trabajo, ICAT) at state and municipal levels. Currently, CECATI operates 199 campuses (*planteles*) across the country. ICAT has 35 mobile units (*unidades móviles*) and 30 campuses across 29 states, which operate 297 training units (*unidades de capacitación*) and 176 mobile units across their municipalities (Gochicoa and Vicente-Díaz, 2020[4]). Whereas CECATI falls under the direct supervision of SEP, ICAT is established under the supervision of state-level organisations such as departments of education to provide training tailored to local needs.

The Secretariat of Labour and Social Welfare (Secretaría de Trabajo y Protección Social, STPS) supports work-based training through incentives and co-financing mechanisms to stimulate employer investment in training. The STPS also collects and distributes data on jobseekers and vacancies in Tlaxcala, and operates Mexico's public employment service, the National Employment Service (Servicio Nacional de Empleo, SNE), that links jobseekers with potential employers.

In addition to SEP and the STPS, the Secretariat of Economy (Secretaría de Economía, SE) provides training programmes for small employers. For instance, the SE operates the National Training and Consulting Programme (El Programa Nacional de Capacitación y Consultoría) to help micro, small and medium-sized enterprises (MSMEs) become more profitable and productive. One of the support measures provided by the SE are training programmes for MSMEs, which are supported by SE's SME Fund (Fondo PyME) (Secretariat of Economy, 2021[5]).

The National Institute for Adult Education (Instituto Nacional para la Educación de los Adultos, INEA) is a federal institute responsible for developing and distributing teaching materials, conducting relevant research, and providing certification for basic youth and adult education. In accordance with the National Development Plan (2001-2006), INEA signed co-ordination agreements with most state governments to decentralise adult learning services. Under these agreements, INEA serves as the regulatory, technical and governing body, while the state-level institutions – State Institutes of Adult Education, (Institutos Estatales de Educación para Adultos, IEEA) – provide training programmes and abide by the operating rules of INEA, which includes submitting quarterly reports on resource management and the achievement of goals and objectives based on indicators set by INEA.

At the state level, SEP Tlaxcala oversees the policies and provision of programmes of adult learning. It also oversees the ICAT for the state of Tlaxcala, the Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado de Tlaxcala, ICATLAX) (see Chapter 3).

ICATLAX provides education and training for employment purposes to those aged above 15 through its nine training units and one mobile unit. The National Employment Service of Tlaxcala (Servicio Nacional de Empleo Tlaxcala, SNET) collects and distributes data on jobseekers and vacancies in Tlaxcala (see Chapter 3). ICATLAX and SNET collaborate closely in the provision of adult learning and employment services. SNET shares information on labour market demands with ICATLAX so that it can align its curriculum to cater to the skills needed in the labour market.

The Institute for Adult Learning (Instituto Tlaxcalteca para Educación de los Adultos, ITEA), INEA's branch in Tlaxcala, provides basic skills programmes and remedial education for adults (see Chapter 3). It also certifies primary and secondary education for adults who have not already attended school at these levels.

Within Tlaxcala, CECATI has one state-level entity (*entidad*) and three campuses in three municipalities through which it provides adult learning programmes designed at the federal level.

Tlaxcala's Co-ordination of the State System of Employment Promotion and Community Development (Sistema Estatal de Promoción del Empleo y Desarrollo Comunitario, SEPUEDE) is a state initiative aimed at generating opportunities for the inclusive development of communities and the indigenous population. It promotes efforts to strengthen the productive and marketing capacity of artisans, producers and micro-entrepreneurs, including by providing training within communities and to the indigenous population. SEPUEDE is also the main co-ordination body that connects public, private and social institutions for the

purpose of promoting education and social development, economic growth, and the health and culture of communities and the indigenous population.

Tlaxcala currently offers three adult learning programmes that are funded through the federal budget: the Contribution Fund for Technological and Adult Education (Fondo de Aportaciones para la Educación Tecnológica y de Adultos, FAETA), the Care Agreement for the Demand for Adult Education (Convenio de Atención a la Demanda de Educación para Adultos, CADEA) and Supérate. FAETA finances adult learning programmes provided by ITEA and the School of Technical Professional Education of the State of Tlaxcala (Colegio de Educación Profesional Técnica del Estado de Tlaxcala). CADEA only finances adult learning programmes provided by ITEA. Supérate finances and provides training for adults in extreme poverty to develop skills for better employability (see Chapter 3). Supérate offers free training to individuals between the ages of 15 and 64 in several topics, including financial education and micro-business entrepreneurship. It also helps adults develop the skills needed in strategic sectors (e.g. automobile, chemistry, textiles).

Table 5.1 summarises the objectives of key actors involved in adult learning in Tlaxcala, as well as associated bodies.

Table 5.1. Key actors involved in adult learning in Tlaxcala

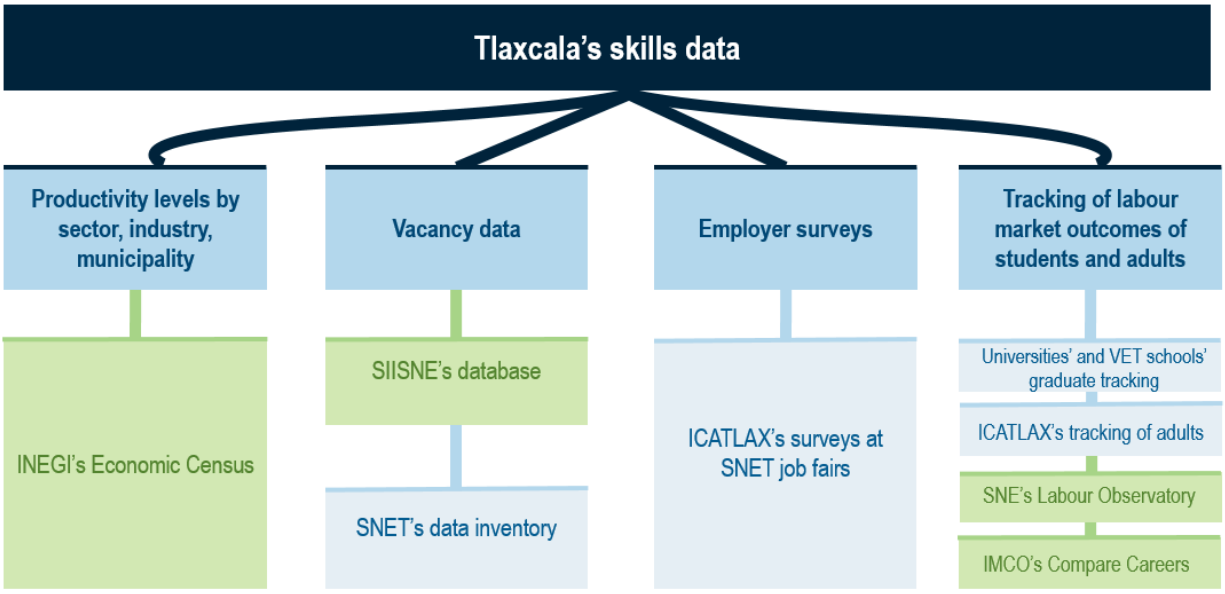
Type	Actor	Objective/mission	Associated bodies	Level of government
Government bodies	SEP Tlaxcala	• Oversees the provision of formal and non-formal adult learning in Tlaxcala. • Supervises the operation of ICAT in Tlaxcala.	SEP DGCFT ICATLAX	State, municipal
	National Employment Service of Tlaxcala (Servicio Nacional de Empleo Tlaxcala, SNET)	• Collects and distributes data on jobseekers and vacancies in Tlaxcala. • Operates the State Employment System (*Sistema Estatal de Empleo*, SEE) as a state-level mechanism to collect employment information.	STPS SNE	State
	Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo del Estado de Tlaxcala, ICATLAX)	• Provides non-formal education and training for employment purposes to those aged above 15 through its nine training units and one mobile unit.	SEP Tlaxcala DGCFT ICATLAX units	State, municipal
	Training Centre for Industrial Work (Centros de Capacitación para el Trabajo Industrial, CECATI)	• Offers a wide range of formal and non-formal training courses throughout the state targeting mainly jobseekers and inactive adults.	DGCFT	State
	Institute for Adult Learning (Instituto Tlaxcalteca para Educación de los Adultos, ITEA)	• Provides formal basic skills programmes and remedial education for adults. • Certifies primary and secondary education for adults who have not attended school at these levels before.	INEA	State, municipal
	Supérate	• Aims to reduce number of people in extreme poverty through delivering non-formal training to adults in extreme poverty to help them develop skills for better employability. Offers free training to individuals aged between 15 and 64.	ICATLAX	State

Type	Actor	Objective/mission	Associated bodies	Level of government
Government initiative	Co-ordination of the State System of Employment Promotion and Community Development (SEPUEDE)	• A state initiative aimed at generating opportunities for the inclusive development of communities and the indigenous population. • Promotes efforts to strengthen the productive and marketing capacity of artisans, producers and micro-entrepreneurs. • Connects diverse actors involved in promoting the education and social development, economic growth, and health and culture of communities and the indigenous population.	SEP Tlaxcala DGCFT ICATLAX	State

Integrated information systems and key sources of skills data

A strong and integrated information system is central to the ability of governments to assess and anticipate current and future skills needs (OECD, 2019[1]). Such a system helps to inform the choices of a wide range of actors in a way that helps to align skills demand and supply. These actors include government, education and training providers, and individuals (e.g. students, jobseekers, workers and employers). Tlaxcala draws on a number of key federal and state-level data sources that provide information on the demand and supply of skills in the state (Figure 5.2).

Figure 5.2. Overview of Tlaxcala's skills data



Note: Darker blue refers to a data type, lighter blue indicates a state-level data source, and green indicates a federal data source.
INEGI = National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía); SIISNE = Integrated Information System of the National Employment Service (Sistema integral de información del Servicio Nacional del Empleo); IMCO = Mexican Institute for Competitiveness (Instituto Mexicano para la Competividad).

The Economic Census (*Censo económico*), administered at the federal level by the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI), provides information on the productivity levels of specific sectors and industries in each of Tlaxcala's 60 municipalities (INEGI, 2020[6]). Data reports produced by INEGI help Tlaxcala's policy makers adjust the education and training

offer so that it responds effectively to the skills needed in the most productive sectors. The Integrated Information System of the National Employment Service (Sistema integral de información del Servicio Nacional del Empleo, SIISNE), administered by the National Employment Service Unit (Unidad del Servicio Nacional de Empleo, USNE), gathers data on vacancies and jobseekers in each Mexican state, including Tlaxcala. SIISNE relies on each state's employment service for the input of data. In Tlaxcala, SNET is in charge of inputting vacancy and jobseeker data into SIISNE. Data from SIISNE are analysed by USNE, which sends aggregate data reports for the previous month to state employment services during the first fifteen days of the current month.

At the state level, SNET developed its own internal vacancy data inventory in 2017, which is independent from SIISNE. The internal inventory collects data on the number of jobseeker registrations *(atenciones)* and vacancy matches *(colocaciones)* in Tlaxcala, made on the basis of SNET officials matching jobseekers with jobs, as well as the number, characteristics and distribution of jobseekers (registered and matched with jobs) and vacancies across Tlaxcala's five municipalities (Tlaxcala, Apizaco, Huamantla, Zacatelco, Calpulalpan) covered by SNET's regional units (*unidades regionales*). SNET further supplements these data by conducting phone interviews with jobseekers registered in Tlaxcala's Employment Portal (Portal del Empleo) to get a fuller picture of their skills, abilities and working history. The internal vacancy inventory allows SNET to: 1) remain informed of labour market developments in each zone; 2) monitor the performance of SNET officials based on the number of registrations and vacancy matches facilitated; and 3) generate projections regarding future registrations and vacancy matches needed. Based on such analysis, SNET's Department of Planning and Occupational Information (Dirección de Planeación e Información Ocupacional) produces summary reports, which are regularly shared with SEPUEDE's planning and finance departments and with ICATLAX to help it adjust its training offer.

Using data from the vacancy inventory, SNET's Department of Job Matching (Dirección de Vinculación Laboral) is in charge of matching jobseekers to identified vacancies, such as through job fairs organised every three months, which have become virtual since the outbreak of the COVID-19 pandemic. ICATLAX carries out employer surveys at these job fairs, where all participating companies are asked to fill in a questionnaire on the skills profiles sought and qualification levels required, as well as their training needs and budgets earmarked for training. At each job fair, ICATLAX is able to collect between 15 and 20 completed employer questionnaires.

Tlaxcala relies on both state and federal sources to track the labour market outcomes of graduates and adults who have completed training. This information allows Tlaxcala's policy makers to have a better picture of the state's skills supply, while serving as a proxy for gauging the labour market demand for the skills that graduates and adults possess. Universities and VET schools in Tlaxcala track graduates following the completion of their studies on voluntary basis. The universities that engage in this exercise track students for up to three years after graduation through surveys that enquire about students' employment outcomes. Certain VET schools also send surveys to graduates that enquire about progression to further studies and labour market insertion. ICATLAX tracks adults who have completed its training courses through satisfaction surveys administered twice a year. These surveys shed light on the usefulness of ICATLAX training in terms of employability.

At the federal level, the SNE has developed the Labour Observatory platform (Observatorio Laboral) that shows graduate tracking results based on data from the National Survey of Occupation and Employment (Encuesta Nacional de Ocupación y Empleo, ENOE) (OECD, 2017[7]). Through its online comparison tool, the Labour Observatory enables the comparison of approximately 70 fields of study at the university level (*carreras universitarias*) and their labour market outcomes (employability rates, average monthly salaries) in Mexico, as well as the trends and characteristics of various occupations. At the state level, including for Tlaxcala, the platform outlines the number of enrolled students and graduates by field of study, their average salaries, field-of-study mismatches upon entering the labour market, and suggestions on which education institutions offer these courses in Tlaxcala (SNE, 2020[8]). Similarly, the online Compare Careers (Compara Carreras) portal of the Mexican Institute for Competitiveness (Instituto Mexicano para la

Competividad, IMCO), based on ENOE, enables the comparison of a wide range of labour market indicators (employment, unemployment and informality rates; average monthly salaries; return on investment, etc.) for 51 university fields of study and 17 pathways that lead to the completion of an advanced technical certificate across Mexico (IMCO, 2020[9]). The platform also includes a state-level search engine for secondary VET and higher education institutions and fields of study.

Performance of Tlaxcala's skills governance arrangements

Co-ordination across the whole of government in adult learning

In Tlaxcala, policy co-ordination in adult learning between the state and municipalities is often hindered by the lack of an effective legal framework and co-ordination mechanisms. Currently, the State Education Law governs the provision of education and institutionalises policy co-ordination among relevant actors. However, it does not establish clear co-ordination mechanisms for the provision of adult learning. Although it stipulates broad the objectives of adult learning, it does not clearly define the roles and responsibilities of the state and municipalities in adult learning provision. In addition, the section of the law that institutionalises co-ordination among different levels of government relates mainly to co-ordination between federal and state levels in basic and secondary education. The absence of clear guidelines makes state and municipal co-ordination in adult learning weak compared to the co-ordination involved in basic and secondary education.

Another key co-ordination mechanism between municipalities and the state in terms of adult learning are state and municipal development plans. The Municipality Law of the State of Tlaxcala requires municipalities to develop and submit their plans to the state government and ensure that they are aligned with the State Development Plan of Tlaxcala. The Institute of Municipal Development (Instituto Tlaxcalteca de Desarrollo Municipal) was established at the state level to assist municipal governments in formulating development plans and facilitating communication with municipalities. However, this institute was dismantled in 2017 as part of institutional reforms and its responsibilities were transferred to the Legal Directorate of the Secretary of Government of the State of Tlaxcala.

Stakeholders in Tlaxcala have commented that there clearly lacks a long-term vision for the adult learning system in Tlaxcala, which allows the priorities for adult learning to shift in an uncoordinated fashion with electoral cycles. Evaluation mechanisms, which could generate evidence-based support for maintaining or discontinuing certain adult learning programmes, are underdeveloped and fragmented. There is no co-ordinated evaluation mechanism that evaluates the impact of adult learning programmes of different providers with the same set of clearly defined criteria. Currently, adult learning providers, including ICATLAX and ITEA, carry out their own evaluation processes relying on differing sets of criteria. As a result it is impossible to assess the success and impact of adult learning programmes in a co-ordinated manner. Most of Tlaxcala's institutions providing adult learning reported a lack of capacity to analyse the results of fragmented evaluations and use them to inform the necessary adjustments in programme planning and implementation.

International evidence reveals that Mexico ranks below average among OECD countries in terms of its use of evidence-based policy making. According to the latest Sustainable Governance Indicators Survey,[1] Mexico ranked 27 out of 41 countries in the executive capacity component of the governance domain (Bertelsmann Stiftung, 2020[10]), which measures a country's performance in evidence-based regulatory impact assessments (RIA) of legal acts and public policies. In the latest survey, room for further improvement was identified for Mexico, including through applying RIA for subnational regulatory projects and strengthening stakeholder engagement in the RIA process.

Making use of integrated information systems and skills data

Making use of integrated information systems and skills data for assessing and anticipating current and future skills needs in Tlaxcala requires the use of both federal and state level data sources. As highlighted above, there are federal data sources on which Tlaxcala's policy makers rely at the state level; however, these sources are not always easily accessible, sufficiently granular or timely. For instance, the data from the Economic Census cannot fully capture the evolving dynamics of Tlaxcala's economy as it is only administered every five years. Similarly, SIISNE's vacancy data cannot be readily accessed from the state level. Given such constraints it is difficult for Tlaxcala to systematically rely on data supplied from the federal level in the design of its skills policies. To address the data gaps, Tlaxcala started gathering relevant state-level skills data, for example through SNET's internal vacancy inventory, to facilitate more targeted data analysis (e.g. through more flexible data disaggregation) that is not feasible by using USNE's reports. Nevertheless, the analytical basis and dissemination of results from Tlaxcala's skills data could be further improved, as could the co-ordination of these efforts with federal institutions.

Graduate tracking in Tlaxcala could be further developed, and policy makers could take greater advantage of its results. Not all of Tlaxcala's universities and VET schools carry out graduate tracking, and the results from these exercises are not reported to and consolidated by government entities in charge of education and training (e.g. SEP Tlaxcala, ICATLAX).

It is not easy for Tlaxcala citizens to get an overview of the state's labour market developments and skills needs based on the graduate tracking portals administered at the federal level (Labour Observatory, Compare Careers). The Labour Observatory does not provide Tlaxcala-specific indicators for many fields of study, even where state-level disaggregation should be available, and Compare Careers lacks state-level disaggregation.

Tlaxcala lacks a state-wide instrument to survey employer needs, which could help inform and steer skills policy making towards greater alignment with labour market requirements. The employer surveys carried out by ICATLAX are restricted to companies that have participated in SNET's job fairs. Equally, the opportunity to supplement skills data with qualitative insights from key stakeholders seems underdeveloped. Currently, there is no formal mechanism for systematically engaging stakeholders in skills assessment and anticipation exercises.

Opportunities for strengthening the governance of the skills system

Based on the desk research of the OECD team, consultations with the Government of Tlaxcala and stakeholder interviews, the following opportunities for strengthening the governance of Tlaxcala's skills system have been identified:

1. Increasing co-ordination in adult learning across the whole of government.
2. Maximising the potential of skills data to strengthen skills assessment and anticipation exercises.

Opportunity 1: Increasing co-ordination in adult learning across the whole of government

Adult learning policies rarely fall under the domain of a single ministry or level of government, but span the domains of multiple entities and federal, state and municipal levels of government. Adult learning policies, therefore, require a whole-of-government approach that necessitates well-functioning horizontal (inter-ministerial) and vertical (different levels of government) co-ordination arrangements. Co-ordination across the whole of government also promotes synergies among different actors and provides effective service delivery to individuals. Robust co-ordination across the whole of government can contribute to improving the effectiveness of adult learning policies.

Tlaxcala should take advantage of the benefits of stronger whole-of-government co-ordination in adult learning by:

- Promoting vertical co-ordination in adult learning between the state and municipalities.
- Strengthening adult learning evaluation mechanisms.

Promoting vertical co-ordination in adult learning between the state and municipalities

Effective vertical co-ordination across different levels of government is essential for successful policy delivery and implementation in decentralised adult learning systems. In the case of Tlaxcala, co-ordination between the state and municipalities is particularly important as Tlaxcala has a relatively large number (60) of municipalities. Furthermore, evidence shows that Tlaxcala is one of the Mexican states most vulnerable to job loss as a result of the COVID-19 pandemic (Bank of Mexico, 2020[3]). Tlaxcala is therefore under pressure to swiftly adapt its adult learning policies and programmes to increase the employability of its population in the context of rapidly evolving skills needs. Vertical co-ordination between the state and municipalities will be critical in allowing municipalities to communicate their specific needs and challenges to the state, and for the state to respond effectively by providing tailored support to address these needs and challenges. However, stakeholders have noted that co-ordination between the state and municipalities in adult learning has not been effective due to the lack of well-functioning co-ordination support mechanisms.

Across OECD countries, several mechanisms, including legal mechanisms and co-ordination bodies, are found to facilitate vertical co-ordination between different levels of government (Box 5.1).

Box 5.1. Mechanisms to facilitate co-ordination between multiple actors and levels of government

OECD countries have reported a range of mechanisms to facilitate co-ordination between different actors and levels of government:

- **Legal mechanisms and standard setting**: Legislation, regulations and constitutional change that assign responsibilities and commensurate resourcing, as well as standards for inputs, outputs and/or outcomes of a service.
- **Contracts:** Commitments to take action or follow guidelines that transfer decision-making rights between parties.
- **Vertical and horizontal (quasi-)integration mechanisms**: Mergers and horizontal and vertical co-operation at the subnational level through intercommunal structures and joint municipal authorities.
- **Co-ordinating bodies:** Government or non-government groups that promote dialogue, co-operation and collaboration, build capacity, align interests and timing, and share good practices among levels of government.
- **Ad hoc/informal meetings**: Between representatives of different levels of government to facilitate dialogue and horizontal, vertical and cross-disciplinary networks, and complement formal mechanisms.
- **Performance measurement**: Using indicators to measure the inputs, outputs and outcomes of a public service, and monitor and evaluate public service provision.
- **Experimentation and pilot projects:** Trying governance mechanisms for a defined time and/or area to learn what is effective in a given context.

Source: Charbit and Michalun (2009[11]), *"Mind the Gaps: Managing Mutual Dependence in Relations among Levels of Government"*, OECD Working Papers on Public Governance, No. 14, https://dx.doi.org/10.1787/221253707200.

Table 5.2. Adult learning objectives established in Tlaxcala's State Development Plan (PED) (2017-2021)

Objectives organised by priority area and topics

	Objectives	Strategies	Lines of action
Employment, economic development and prosperity for families			
Employment	1.1 Boosting economic growth and investment in the state.	1.1.1 Promote the competitive advantages of the state nationally and internationally to attract greater national and foreign private investment.	1.1.1.3 Promote a better alignment of the supply of human capital appropriate to the development needs of the local industry.
	1.2 Generating more and better paid jobs.	1.2.1 Improve employment conditions and opportunities for the state's population.	1.2.1.2 Develop vocational skills and competencies of the working aged population through training to increase their job opportunities and income.
			1.2.1.3 Strengthen the link between secondary and higher education institutions with the state productive sector to generate an adequate supply of human capital to meet the needs of local industry.
Competitiveness	1.4 Raise competitiveness by supporting human capital development.	1.4.1 Develop Tlaxcalan talent that is oriented to the needs of the productive sectors of the state.	1.4.1.1 Promote the alignment of the intermediate, higher educational offer with the human capital needs of the state productive sector.
			1.4.1.2 Develop training and skills development schemes for the working age population.
Agriculture, livestock and rural development	1.7 Strengthen the integral and sustainable development of the rural sector through programmes that increase the productivity and well-being of farm workers and their families.	1.7.1 Strengthen federal and state programmes to support the rural sector.	1.7.1.2 Strengthen state programmes designed to raise the productivity of small production units (farms). Implement these programmes through a strategy that prioritises collaborative work and the integration of value chains, and encourage the identification and channeling of resources to rural projects with higher profit potential.
	1.8 Generate employment and development opportunities in the agricultural, livestock and aquaculture sectors that raise the living conditions of the rural population.	1.8.1 Develop agricultural production chains that favour the creation of added value and commercialisation.	1.8.1.2 Provide training and technical assistance to add value to agricultural, livestock and aquaculture products.
Tourism	1.10 Improve the tourist competitiveness of Tlaxcala.	1.10.2 Improve the skills and productivity of tourist sector workers.	1.10.2.2. Increase the supply of training and the training of specialised skills and abilities for the tourism sector.
Relevant education, quality health and inclusive society			
Education	2.8. Link education with the labor market.	2.8.1. Bring the state education system closer to the labour market.	2.8.1.1 Upskill and reskill workers to better align skills supply and demand.
			2.8.1.2 Encourage the acquisition of basic skills, including the command of other languages, to compete in a globally competitive job market.
		2.8.2 Strengthen education business co-operation to promote the updating of study plans and programmes, the employability of young people, and innovation.	2.8.2.6. Formally recognise the skills acquired at work or through informal learning.
	2.9. Facilitate education policy co-ordination	2.9.1 Improve co-ordination and interaction between the public, private and social sectors for the benefit of education.	2.9.1.5. Promote greater co-operation between the public, private and social sectors in the design and implementation of higher secondary education curricula to improve the link between educational and productive sectors. Promote the certification and accreditation of learning.

Note: This table has been compiled by the OECD for the purpose of this project.
Source: Government of Tlaxcala (2017[12]), *State Development Plan of Tlaxcala 2017-2021*.

In Tlaxcala, there are two main legal mechanisms that facilitate vertical co-ordination in adult learning. First, the State Development Plan (Plan Estatal de Desarrollo, PED) is an instrument that facilitates vertical co-ordination across different levels of government in Mexico. Key objectives and strategies of the PED need to be aligned with those of the National Development Plan (Plan Nacional de Desarrollo). The PED outlines the objectives, policies and required resources across Tlaxcala's priority policy objectives, which include employment, competitiveness, rural development, tourism and education. All five objectives of the PED include actions related to the promotion of adult learning (Table 5.2).

Second, the Municipality Law of the State of Tlaxcala obliges all municipalities to formulate a municipal development plan (*plan de desarrollo municipal,* PDM) within the first four months of the creation of a new municipal government. The plan should then be implemented during municipal governments' three-year term. The purpose of the PDM is to identify municipalities' key policy and resource challenges and needs, and communicate them to the state government to solicit relevant support. Once the plans have been formulated, the city council of each municipality uploads them to the municipality website. PDMs submitted to the state government are delivered to the Senior Government Office (Oficialía Mayor de Gobierno) and published in the official state newspaper.

The Municipal Law of the State of Tlaxcala and the Political Constitution of the United Mexican States stipulate that municipalities should develop PDMs in alignment with the State Development Plan (PED). However, municipalities face significant challenges in aligning their PMDs to Tlaxcala's PED, which weakens the co-ordination potential of PED in relation to adult learning. As shown in Table 5.2, the strategies and lines of action presented in the PED regarding adult learning are described only very generally and do not clearly define the roles and responsibilities of relevant actors. The lack of clarity in adult learning objectives and in the delineation of roles and responsibilities at the state level make it difficult for municipalities to design PMD adult learning strategies in line with PED goals. Korea presents a relevant example of a set of plans dedicated specifically to adult learning that clearly define the roles and responsibilities of relevant actors. Under Korea's Lifelong Learning Act, the national government develops the Lifelong Learning Promotion Plan, which serves as the basis for state- and municipal-level lifelong learning promotion basic plans and lifelong learning promotion implementation plans (Box 5.2) (Government of Korea, 2021[13]).

Box 5.2. Relevant international example: Korea's Lifelong Learning Promotion Plan at national, state and municipal levels

Under the Lifelong Education Act, the Ministry of Education of Korea has developed a National Lifelong Education Promotion Basic Plan every five years since 2002. The current Lifelong Education Promotion Basic Plan (2018-2022) provides overall objectives for mid- to long-term lifelong education policies with an aim to build a sustainable environment for lifelong education across the nation. The plan, which targets mainly adults and vulnerable youth, introduces strategies, initiatives and a corresponding budget plan to promote the proposed policy objectives, and clearly identifies relevant actors. The policy objectives of the plan include:

- Increase participation in lifelong education through enhanced training leave, effective career guidance, better recognition of prior learning, tailored support for multicultural families and more support to women for re-entry into the labour market (Ministry of Education, Ministry of Employment and Labour, Ministry of Gender Equality and Family, and others).
- Provide more tailored support for vulnerable groups through increased access to literacy education and high-quality e-learning, provision of financial allowances to participate in lifelong learning, and tailored learning programmes for disabled citizens (Ministry of Education, Ministry of Health and Welfare, Financial Services Commission, and others).

- Increase adult learning opportunities for workers by providing more vocational education through MOOC (massive open online courses), engaging more employers in public education and training design, and promoting the increased provision of adult learning and vocational training through higher education institutions (Ministry of Education and Ministry of Employment and Labour).
- Encourage community-based lifelong learning by promoting lifelong learning cities, increasing lifelong learning opportunities through local lifelong learning centres, and supporting tailored lifelong learning programmes that reflect local demands (Ministry of Education, Ministry of SMEs and Start-ups).
- Strengthen the lifelong learning environment by bolstering legal frameworks and vertical co-ordination mechanisms, improving the quality of lifelong learning statistics, and increasing public expenditure in lifelong learning (Ministry of Education and Ministry of Economy and Finance).

Once the five-year National Lifelong Education Promotion Basic Plan has been established, state- and municipal-level governments are obliged to develop their own lifelong education promotion basic plans and annual lifelong education promotion implementation plans in close alignment with the prescribed objectives, strategies and initiatives proposed by the national-level plan. These plans are then submitted for review to the Lifelong Education Promotion Councils established at both state and municipal levels to promote lifelong learning and facilitate lifelong learning policy co-ordination.

Source: OECD (Forthcoming[14]), *Skills Strategy Report for Korea: Governance Review*; Government of Korea (2021[13]), *Lifelong Education Act*.

A comparison between the PED and Tlaxcala's 53 publicly accessible PMDs demonstrates numerous cases of misalignment (Table 5.3). Analysis based on these cases of misalignment reveals that the percentage of municipalities with a misalignment between the PMD and the PED reaches 92% in the tourism priority area, followed by competitiveness (78%), rural development (55%), education (43%) and employment (17%). Considering that adult learning is a horizontal topic that cuts across all objectives of the PED, this lack of alignment seems to undermine the PED's potential to foster co-ordinated adult learning policy provision at the municipal level. In addition, the PED does not have any objectives related to adult learning as remedial education, which is highlighted in most (32 out of 53) of the PMDs.

Table 5.3. Alignment between the PED and PMD in priority policy areas

Priority areas of PMD that are aligned (blue) or misaligned (white) with PED

Municipality	Employment	Competitiviness	Rural development	Tourism	Education	Municipality	Employment	Competitiviness	Rural development	Tourism	Education
Amaxac de Guerrero						Tetla de la Solidaridad					
Atlangatepec						Tetlatlahuca					
Atltzayanca						Tlaxcala					
Apizaco						Tlaxco					
El Carmen Tequexquitla						Tocatlán					
Cuapiaxtla						Totolac					
Cuaxomulco						Zitlaltepec de Trinidad Sánchez Santos					
Chiautempan						Tzompantepec					
Muñoz de Domingo Arenas						Xaloztoc					
Españita						Xaltocan					
Hueyotlipan						Papalotla de Xicohténcatl					
Ixtacuixtla de Mariano Matamoros						Xicohtzinco					
Ixtenco						**Zacatelco**					
Mazatecochco de José María Morelos						Benito Juárez					
Contla de Juan Cuamatzi						Emiliano Zapata					
Tepetitla de Lardizábal						La Magdalena Tlaltelulco					
Nanacamilpa de Mariano Arista						San Damián Texoloc					
Acuamanala de Miguel Hidalgo						San Francisco Tetlanohcan					
Natívitas						**San Jerónimo Zacualpan**					
Panotla						San José Teacalco					
San Pablo del Monte						San Juan Huactzinco					
Santa Cruz Tlaxcala						San Lorenzo Axocomanitla					
Tenancingo						**Santa Ana Nopalucan**					
Teolocholco						Santa Apolonia Teacalco					
Tepeyanco						Santa Catarina Ayometla					
Terrenate						Santa Cruz Quilehtla					
						Santa Isabel Xiloxoxtla					

Note: Blue cells imply that the given municipality's PMD was aligned with the PED under that priority area. Municipalities in bold highlight the need for better co-ordination between state and municipal institutions and programmes regarding adult learning.
Source: This table has been created by the OECD for the purposes of this project based on the state and municipal development plans.

Tlaxcala's legal instruments (PED, PMD) for the vertical co-ordination of adult learning are complemented by several co-ordinating bodies. ICATLAX and ITEA, operating at the state level, run a number of training units at the municipal level, which act as co-ordinating bodies to facilitate collaboration and co-ordination in adult learning provision between the state and municipalities. However, these training units only exist in a limited number of municipalities. For example, ICATLAX currently has nine training units and one mobile unit across ten municipalities – Calpulalpan, Chiautempan, Huamantla, San Pablo del Monte, Tepetitla, Tetla, Tetlanohcan, Tlaxco, Zitlaltepec and Papalotla. Out of these ten training units, seven are located in Tlaxcala's most populated municipalities, implying that in less populated areas, mechanisms for co-ordinating the provision of adult learning are relatively weaker.

A lack of co-ordination between the state and municipalities can create several challenges in the provision of adult learning, such as overlaps of adult learning programmes between the state and municipalities. It can also weaken municipalities' understanding of adult learning priorities set out at the state level (e.g. through the PED), resulting in misinterpretation or diverging interpretations of Tlaxcala's adult learning goals. Conversely, the lack of co-ordination can diminish the state's understanding of the specific challenges that each municipality may face when putting state-level adult learning goals into practice. Such a lack of understanding can deprive the state of the opportunity to benefit from on-the-ground feedback on adult learning policy design, which could guide the provision of necessary support to municipalities. Tlaxcala has established relatively effective co-ordination mechanism regarding its financial policies (Box 5.3). Under the Financial Co-ordination Law for the State of Tlaxcala and its Municipalities (Ley de Coordinacion Hacendaria para el Estado de Tlaxcala y sus Municipios), Tlaxcala provides relevant support to municipalities based on effective co-ordination mechanisms.

Box 5.3. Relevant national example: Co-ordination between the state of Tlaxcala and its municipalities for financial policies

In the context of growing financial decentralisation, the state of Tlaxcala has developed structured co-ordination mechanisms to facilitate effective co-ordination between the state and municipalities in the area of financial policies. Under the Financial Co-ordination Law for the State of Tlaxcala and its Municipalities, the state established co-ordination measures to support municipalities in financial policy design and implementation.

First, the state of Tlaxcala operates the State Tax Co-ordination System to identify municipalities that have particular needs for additional financial resources. This serves as an important instrument to allocate the state's financial resources equitably across municipalities. Second, the state of Tlaxcala developed clear definitions of the roles and responsibilities of relevant actors (i.e. State Congress, State Executive and municipalities), a range of financial resources, and types of decrees and ordinances related to financial co-ordination between the state and municipalities. Clear definitions of related actors and instruments help promote effective co-ordination between the state and municipalities in terms of the administration, collection, surveillance and evaluation of public spending. Third, the state of Tlaxcala promotes citizen participation at state and municipal levels in decision making related to public financial programmes and projects. Lastly, municipalities that do not have sufficient capacity and administrative infrastructure to comply with actions required by the financial co-ordination mechanism can sign agreements with the state of Tlaxcala to receive administrative support, including technical support in computing, the preparation of financial programmes, and planning, and intervention in administration procedures.

Source: Government of Tlaxcala (1999[15]) *Financial Co-ordination Law for the State of Tlaxcala and its Municipalities* https://normas.cndh.org.mx/Documentos/Tlaxcala/Ley_CHE_Tlax_Tlax.pdf.

Recommendations for promoting vertical co-ordination in adult learning between the state and municipalities

5.1 Foster better alignment between the State Development Plan (PED) and municipal development plans (PMD). First, Tlaxcala should more clearly define adult learning objectives and the roles and responsibilities of relevant actors in the PED to provide a good example and better guidance to Tlaxcalan municipalities in the development of their PMDs. A standardised structure for PMDs should be prescribed by the state to enable comparison across municipalities in terms of content and level of alignment with the PED. Second, Tlaxcala should take concrete follow-up actions once PMDs have been delivered. Once submitted to the Senior Government Office, designated personnel in the office, supported by the Higher Inspection Body (Órgano de Fiscalización Superior, OFS), could evaluate the alignment of adult learning policies and programmes between the PED and PMDs, communicate the results and provide feedback to municipalities.

5.2 Establish designated focal points in each municipality to co-ordinate the activities of the state and municipalities in the area of adult learning. Officials from ICATLAX or ITEA could be designated as focal points in municipalities where they are present. In municipalities where ICATLAX and ITEA do not have a presence, the focal point could be an official from SEP Tlaxcala education units or other departments (i.e. Department of Agriculture and Rural Development, Department of Environment and Natural Resources). In some municipalities, these departments have a physical presence and provide technical and vocational education in specific areas. Using their knowledge about local skills needs and facilities (i.e. local offices, centres or buildings), these departments could act as focal points and provide more adult learning opportunities in relevant areas in collaboration with municipal and state governments, as well as ICATLAX and ITEA. Lastly, the focal points could take responsibility for leading co-ordination between the PED and PMDs at the municipal level. By liaising with the Senior Government Office and the Higher Inspection Body, the focal point could also promote the exchange of feedback between the state and municipalities and facilitate the state's provision of consulting and incentives to municipalities when needed.

Strengthening adult learning impact evaluation mechanisms

The appropriate *ex post* impact evaluation of policy interventions is key to assessing the effectiveness of public policies, and is widely regarded as a means to improve their quality. Impact evaluation can help determine if a policy intervention has reached the objectives it aimed to achieve. Effective impact evaluation provides important evidence to improve governance, as policy makers can reassess the roles and responsibilities of relevant actors, improve policy co-ordination, and reallocate financial resources based on evaluation results. *Ex post* impact evaluations should be embedded in the process of designing and implementing policies (OECD, 2016[16]).

Effective *ex post* impact evaluation in adult learning can assess whether adult learning programmes have produced expected learning outcomes, and whether financial resources have been distributed efficiently (OECD, 2020[17]; OECD, 2019[18]). In this way, robust evaluation mechanisms can help sustain momentum to support strongly performing adult learning programmes across electoral cycles, and therefore contribute towards maintaining a long-term, co-ordinated vision of the adult learning system.

At the national level, Mexico's National Council for the Evaluation of Social Development Policy (Consejo Nacional de Evaluación de la Política de Desarrollo Social, CONEVAL) conducts a Diagnosis of Advances in Monitoring and Evaluation in Federal Entities (*Diagnóstico del avance en monitoreo y evaluación en las*

entidades federativas) (CONEVAL, 2019[19]). This diagnosis has been carried out biennially since 2011 to assess the performance of Mexican states in evaluating their social policies and programmes (Box 5.4). The objective of the diagnosis is to compare states' overall performance in policy monitoring and evaluation.

Box 5.4. The monitoring and evaluation index of CONEVAL

The monitoring and evaluation index, through the diagnosis of monitoring and evaluation progress in the states, identifies progress on the issuance of regulations and the implementation of monitoring and evaluation of social development policy and programmes.

The index has nine relevant areas of analysis that are organised in four levels of disaggregation:

1. **Normative and practical components**: Normative component refers to the regulations issued by federal entities in several areas of analysis, such as social development law, registry of beneficiaries and criteria of evaluation. Practical component refers to the implementation of these areas.
2. **Elements**: This involves nine areas of analysis: 1) the existence and scope of the Social Development Law, or equivalent; 2) criteria for the creation of new programmes; 3) creation of a list of beneficiaries; 4) preparation of operating rules or equivalent; 5) dissemination of programme information; 6) transparency in the budget; 7) monitoring and evaluation elements; 8) performance and management indicators; and 9) area responsible for conducting evaluation.
3. **Variables**: This involves 27 variables: 14 regarding the normative component and 13 regarding the practical component.
4. **Criteria**: This considers 154 criteria related to the characteristics evaluated in each variable.

Source: CONEVAL (2019[19]), *Diagnosis of Advances in Monitoring and Evaluation in Federal Entities 2019*, https://www.coneval.org.mx/InformesPublicaciones/Documents/Diagnostico_2019.pdf.

At the state level, Tlaxcala conducts *ex post* evaluation of its policy interventions through the Annual Programme of Evaluation (Plan Annual de Evaluación, PAE) led by the Technical Directorate of Performance Evaluation (Dirección Técnica de Evaluación del Desempeño, DTED) at the Department of Planning and Finance (Secretaría de Planeación y Finanzas del Gobierno, SPF) (CONEVAL, 2019[19]). The objective of the PAE, which is conducted across all states in Mexico, is to evaluate the performance of federally funded programmes and to use the results as input for "results-based budgeting", a technique that encourages the planning of public expenditure based on measurable results of interventions (CONEVAL, 2019[19]).

The PAE uses indicators and methodologies established by CONEVAL. The effectiveness and efficiency of adult learning programmes in Tlaxcala are assessed through the evaluation of three programmes: the Contribution Fund for Technological and Adult Education (FAETA), the Care Agreement for the Demand for Adult Education (CADEA) and Supérate. FAETA evaluation covers adult learning programmes provided by ITEA and the College of Technical Professional Education of the State of Tlaxcala, while CADEA evaluation only covers ITEA programmes. The PAE for federally funded programmes conducts: 1) assessment of programme design; 2) assessment of programme process; 3) assessment of specific performance; 4) evaluation of indicators; 5) assessment of consistency and results; 6) integral evaluation; and 7) impact evaluation (Table 5.4) (Government of Tlaxcala, 2017[20]).

Table 5.4. Types of evaluation used in the Annual Programme of Evaluation (PAE)

Category	Indicators
1. Programme design	• Conducted for new budget programmes during the first year of implementation. • Assesses internal logic of a programme to verify whether it contributes to the solution of the problem for which it was created.
2. Programme process	• Analyses whether the budget programme carries out its operational processes effectively and efficiently, and whether it contributes to the improvement of programme management.
3. Specific performance	• Assesses whether the programme meets the intended objectives through an analysis of performance focusing on service and management indicators.
4. Evaluation of indicators	• Evaluates the relevance and scope of all indicators used for the particular budget programme within the PAE evaluations.
5. Programme consistency and results	• Analyses the design and overall performance of the budget programmes to improve their management and measure the achievement of their results.
6. Integral evaluation	• Serves as a general assessment of the performance of budget programmes by interpreting the results in a broader context.
7. Impact evaluation	• Identifies with rigorous methodologies the results of the programmes that are attributable to the execution of the budget programmes.

Source: Government of Tlaxcala (2017[20]), *Annual Programme of Evaluation*, https://www.septlaxcala.gob.mx/programa_anual_evaluacion/2017/pae_2017.pdf.

There are several challenges in using the PAE to evaluate the performance of adult learning programmes in Tlaxcala. First, only adult learning programmes provided by ITEA (under FAETA and CADEA), the College of Technical Professional Education of the State of Tlaxcala (under FAETA) and Supérate are evaluated under the PAE. This means that a large proportion of Tlaxcalan adult learning programmes provided by ICATLAX are currently not subject to any evaluation. Second, the adult learning programmes provided under FAETA, CADEA and Supérate, which are evaluated under PAE, have never been subject to an impact evaluation (Table 5.5). The evaluation of programme consistency and programme results is also carried out on an irregular basis (Table 5.5), which makes it challenging to verify whether the results of the evaluation from the previous year have been reflected in the following year's programme design.

Table 5.5. Types of PAE evaluation used for selected federally funded budget programmes

Types of evaluations conducted for FAETA, CADEA and Supérate between 2015 and 2020

Programme (year)	Evaluation type						
	Programme design	Programme process	Specific performance	Indicators	Consistency and results	Integral evaluation	Impact evaluation
ETA (2020)	-	-	-	-	**X**	-	-
FAETA (2019)	-	**X**	-	-	-	-	-
FAETA (2018)	-	-	**X**	-	-	-	-
FAETA (2017)	-	-	**X**	-	-	-	-
FAETA (2016)	-	-	-	-	**X**	-	-
FAETA (2015)	-	-	-	-	**X**	-	-
CADEA (2020)	-	-	-	**X**	-	-	-
CADEA (2019)	**X**	-	-	-	-	-	-
CADEA (2018)	**X**	-	-	-	-	-	-
Supérate (2020)	**X**	-	-	-	-	-	-

Note: CADEA and Supérate were initiated in 2017 and 2019 respectively. "x" indicates that the particular type of evaluation was conducted for the corresponding budget programme in the given year whereas "-" indicates that the particular type of evaluation was not conducted.
Source: Government of Tlaxcala (2020[21]), *Consistency and Results Evaluation of the Contributions Fund for Technological and Adult Education (FAETA): Fiscal Year 2019*.

The indicators used to assess programme consistency and results tend to measure participation in or the completion of adult learning, rather than examine the impact generated from the participation in or completion of adult learning programmes (Table 5.6).

Table 5.6. Indicators used for the evaluation of "programme consistency and results" in the PAE

Based on indicators used for FAETA evaluation (2020)

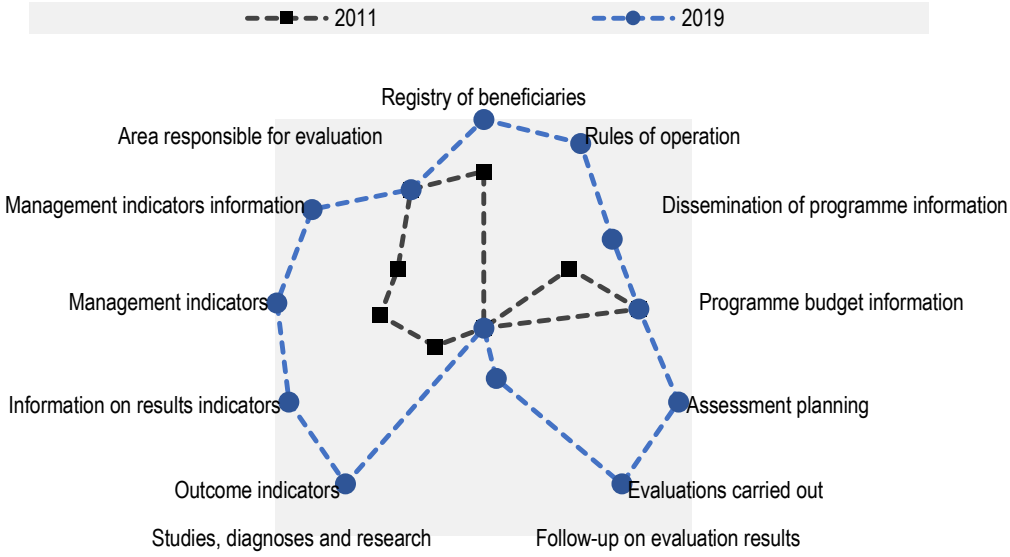
Category	Indicators
Goal	• Variation rate of the population aged 15 and over who under-perform in education and training
Purpose	• Variation rate of users completing initial, intermediate and/or advanced level.
Component	• Percentage of examinations administered in primary and secondary education that apply the Special Certification Programme (PEC). • Percentage of o learners with a leaving certificate as a share of the total number of learners who have completed certain levels of MEVYT and PEC • Percentage of accredited Education for Life and Work Model (*El Modelo Educación para la Vida y el Trabajo*, MEVYT) exams.
Activities	• Percentage of registrations in the PEC linked to an alliance. • Percentage of users who complete intermediate and advanced levels of the MEVYT and who have been involved in community-provided educational services. • Percentage of users who complete intermediate and advanced levels of the MEVYT and have been involved in educational services provided in local units of IEEA. • Percentage of certificates issued on request. • Percentage of women attended in the period. • Percentage of men attended in the period. • Percentage of dissemination actions of the educational programme. • Percentage of users who complete intermediate and advanced levels of MEVYT linked to study circles. • Percentage of MEVYT exams taken online in proportion to MEVYT exams taken in all forms • Percentage of MEVYT applied printed exams. • Reason for modules delivered and linked to users. • Percentage of online or digital modules linked. • Percentage of linked printed modules. • Percentage of advisers with more than one year of permanence with continuous training.

Source: Government of Tlaxcala (2020[21]), *Consistency and Results Evaluation of the Contributions Fund for Technological and Adult Education (FAETA): Fiscal Year 2019*.

Irregular results evaluation that relies simply on participation or completion rates may prevent the analysis of mid- to long-term impacts of adult learning programmes, which is critical for evidence-based policy making and the continued provision of strongly performing adult learning programmes. Within the current PAE framework, only one type of evaluation can be undertaken per year, which may restrict the inclusion of impact evaluation when there is particular need for another type of evaluation for the given year. In the case of FAETA, there was a three-year gap (2017-2019) in such evaluation. For CADEA, consistency and results evaluation has never been conducted, despite being in place since its initiation in 2017.

Tlaxcala has room for improvement in following up on evaluation results. According to the Diagnosis of Advances in Monitoring and Evaluation in Federal Entities conducted by CONEVAL, Tlaxcala has made advances in many components of the diagnosis, but its performance remains weak regarding follow-up on evaluation results (Figure 5.3). This can partly be explained by the lack of PAE guidelines, which would suggest concrete steps and follow-up actions. Each PAE report identifies Susceptible Aspects for Improvement (*Aspectos Susceptibles de Mejora*, ASM), which refers to areas where follow-up actions are deemed necessary (Government of Tlaxcala, 2020[21]). The PAE then allocates five months for relevant actors to address the ASMs. However, the PAE does not provide a clear set of procedures to facilitate the follow-up of identified recommendations, as done, for instance, by Chile's Evaluation and Management Control System (SECG) (Box 5.5).

Figure 5.3. Change in Tlaxcala's performance in selected PAE components (2011 and 2019)



Note: The scores indicate the relative performance of the state of Tlaxcala in 2011 (black squares) and 2019 (blue circles) on the selected components of PAE on the scale of 0 (worst) to 4 (best) (normalised scores). Being further away from the core of the chart indicates better performance. For example, the component "Registry of beneficiaries" had a high score (4) in 2019, which indicates that Tlaxcala performed well and had improved from its previous score (3) recorded in 2011.
Source: CONEVAL (2019[19]), *Diagnosis of Advances in Monitoring and Evaluation in Federal Entities 2019*, https://www.coneval.org.mx/InformesPublicaciones/Documents/Diagnostico_2019.pdf.

StatLink https://stat.link/bp0keh

The absence of impact evaluation for adult learning programmes, coupled with inadequate follow-up actions, limits the extent to which evaluation can support evidence-based policy making in Tlaxcala. However, several positive developments can help Tlaxcala address these challenges. For example, the latest FAETA evaluation report recommends conducting impact evaluations of the FAETA budget (Government of Tlaxcala, 2020[21]), which can help build momentum to initiate impact evaluations of FAETA-financed adult learning programmes.

Box 5.5. Relevant international example: Chile's Evaluation and Management Control System

Chile's Evaluation and Management Control System (SECG) is an initiative administered by the Chilean Budget Office of the Ministry of Finance (DIPRES).

SECG includes four types of *ex post* evaluation for public policy programmes and institutions: 1) evaluation of governmental programmes (*evaluación de programas gubernamentales,* EPG); 2) impact evaluation (*evaluación de impacto,* EI); 3) evaluation of institutional cost (*evaluación del gasto institucional,* EGI); and 4) evaluation of new programmes (*evaluación programas nuevos, EPN*).

The main objective of the EI line of work is to evaluate the effectiveness of public policy programmes and the intermediate and final results for the beneficiaries through quasi-experimental methodologies. The evaluations require field research to gather programme information. They are carried out by external evaluation entities, either universities or consulting firms, which are selected through a public tender.

The evaluation process lasts approximately 18 months. In the interim period, preliminary reports are delivered. The final evaluation report contains the evaluation results and recommendations that the panel proposes to overcome the shortcomings detected during the evaluation.

The recommendations formulated by the evaluators are analysed in the Ministry of Finance together with the institutions responsible for the programmes evaluated to specify how they will be incorporated, identify the leader for such efforts (ministry, other public institutions), and identify the possible legal and resource restrictions. The final product consists of formally establishing institutional commitments to incorporate recommendations in each of the programmes evaluated. These commitments constitute the basis for monitoring the performance of the programmes.

Since the beginning of the evaluations, DIPRES has requested a permanent interlocutor within each ministry. In the Ministry of Education, this responsibility is assumed by the Division of Planning and Budgets (DIPLAP). The main objective of DIPLAP is to co-ordinate the entire programme evaluation process carried out by DIPRES. DIPLAP's tasks include ensuring the adequate participation of the ministry from the beginning of the programme evaluation process and providing technical support and advice where relevant.

Between January and August 2016, an Impact Evaluation of the Education Programme for Youth and Adults (*Programa educación para personas jóvenes y adultas*) was completed under SECG. The final report of approximately 150 pages contained conclusions regarding the quality and cost-efficiency of the programme, together with concrete policy recommendations.

Source: Ministry of Education (2021[22]), *Chilean Budget Office of the Ministry of Finance (DIPRES) Evaluation*, https://centroestudios.mineduc.cl/evaluaciones-dipres/una-evaluacion-dipres/.

Recommendations for strengthening adult learning evaluation mechanisms

5.3 Expand the implementation of impact evaluation for adult learning programmes. Tlaxcala's Annual Programme of Evaluation (PAE) should conduct impact evaluations of adult learning programmes provided by FAETA, CADEA and Supérate. Indicators for impact evaluation will first need to be set. The PAE could consider adopting mid- to long-term indicators for "perceived impact" established under the OECD Priorities for Adult Learning (PAL), which seek to assess the readiness of adult learning systems to respond to the challenges of changing skill needs (i.e. usefulness of training use of acquired skills, impact on employment outcomes, and wage returns to adult learning). Similar to Chile's SECG (Box 5.5), PAE impact evaluation should be composed of a structured set of deliverables (i.e. preliminary report, final report with recommendations, follow-up on the recommendations). Once the impact evaluation has been initiated it should be conducted in a regular and sustained manner to produce adequate data to inform evidence-based policy making. As adult learning programmes provided by ICATLAX are not included in the PAE, a dedicated unit for adult learning evaluation could be established in the Directorate for Education Evaluation (Dirección de Evaluación Educativa, DEE) at SEP Tlaxcala. The unit would be tasked with carrying out the impact evaluation of adult learning programmes provided by ICATLAX using the same criteria applied by FAETA, CADEA and Supérate in the impact evaluation of the PAE. In order to ensure comparability across evaluations, DEE could use a set of indicators for impact evaluation similar to those proposed for use under the PAE. As successful evaluations depend on high-quality data collected from monitoring, adult learning providers (i.e. ICATLAX, ITEA) should be required to monitor and accumulate on an ongoing basis data on indicators that will be used for impact evaluation.

5.4 Utilise the results of the evaluations of adult learning programmes to inform evidence-based policy making process. The Technical Directorate of Performance Evaluation (Dirección Técnica de Evaluación del Desempeño, DTED) of the SPF could be tasked with not only publishing the results of evaluations and ASMs, but also following up with relevant institutions to hold them accountable to deliver on the ASMs identified by the PAE. The designated unit in DEE (see Recommendation 5.3) could also be responsible for publishing the results of its impact evaluations on adult learning programmes and following up on the recommendations produced. Similar to Chile's DIPRES (Box 5.5), the DTED and DEE could lead efforts in analysing the recommendations for improvement, following up on the implementation of the recommendations, and identifying possible legal and resource constraints that need to be addressed. An interlocutor could be assigned in each relevant institution involved in adult learning to facilitate the efforts of the DTED and DEE.

Opportunity 2: Maximising the potential of skills data to strengthen skills assessment and anticipation exercises

Mobilising skills data and maximising their potential allows countries to effectively generate information about the current and future skills needs of the labour market (skills demand) and the available skills supply (OECD, 2016[23]). Engaging in such skills assessment and anticipation (SAA) exercises contributes to making skills systems more responsive and empowers policy makers to respond swiftly to reduce costly skills imbalances (see Chapter 2). More countries are taking steps to develop robust SAA exercises to foster a better alignment between skills supply and demand (OECD, 2016[23]).

In the context of structural changes brought about by the COVID-19 pandemic and the USMCA agreement, Tlaxcala's ability to thrive in the post-pandemic context will depend on its ability to effectively respond to changing labour market developments. Because of the worsening economic situation induced by the pandemic, many displaced workers will require adequate reskilling and upskilling. The USMCA agreement is likely to further magnify the relative importance of certain Tlaxcalan sectors, which will put pressure on Tlaxcala's education and training system to keep up with changes to the economic structure of the state. The capacity to assess and anticipate current and future skills needs is likely to become a crucial cornerstone of Tlaxcala's policy making in the years to come.

SAA exercises exist in almost all OECD countries. They can differ in various ways: 1) definition of skills and proxies used to measure them (education qualifications, fields of study, specific skills); 2) coverage (national, regional or sectoral exercises); 3) time span (current assessment vs, short-, medium- or long-term forecasts); and 4) methods used (quantitative or qualitative). However, all skills data is put to the most effective use in policy making when there is good co-ordination across the whole of government, and strong stakeholder involvement (OECD, 2016[23]).

Tlaxcala should use a rich variety of skills data for assessing and anticipating changing skills needs, and continue its efforts to maximise its potential, by:

- Bolstering the analytical foundations and results dissemination of skills assessment and anticipation exercises.
- Strengthening stakeholder engagement in consolidating, analysing and validating the findings from skills assessment and anticipation exercises, and advising policy makers.

Bolstering the analytical foundations and results dissemination of skills assessment and anticipation exercises

Effective and impactful SAA exercises rely on the high-quality analysis of skills needs before the results of such analyses are consolidated and disseminated to relevant target groups. Strong analytical foundations of SAA exercises (i.e. robust data collection, data processing, data analysis and data linkages) enable the more accurate and reliable diagnosis and projection of skills needs. At the same time, communicating the results of SAA exercises to the public allows individuals (jobseekers, individuals in need of training, young people weighing their study choices) to make decisions aligned with the needs of the labour market.

Tlaxcala uses both federal and state sources of skills data to keep track of its supply and demand of skills, as indicated in Figure 5.2 above. Interviewed stakeholders commented that the co-ordination of data exchange between state and federal entities is one of the key challenges in effectively assessing and anticipating Tlaxcala's skills needs. The vacancy data gathered in the Information System of the National Employment Service (SIISNE), operated by National Employment Service Unit (USNE), cannot be readily accessed by the National Employment Service of Tlaxcala (SNET). Instead, USNE sends reports to state-level employment services with aggregate data for the previous month during the first fifteen days of the current month. Stakeholders in Tlaxcala highlighted that USNE reports do not always arrive on time. If a data request from a state-level entity in Tlaxcala arises in between the officially delineated periods when USNE sends the vacancy reports, the process for obtaining the data is lengthy and cumbersome. To request the data, an official letter signed by the Director of SNET indicating what type of data is required and why the data are needed has to be sent to USNE, and the response can take up to ten days. Therefore, it is difficult for Tlaxcala to make short-term projections about its skills needs based solely on results supplied at the federal level, where the data are handled and inaccessible to state-level entities.

It is important to acknowledge the measures that Tlaxcala has taken to address issues arising from co-ordination challenges with USNE. As mentioned above, SNET has constructed its own internal inventory of vacancy data that gathers information on jobseekers' profiles (name, age, gender, working history) and current vacancies (companies soliciting workers, their location, type of position advertised and type of skills sought). This new vacancy data inventory means that SNET can at any point in time rely on regularly updated data on flows of jobseekers, which can be disaggregated as needed. In the internal inventory there are 34 data fields for employers (vacancies), 27 for jobseekers awaiting placement and 30 for jobseekers placed. However, interviewed stakeholders commented that there is room for improvement of the inventory in terms of: 1) collecting data on vacancies from a larger number of employers; 2) being more consistent in classifying and organising vacancy data; 3) strengthening the technical skills of SNET staff and the inventory's design to allow for more thorough data analysis; and 4) more actively integrating the vacancy inventory with Tlaxcala's other skills data sources.

Regarding the collection of SNET's own vacancy data, interviewed stakeholders agreed that it does not succeed in capturing the entirety of Tlaxcala's labour market as the vacancies recorded are reported to SNET voluntarily by employers. SNET's recruitment advisors (*consejeros en reclutamiento*) are in charge of actively reaching out to employers registered in SNET's database and identifying new employers to engage. Systematic, state-wide employer surveys could be helpful to fill the gap by providing a regular source of information on changing labour market needs; however, as highlighted above Tlaxcala does not administer employer surveys. The closest alternative to employer surveys, ICATLAX's surveys of companies participating in SNET's regular job fairs, are limited to a handful of companies and do not provide a comprehensive picture of the needs of Tlaxcala's labour market. Interviewed stakeholders underlined that putting in place a formal, permanent mechanism for regularly surveying employers' needs, such as a skills needs survey, would be fundamental for enriching Tlaxcala's skills data and improving the state's capacity to assess changing skills needs.Box 5.6 describes New Zealand's Survey of Employers who have Recently Advertised (SERA), which is used to complement the vacancy data collected under the Job Vacancy Monitoring Programme (JVMP).

Box 5.6. Relevant international example: New Zealand's Survey of Employers who have Recently Advertised (SERA)

The Survey of Employers who have Recently Advertised (SERA) is one of two principal components of New Zealand's Job Vacancy Monitoring Programme (JVMP), introduced by the Department of Labour to help identify skills shortages in the country. It is complemented by the programme's second component, the Job Vacancy Monitor (JVM), which analyses vacancy data advertised on selected online job portals and in print media on a monthly basis.

SERA surveys employers who have recently published a vacancy. The survey comes in two forms: extensive and intensive.

The extensive SERA is a short telephone survey of a sample of employers administered in the first half of the year to provide a broad overview of labour market developments. The sample contains between 3 000 and 4 000 advertised vacancies. Employers are approached six to eight weeks after having advertised a vacancy and asked whether they have succeeded in filling the vacancy and how many suitable applications they received. Based on this information, the Department of Labour is able to calculate the "fill rate" for each occupation (proportion of vacancies filled within six to eight weeks of being published) and the average number of suitable applicants per vacancy. These measures serve as key indicators of occupational shortages; occupations with fill rates lower than 80% are classified as shortage (hard-to-fill) occupations.

The intensive SERA builds on the results of the extensive SERA and is administered in the second half of the year. It is an in-depth survey of a small number of companies that have recently advertised vacancies in shortage. Its objective is to gain rich qualitative knowledge of the causes of shortages in each occupation. It is based on a sample of 20 employers in each shortage occupation. Occupations are identified as hard-to-fill either on the basis of the extensive SERA or the JVM (e.g. a rapid increase in the number of advertised vacancies in an occupation might indicate an emerging shortage). The questionnaire is a mix of quantitative and qualitative questions. Quantitative questions are similar to those included in the extensive SERA. Qualitative questions include enquiries about 1) whether the shortage is an actual skill shortage or reflects a recruitment difficulty; 2) the skill sets employers are having trouble finding among applicants; and 3) implications of the inability to fill vacancies for the employer, and their response.

The decision to rely on SERA for surveying employers' needs was a result of weighing the pros and cons of three other models of employer survey. The Department of Labour opted for SERA after it achieved the highest overall score according to the following criteria: 1) user needs, weighed according to the strategic importance of potential users; 2) contribution to the objectives of the government's Skills Action Plan; 3) not duplicating existing or forthcoming information; 4) cost-effectiveness; 5) respondent burden; 6) focus on specialised occupations; 7) potential to create strong linkages with other initiatives assessing skills shortages; 8) statistical robustness; 9) ability to provide a macro perspective; and 10) objectivity.

Source: González-Velosa and Rucci (2016[24]), *Methods for anticipating skills needs*, https://publications.iadb.org/en/methods-anticipate-skills-demand.

There is room to improve the data processing of SNET's vacancy inventory, particularly the consistency of definitions used by SNET and USNE to classify and organise vacancy data. Having developed an alternate data inventory at the state level, SNET now relies on a separate data source alongside the diagnosis infrequently supplied from the federal level (USNE) to keep track of vacancies in the state. However,

collecting the same data simultaneously at the federal and state level can pose challenges, including risks of duplication or incomparability of results (OECD, 2016[23]). If regional (state) data are not harmonised in their methods and definitions, comparisons and aggregations with national (federal) level data can be made difficult, or even impossible (OECD, 2016[23]). Stakeholders noted that SNET does not use the same definitions of key indicators (e.g. how much time a jobseeker has to spend in a new job to be officially classified as having filled the vacancy) as USNE. Such discrepancies lead to SNET and USNE producing diverging results (i.e. numbers and characteristics of jobseekers and vacancies) that are not easily comparable and that can bias the picture of skills needs in the state. Better aligning state and federal indicators is crucial to foster the comparability of data and avoid the risk of producing duplicative results.

There are four opportunities to enhance the data analysis of SNET's internal vacancy inventory. First, stakeholders commented that even though SNET's data inventory gathers the right type of data, not all of SNET's staff feed the database with the necessary data as regularly as officially required. As a result of inadequate and irregular data input, SNET's internal vacancy inventory is not seen as a sufficiently reliable source, which constrains the data analysis process. Second, there is room to strengthen the technical expertise in SNET to carry out statistical analysis based on the current data. Stakeholders noted that the lack of relevant information and communication technology (ICT) and statistical skills on the part of SNET staff leads to the inadequate handling of data, which is aggravated by the lack of knowledge about the importance of reliable data in the first place. Third, SNET's internal vacancy inventory has a simple design (i.e. it comes in the form of an Excel sheet) and it can be time consuming to work with due to its size. Stakeholders commented that moving from the current Excel-based data inventory towards an official, online system would make the data analysis process more efficient and enable linkages with other sources of skills data. Fourth, as mentioned above, SNET's own vacancy data is currently used to keep track of the number, distribution and characteristics of jobseekers in Tlaxcala by recording current jobseeker registrations and vacancy matches. However, it lacks the capacity to generate projections about Tlaxcala's future skills needs due to its inflexible design, the lack of technical expertise in SNET and irregular data input.

Many stakeholders commented that SNET's vacancy inventory could be better integrated with Tlaxcala's other sources of skills data (Figure 5.2). For instance, SNET's inventory is not linked with the state-level data collected thorough the Economic Census. Stakeholders indicated that linking data collected from the Economic Census with SNET's vacancy data is not only possible, but also desirable. This type of interoperability would enable the identification of the types of skills profiles (based on vacancy data) sought in Tlaxcala's most productive sectors, thus helping to better tailor the state's education and training offer (e.g. ICATLAX's courses). Box 5.7 describes how Austria's Target Group Oriented Labour Market Information System (AMS Skills Barometer) combines vacancy data collected by the public employment service with online and print job postings.

Box 5.7. Relevant international example: Austria's Target Group Oriented Labour Market Information System (AMS Skills Barometer)

Austria's AMS Skills Barometer is an instrument developed by the Austrian public employment service (PES) (Arbeitsmarktservice, AMS) that seeks to provide information on current and future (short- and medium-term) skills needs. The tool was created to consolidate Austria's available skills data and make the data available to a broad range of end users: government, employers and businesses, workers and jobseekers, educators, training providers, career guidance counsellors, and researchers.

The AMS Skills Barometer is run by the AMS together with a private consultancy firm and the Institute for Research on Qualifications and Training of the Austrian Economy (Institut für Bildungsforschung der Wirtschaft, IBW), which is a subsidiary of the Austrian Federal Economic Chamber (Wirtschaftskammer Österreich, WKO).

The AMS Skills Barometer analyses the vacancy data collected by the AMS, online job postings and job postings advertised in Austrian print media at three levels of disaggregation. Level 1 includes 24 wider occupational areas, level 2 includes 95 smaller occupational fields, and level 3 includes 560 occupational profiles. The results are presented in tables that show the number of PES vacancies, online job postings and print job postings at each of the three levels of disaggregation. From analysing the PES, print and online vacancies, the AMS Barometer is also able to forecast labour market demand (increasing, stable, decreasing) at the level of occupational fields and profiles.

To help individuals re/upskill in line with shifting labour market needs, the AMS Skills Barometer also identifies the skills required for each occupational area, field and profile from among 23 broader skills areas, 230 skills types and approximately 8 000 more detailed and specific skills.

Source: González-Velosa and Rucci (2016[24]), *Methods for anticipating skills needs,* https://publications.iadb.org/en/methods-anticipate-skills-demand; AMS (2020[25]), *AMS Skills Barometer – Methodology,* http://bis.ams.or.at/qualibarometer/hilfe.php?load=methodik2.

There is room to strengthen the dissemination of SAA results to the public. In Tlaxcala, the results of the analysis of Tlaxcala's skills data (Figure 5.2) are not adequately consolidated in one place that is accessible to the public, which prevents the active dissemination of results to end users, including students and jobseekers, seeking guidance on how to make the most informed and profitable decisions in their lives and careers. Many countries consolidate the results from a variety of SAA exercises, including graduate tracking, in an online public portal that outlines the labour market prospects and often contains information on study opportunities (OECD, 2020[26]). In Mexico, there are a variety of these platforms at the federal level, such as the Labour Observatory or Compare Careers (Figure 5.2). However, as highlighted above, given that state-level disaggregation is often missing from these portals, the information provided might be of limited use to Tlaxcala's citizens. Interviewed stakeholders agreed that Tlaxcala's public could greatly benefit from such a portal. In 2019, the Government of Mexico City introduced its own Skills Needs Portal, DiCode (*Diagnóstico de Competencias Demandadas*), which consolidates key labour market information for the public in one place (Box 5.8). The innovative web scraping method leveraged by DiCoDe, but not (yet) widely used in Tlaxcala, could serve as a further source of inspiration.

Box 5.8. Relevant national example: Mexico City's Skills Needs Portal – DiCoDe

The DiCoDe portal is an online tool developed by the Secretariat of Labour and Employment Promotion (Secretaría del Trabajo y Fomento al Empleo, STyFE) of Mexico City. Its main aim is to support STyFE's objective of securing the right to dignified and decent work for all citizens, while recognising that access to reliable, systematised and up-to-date information facilitates a greater degree of labour market inclusion. By reducing information gaps in skills supply and demand, DiCoDe also supports better employability and the development of required skills.

The DiCoDe portal fulfils three functions. First, it scans the main online job portals in Mexico City, collects information on advertised vacancies and consolidates this information in one place. Second, it classifies the vacancies according to the National Occupational Classification System (Sistema Nacional de Clasificación de Ocupaciones, SINCO). Third, it measures the gaps between the skills, knowledge and abilities most in demand in Mexico City, and those possessed by jobseekers.

The innovative feature of the DiCoDe portal lies in its reliance on "big data", which is leveraged to analyse the content of thousands of job vacancies using web scraping, natural language processing and machine learning. The portal can identify and consolidate the main skills, knowledge, abilities and occupations in demand in Mexico City, almost in real time. At the same time, DiCoDe generates insights regarding how the information contained in the advertised vacancies corresponds to the characteristics of Mexico City's workforce. The portal also includes a job search and training search function.

The DiCoDe portal is intended for a broad range of end users. It allows workers to better understand the types of skills demanded in the labour market, while employers can learn how common the vacancies they are trying to fill are. At the same time, policy makers, PES and training providers can make use of the information provided on DiCoDe to adjust the content of their policies, programmes and activities. All the information contained on the DiCoDe portal is, and will continue to be, public.

There are further improvements foreseen for DiCoDe. Apart from intending to bolster the portal's visual, STyFE plans to improve the quality of information on skills supply that DiCoDe provides by allowing employers to see the profiles of jobseekers registered on the platform.

Source: Government of Mexico City (2019[27]), *Analysis of the intersections between labour supply and demand in Mexico City*, https://www.trabajo.cdmx.gob.mx/storage/app/media/Dicode100.pdf; Sierra et al. (2020[28]), *Enhancing Job Searches in Mexico City with Language Technologies,* https://www.aclweb.org/anthology/2020.lt4gov-1.3/; Government of Mexico City (2020[29]), *ILO Skills Challenge Innovation Call – DiCoDe,* https://www.youtube.com/watch?v=LHNMcyJLKDQ.

Recommendations for bolstering the analytical foundations and results dissemination of SAA exercises

5.5 Support SNET's efforts to strengthen its internal vacancy inventory. SNET's internal vacancy inventory could be transformed into a more robust and reliable tool for analysing Tlaxcala's current and future skills supply and demand in five ways. First, data collection processes could be enhanced through the more systematic and proactive outreach to employers by SNET officials, and consideration could be given to collecting data from online job vacancies through web scraping (Box 5.8). Second, data processing could be strengthened by aligning definitions of key indicators (e.g. jobseeker registrations and vacancy matches) used by SNET and USNE to foster comparability between the outputs of SNET's internal vacancy inventory and USNE's SIISNE. Third, the data analysis process could be improved through strengthening SNET officials' commitment to regularly inputting data by introducing stronger supervision of the process. SNET staff should also be provided with relevant ICT and statistical training to allow them to carry out more in-depth SAA exercises. Fourth, efforts should be channelled towards transforming SNET's data inventory from a simple internal Excel sheet into an official online system capable of storing larger amounts of data and enabling more flexible analysis. Fifth, consideration could be given to establishing linkages between SNET's vacancy data with other sources of skills data used by Tlaxcala (see how Austria's AMS Skills Barometer combines vacancy data with regional and national projections of skills needs and other skills data sources in Box 5.7). For instance, SNET's vacancy data could be linked to data from INEGI's Economic Census or state-wide employer surveys (see Recommendation 5.6). Overall, improving the data collection, data processing and data analysis of SNET's vacancy data, as well as establishing linkages with other state skills data sources, would support Tlaxcala in initiating SAA exercises dedicated to projecting future skills needs.

5.6 Introduce Tlaxcala's own skills needs survey to regularly survey employer's needs. The analysis of Tlaxcala's current and future skills demand would benefit from a more in-depth, state-wide and systematic source of insight regarding employers' needs. Implementing a regular employer survey would contribute to this goal. The survey should be administered in regular intervals and cover a wide range of employers, especially those representing Tlaxcala's key sectors (such as automotive, chemical, textile). The criteria that New Zealand relied on in designing its Survey of Employers who have Recently Advertised, such as cost-effectiveness, user needs or objectivity (Box 5.6), could serve as a useful guide for Tlaxcala's policy makers in the design of their own employer survey.

5.7 Design an online one-stop shop skills needs portal that provides information on Tlaxcala's skills needs, labour market trends and study opportunities. An online one-stop shop portal (such as Mexico City's DiCoDe portal described in Box 5.8) would aid the dissemination of results from SAA exercises among Tlaxcala's population. Tlaxcala's portal could include at least three components. First, it could present the results from SAA exercises carried out at the state-level based on bolstered and interconnected skills data sources (see Recommendations 5.5 and 5.6). Second, the portal could include reports published by the new Tlaxcala's Skills Needs Committee (see Recommendation 5.8), taking stock of quantitative SAA information and highlighting the most important labour market trends. Third, it could outline possible study opportunities (ideally both at the level of VET and higher education) in Tlaxcala, making synergies with the state-level relevant content already showcased in the Labour Observatory and Compare Careers portals. Departments in SEP and STPS (Tlaxcala) with sufficient technical and ICT expertise should jointly manage the portal, and ensure it is regularly updated and user-friendly.

Strengthening stakeholder engagement in consolidating, analysing and validating the findings from skills assessment and anticipation exercises, and advising policy makers

Although strengthening the analytical foundations of SAA exercises will be essential for Tlaxcala, Tlaxcalan policy makers should equally pay attention to engaging stakeholders in the SAA process. Stakeholders can consolidate the results from various SAA sources (such as Tlaxcala's own vacancy inventory and Mexico's Economic Census), analyse emerging skills needs trends and validate the findings in order to provide skills policy makers with recommendations (OECD, 2016[23]; Van Breugel, 2017[30]). Stakeholders are uniquely positioned to advise policy makers on the consolidation, analysis and validation of SAA findings given their valuable sector-specific and/or region-specific on-the-ground expertise.

There is ample room to strengthen the engagement of stakeholders in consolidating, analysing and validating SAA findings in Tlaxcala. As highlighted in Figure 5.2, such efforts are currently limited to ICATLAX engaging with companies and business leaders during SNET's regular job fairs. There is no multidisciplinary, inter-institutional formal mechanism or body in Tlaxcala that brings together key governmental and non-governmental stakeholders to consolidate, analyse and validate skills data (Figure 5.2). Stakeholders noted that Tlaxcala used to have a temporary committee that convened a diverse group of key actors to support SAA in the past (Box 5.9). In spite of certain operational challenges (Box 5.9), stakeholders commented that recreating a similar, but permanent, stakeholder engagement mechanism could greatly enrich Tlaxcala's SAA efforts and serve as a valuable source of advice to policy makers.

Box 5.9. Relevant national example: Tlaxcala's Committee for Connecting the Productive Sector with the Educational Technology Sector

Tlaxcala's Committee for Connecting the Productive Sector with the Educational Technology Sector (Comité de Vinculación entre los Sectores Productivo, de Bienes y Servicios con el Sector Tecnológico Educativo) was created in 2004 as an ad hoc response to a pronounced wave of foreign direct investment (FDI) coming into Tlaxcala. Tlaxcala's policy makers expected the volume of inward FDI to increase in the coming years, and therefore saw the need for the committee's establishment.

The committee's main objective was to identify the current and future skills needs of Tlaxcala's existing labour market, together with the potential needs of the international businesses expected to arrive in the state. It also discussed how education institutions could adjust their programmes to equip students with these skills. The committee served as a forum to foster information exchange and discussion between key stakeholders of Tlaxcala's labour market (businesses, employer associations and civil society organisations), government entities (federal, state and municipal) and education institutions (especially VET schools). The committee convened every two months.

During its existence, the committee encountered some challenges. For instance, although the same institutions participated in each committee session, they were not always represented by the same officials. Therefore, continuity and co-ordination between the different sessions was not always ensured.

Stakeholders indicated two possible reasons for the absence of a formal, permanent mechanism for convening the key actors of Tlaxcala's skills system to consult on current and future skills needs. First, internal regulations delineating the mandates of the different public entities do not foresee or provide a formal basis for this type of inter-institutional co-operation. At the same time, in the context of limited experience with such collaborative efforts, Tlaxcala cannot rely on the spontaneous, voluntary initiative of individual institutions to regularly convene to discuss the state's changing skills needs. Second, the active participation of individual employers can be precluded by a lack of awareness of the potential benefits to

working together. Stakeholders underlined that in Tlaxcala's companies (mostly small and medium-sized enterprises, SMEs), there is room to raise awareness about the fact that recruiting the right talent and minimising skills mismatches by reskilling and upskilling workers can elicit productivity gains, resource savings and foster innovation. Third, employer participation is made more difficult by the general lack of a collaborative culture for exchanging opinions, suggestions and requests internally to continuously improve Tlaxcala's companies. As a result, participating in external collaborative exercises might not come naturally to Tlaxcala's employers.

Nonetheless, stakeholders in Tlaxcala expressed strong support to systematically engage key actors in the consolidation, analysis and validation of SAA findings to advise policy makers on Tlaxcala's skills needs. Interviewed stakeholders attached particular importance to collecting different region- (municipality) and sector-specific perspectives on labour market developments in Tlaxcala to provide the government with an overview of Tlaxcala's skills needs and enable more responsive and informed policy making. Following the examples of Portugal's Co-ordinating Council of the Qualification Needs Anticipation System (Sistema de Antecipação de Necessidades de Qualificações, SANQ) and Norway's Future Skills Committee (Box 5.10), Tlaxcala could consider establishing its own Skills Needs Committee to advise the government on the consolidation, analysis and validation of the findings of Tlaxcala's SAA exercises.

Box 5.10 Relevant international examples: SAA models involving stakeholder participation

Portugal's Co-ordinating Council of the Qualification Needs Anticipation System

The Qualification Needs Anticipation System (SANQ) is the SAA mechanism established by Portugal's National Agency for Qualification and Vocational Education (ANQEP). SANQ draws on domestic (vacancy data, results from employer surveys, graduate labour market outcomes) and international data (projections of future skills demand by the European Centre for the Development of Vocational Training) to determine the demand for each qualification in Portugal's National Catalogue of Qualifications at the regional (NUT II) level.

SANQ is monitored by the Co-ordinating Council, which relies on the representation of a wide range of stakeholders, including: 1) government entities (ANQEP); 2) social partners and employers (General Workers' Union, Entrepreneurial Confederation of Portugal, Confederation of Farmers of Portugal, Confederation of Commerce and Services of Portugal, Confederation of Portuguese Tourism); and 3) international organisations (International Labour Organisation).

The Co-ordinating Council regularly convenes key actors in Portugal's skills policy to analyse and validate the results produced by SANQ. The council fosters active stakeholder engagement in Portugal's approach to SAA, but also complements SANQ's quantitative results with practical, on-the-ground perspectives from key actors representing different economic sectors and interest groups.

Norway's Future Skills Committee

Norway's Ministry of Education and Research established the Future Skills Committee (Kompetansebehovsutvalget) under the Norwegian Strategy for Skills Policy 2017-2021. The Future Skills Committee's mandate is "to provide the best possible evidence-based assessment of Norway's future skill needs." The functioning of the committee is set to continue for 2020-2026.

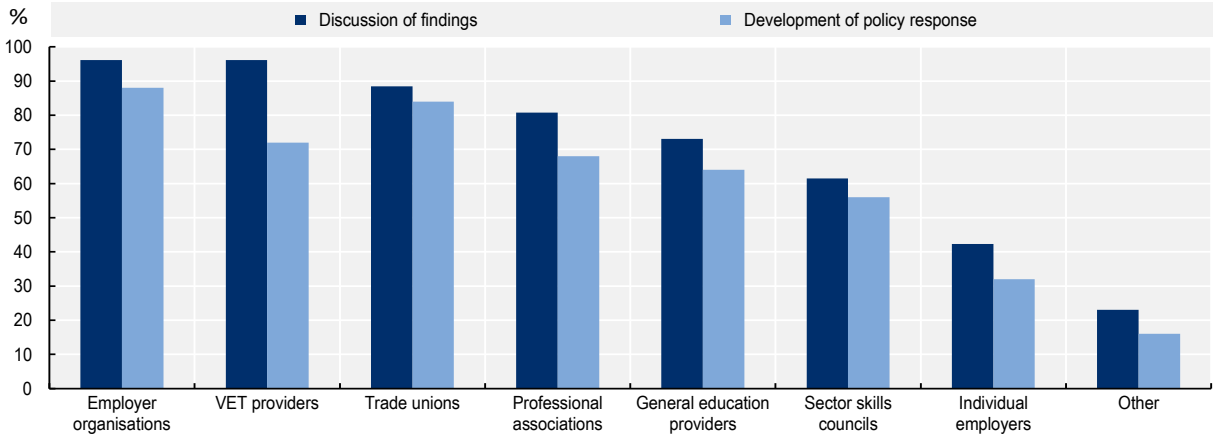
In the 2020-2026 period, the committee's main tasks will include: 1) providing an analysis of Norway's future skill needs (short, medium and long term), and the education system's ability to cover these needs; 2) stimulating open dialogue about society's skill needs with different stakeholders, while highlighting input from social partners; and 3) producing at least one report (national and regional) every other year that consolidates the abovementioned inputs. The committee may raise issues that concern skills needs in separate reports, articles or other documents. All of the committee's work should be useful for the design and implementation of skills policy by national and regional authorities.

The Future Skills Committee has 16 members and is chaired by the director of the Directorate for Lifelong Learning of Ministry of Education and Research (Skills Norway). There are eight representatives of social partners (four from the employer side and four from the employee side), seven researchers and one representative from the county councils (*fylkeskommunene*). The members of the committee are appointed for two years at a time. In 2020-2026, the committee will have its own secretariat at Skills Norway.

Source: OECD (2020[2]), *Strengthening the Governance of Skills Systems: Lessons from Six OECD Countries*, https://dx.doi.org/10.1787/3a4bb6ea-en; Skills Panorama (2017[31]), *Skills anticipation in Portugal*, https://skillspanorama.cedefop.europa.eu/en/analytical_highlights/skills-anticipation-portugal#_governance; Future Skills Needs Committee (2020[32]), *Norwegian Committee on Skill Needs,* https://kompetansebehovsutvalget.no/mandate-of-official-norwegian-committee-on-skill-needs.

Figure 5.4. Non-governmental stakeholders involved in the discussion of SAA exercise findings and the development of a policy response, OECD countries

Percentage of countries reporting involvement



Note: Percentages for the discussion of findings based on responses from 25 countries reporting at least one stakeholder involved (Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Korea, Japan, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland and Turkey). Percentage for the development of a policy response based on responses from 24 countries reporting at least one stakeholder involved (Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland and Turkey). If more than one questionnaire was received per country, involvement is considered if reported in any questionnaire received.
Source: OECD (2016[23]), *Getting Skills Right: Assessing and Anticipating Changing Skill Needs,* http://dx.doi.org/10.1787/888933334041.

StatLink https://stat.link/6v1075

It is important that the Tlaxcalan stakeholders engaged in the new Skills Needs Committee are carefully selected. Drawing on the examples of Portugal and Norway, Box 5.10 provides an illustration of the types of stakeholder (e.g. central and municipal government representatives, social partners, international organisations, researchers) that could be involved in supporting SAA exercises in Tlaxcala. The OECD (2016[23]) surveyed member countries on the types of stakeholder who tend be engaged in discussing the findings from SAA exercises or developing a policy response. Figure 5.4 shows that practically all OECD countries tend to involve employer organisations, trade unions and VET providers to discuss the findings

from SAA exercises. Most countries also rely on the participation of professional associations, general education providers and sector skills councils (Figure 5.4). Among governmental stakeholders participating in discussing the findings of SAA exercises and developing a policy response, ministries of education and labour tend to be most heavily involved, with more than half of OECD countries also relying on the participation of ministries of economy, industry, agriculture and the treasury (OECD, 2016[23]).

In Tlaxcala, interviewed stakeholders identified a large number of important actors at the state and federal level who could potentially become members of the Skills Needs Committee (Table 5.7). The selection of potential members of the committee largely mirrors the common practice of most OECD countries (especially the focus on actively involving employer organisations, as demonstrated in Figure 5.4), although with slight differences (e.g. sectoral skills councils do not exist in Tlaxcala). Highlighting the need to ensure that the committee has a wide membership base, interviewed stakeholders also suggested engaging key government bodies, employer organisations and businesses chambers, VET and higher education institutions, and municipalities (Table 5.7).

The participation of a variety of relevant government bodies and departments in the new Skills Needs Committee might be of particular importance for Tlaxcala. Stakeholders indicated that the findings of government entities' respective SAA exercises are not being widely disseminated across government in a co-ordinated manner. For instance, it would be valuable to share information on employers' needs (based on ICATLAX surveys) and SNET's analysis of skills demand (based on SNET's own vacancy data inventory) with SEP Tlaxcala, which is tasked with adjusting national curricula to suit Tlaxcala's context and needs.

Interviewed stakeholders commented that bringing together employers and representatives of education institutions on the new Skills Needs Committee would be of great value. By consolidating, analysing and validating the results of SAA exercises in tandem with employers, representatives of Tlaxcalan universities and VET schools would be able to hear employers' views on their skills needs first hand, and have the opportunity to adjust their offer and curricula accordingly.

Table 5.7. Potential members of Tlaxcala's Skills Needs Committee

Institution type and relevant entities in Tlaxcala

Institution type	Relevant entity in Tlaxcala
Federal (Mexico) and state (Tlaxcala) government entities	• Secretariat of Labour and Social Welfare (Secretaría del Trabajo y Previsión Social, STPS) • Secretariat of Public Education (Secretaría de Educación Pública, SEP) • SEPUEDE (including SNET and ICATLAX)
Employer organisations and business chambers	• Mexican Chamber of the Construction Industry in Tlaxcala (Cámara Mexicana de la Industria de la Construcción en Tlaxcala) • National Chamber of the Manufacturing Industry in Tlaxcala (Cámara Nacional de la Industria de la Transformación en Tlaxcala) • National Chamber of Commerce in Tlaxcala (Cámara Nacional de Comercio en Tlaxcala) • National Chamber of Tourism Service Providers in Tlaxcala (Cámara Nacional de Prestadores de Servicios Turísticos en Tlaxcala) • Confederation of Workers of Mexico in Tlaxcala (Confederación de Trabajadores de México en Tlaxcala) • Revolutionary Confederation of Workers and Peasants in Tlaxcala (Confederación Revolucionario de Obreros y Campesinos en Tlaxcala) • Regional Confederation of Workers of Mexico in Tlaxcala (Confederación Regional de Obreros de México en Tlaxcala)
VET and higher education institutions	• Autonomous University of Tlaxcala (Universidad Autónoma de Tlaxcala) • National Autonomous University of Mexico (Universidad Nacional Autónoma de México) • University of the Valley of Tlaxcala (Universidad del Valle de Tlaxcala) • Polytechnic University of Tlaxcala (Universidad Politécnica de Tlaxcala) • National Polytechnic Institute in Tlaxcala (Instituto Politécnico Nacional en Tlaxcala)

Institution type	Relevant entity in Tlaxcala
	• University of the Tlaxcala Plateau (Universidad del Altiplano de Tlaxcala) • Technological Institute of the Altiplano de Tlaxcala (Instituto Tecnológico de Altiplano de Tlaxcala) • National School of Technical Professional Education of Tlaxcala (Colegio Nacional de Educación Profesional Técnica de Tlaxcala) • School of Scientific and Technological Studies of the State of Tlaxcala (Colegio de Estudios Científicos y Tecnológicos del Estado de Tlaxcala) • Industrial Technology and Services High School in Tlaxcala (Centro De Bachillerato Tecnológico Industrial Y De Servicios de Tlaxcala)
Municipalities	• Selected representatives of Tlaxcala's municipalities

Note: Compiled by the OECD for the purposes of this project based on input from interviewed stakeholders.

Recommendations for strengthening stakeholder engagement in consolidating, analysing and validating the findings from SAA exercises, and advising policy makers

5.8 Establish Tlaxcala's own Skills Needs Committee to consolidate, analyse and validate SAA findings, and advise Tlaxcala's government on skills needs. Similar to Portugal or Norway (Box 5.10), Tlaxcala could create its own SAA stakeholder engagement mechanism, the Tlaxcala's Skills Needs Committee. The committee would act as an advisory body on skills needs to the Government of Tlaxcala and provide recommendations to better align Tlaxcala's skills policy with labour market needs based on available SAA evidence. More specifically, the committee's activities could be organised into three work streams: 1) regularly consolidating outputs from Tlaxcala's bolstered and interconnected skills data sources (see Recommendations 5.5 and 5.6); 2) discussing, analysing and validating these SAA results by supplementing them with sector-specific qualitative evidence based on individual representatives' monitoring of labour market needs; and 3) providing recommendations to update Tlaxcala's education and training offer based on the data. The committee should publish regular reports summarising the main conclusions of all work streams. The committee would build on ICATLAX's current engagement with employers and business leaders during SNET's state job fairs. However, it would regularly convene representatives from government bodies beyond SNET and ICATLAX, employer organisations and business chambers, as well as VET and higher education institutions (Table 5.7). To enable the systematic participation of key public institutions, Tlaxcala could adjust their mandates by issuing a higher executive instruction *(instrucción ejecutiva superior)*. In order to ensure continuity between individual sessions, the committee should require the attendance of the same representatives from participating institutions in each of its meetings.

5.9 Disseminate key outputs from Tlaxcala's Skills Needs Committee to policy makers and the public. The work of Tlaxcala's Skills Needs Committee (see Recommendation 5.8) should bring tangible and wide-ranging benefits, and its reports summarising the key points from its three work streams should be widely disseminated. Circulation of the committee's reports among Tlaxcala's key government departments and agencies should be fostered to help boost the rigour of evidence-based policy making. The committee's reports should also form part of the analysis published on Tlaxcala's Skills Needs Portal (see Recommendation 5.7) in order to: 1) provide context for, and facilitate the interpretation of, the quantitative results of SAA exercises; and 2) help individuals select wisely from among Tlaxcala's study opportunities advertised on the portal.

Overview of recommendations

Policy directions	Recommendations	Responsible parties
Opportunity 1: Increasing co-ordination in adult learning across the whole of government		
Promoting vertical co-ordination in adult learning between the state and municipalities	5.1 Foster better alignment between the State Development Plan (PED) and municipal development plans (PMD).	State government entities (SEP Tlaxcala, Senior Government Office, Higher Inspection Body) Municipalities
	5.2 Establish designated focal points in each municipality to co-ordinate the activities of the state and municipalities in the area of adult learning.	State government entities (SEP Tlaxcala, Senior Government Office, Higher Inspection Body, and departments with municipal-level presence) ICATLAX ITEA Municipalities
Strengthening adult learning evaluation mechanisms	5.3 Expand the implementation of impact evaluation for adult learning programmes.	State government entities (SEP Tlaxcala, SPF) ICATLAX ITEA Supérate
	5.4 Utilise the results of the evaluations of adult learning programmes to inform evidence-based policy making process.	State government entities (SEP Tlaxcala, SPF) ICATLAX ITEA
Opportunity 2: Maximising the potential of skills data to strengthen skills assessment and anticipation exercises		
Bolstering the analytical foundations and results dissemination of skills assessment and anticipation exercises	5.5 Support SNET's efforts to strengthen its internal vacancy inventory.	STPS (Tlaxcala) SNET
	5.6 Introduce Tlaxcala's own Skills Needs Survey to regularly survey employer's needs.	SNET ICATLAX
	5.7 Design an online one-stop shop skills needs portal that provides information on Tlaxcala's skills needs, labour market trends and study opportunities.	SEP and STPS (Tlaxcala) departments with strong technical and ICT expertise
Strengthening stakeholder engagement in consolidating, analysing and validating the findings from skills assessment and anticipation exercises, and advising policy makers	5.8 Establish Tlaxcala's own Skills Needs Committee to consolidate, analyse and validate SAA findings, and advise Tlaxcala's government on skills needs.	Federal government entities (STPS, SEP) State government entities (STPS, SEP) Municipalities
	5.9 Disseminate key outputs from Tlaxcala's Skills Needs Committee to policy makers and the public.	Relevant SEP and STPS (Tlaxcala) departments SNET ICATLAX

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Annex 5.A. Examples of indicators to evaluate the impact of adult learning

Annex Table 5.A.1. Indicator types, description, reference year and source

Indicator	Description	Reference year	Source
Usefulness of training	Percentage of participants for whom at least one formal or non-formal job-related adult learning activity was "very useful" for the job they had at the time of the learning activity.	2011/12 to 2015	PIAAC
Use of acquired skills	Percentage of participants in non-formal job-related adult learning who are currently using or are expected to use (a lot or a fair amount of) the skills or knowledge acquired.	2016	AES/WRTAL
Impact on employment outcomes	Percentage of participants in non-formal job-related adult learning for whom the skills and knowledge acquired helped them: 1) getting a (new) job; 2 higher salary/wages; 3) promotion in the job; 4) new tasks; and/or 5) better performance in present job.	2016	AES
Wage returns to adult learning	Hourly wage returns to participation in formal or non-formal PIAAC job-related adult learning.	2011/12 to 2015	OECD calculations based on PIAAC

Note: The Australian Work-Related Training and Adult Learning (WRTAL) Survey (2016/2017) refers to individuals responding that they use at least sometimes their acquired skills.
PIAAC = Programme for the International Assessment of Adult Competencies; AES = EU Adult Education Survey.
Source: OECD (2019[18]), *Getting Skills Right: Future-Ready Adult Learning Systems, Getting Skills Right*, https://doi.org/10.1787/9789264311756-en.

Note

[1] The Sustainable Governance Indicators (SGI) Survey is a cross-national comparative survey designed to identify the performance and reform needs of 41 OECD and European Union countries in the area of effective policy making for sustainable governance. It focuses on three pillars: 1) policy performance (economic policies, social policies and environmental policies); 2) democracy (quality of democracy); and 3) governance (executive capacity and executive accountability).

Annex A. Engagement

The OECD Skills Strategy project in Tlaxcala, Mexico involved ongoing oversight and input from the National Project Team, which was composed of experts outlined in Table A A.1 below.

Table A A.1. National Project Team

Project Team	
Manuel Camacho (Project Leader)	Secretary of Public Policy of the State of Tlaxcala (Secretario de Políticas Públicas del Estado de Tlaxcala) and Co-ordination of the State System of Employment Promotion and Community Development (Coordinación del Sistema Estatal de Promoción de empleo y desarrollo comunitario, SEPUEDE)
José Luis Bustos Villegas	President of the Co-ordination of the Supérate Tlaxcala Programme
Gustavo Eduardo Vargas Farías	Secretary of Agriculture, Livestock and Rural Development of the State of Tlaxcala (Secretario de Agricultura, Ganadería y Desarrollo Rural del Estado de Tlaxcala)
José Antonio Carvajal Sampedro	Secretary of Tourism of the State of Tlaxcala (Secretario de Turismo del Estado de Tlaxcala)
Roberto Lima Morales	Secretary of Education of the State of Tlaxcala (Secretario de Educación del Estado de Tlaxcala)

OECD missions to Tlaxcala (Mexico)

The OECD held three virtual missions to Tlaxcala between July 2020 and December 2020, during which it met with a broad range of stakeholders who represented secretariats, government agencies, education and training providers, municipalities, and many more (see Table A A.2) . The OECD would like to thank all participants for their invaluable contributions to the project. The missions included large interactive workshops, working groups and bilateral meetings. All workshops and meetings were held virtually given the restrictive measures and travel restrictions caused by the COVID-19 pandemic.

Mission 1: Kick-off mission (7 July 2020)

The main objectives of this mission were to discuss Tlaxcala's main policy priorities and the proposed priority areas for the project, identify potential areas to address within each of these priority areas, and evaluate options and timing for workshops and select key dates for these events. The mission included the following elements:

- **Opening remarks**: The Governor of Tlaxcala expressed his support for the project and explained its relevance in tackling the skills challenges in Tlaxcala. A representative from the Permanent Delegation of Mexico to the OECD then welcomed all participants on behalf of the Delegation. Subsequently, all members of the Tlaxcala National Project Team and the OECD team were introduced.
- **Introduction to the Skills Strategy Framework**: The Head of the OECD's Centre for Skills introduced the 2020 OECD Skills Strategy Framework, and presented the project motivation and the importance of skills development for Mexico and Tlaxcala.
- **Presentation on priority areas:** The OECD Project Lead for Tlaxcala presented an overview and general structure of the final deliverable of the project, an OECD Skills Strategy Tlaxcala report, and introduced the four proposed priority areas for the project: 1) strengthening the skills of youth;

2) fostering greater participation in adult learning; 3) using people's skills more effectively to raise productivity; and 4) strengthening the governance of the skills system.

- **Discussion of priority areas:** The presentation of each of these priority areas was followed by a brief discussion where the Tlaxcala team provided feedback on the sub-topics proposed under each priority area, resulting in an overview of the main topics to include within each priority, and thereby defining their scope.

Mission 2: Skills Strategy Assessment Workshop (19-20 October 2020)

For the second virtual mission of the Skills Strategy Tlaxcala project, the OECD held the Assessment Workshop. The main objectives of this mission were to collect insights about Tlaxcala's performance and initiatives in the four identified priority areas, refine the topics to be developed within each priority area, and generate stakeholder support for the project. Several sessions were part of this workshop:

- **The plenary session (19 October 2020**): This gathered approximately 130 participants and was opened by the Governor of Tlaxcala, who expressed his support for the project and explained its importance for tackling Tlaxcala's skills challenges. The Governor was followed by the Ambassador of the Permanent Delegation of Mexico to the OECD, who welcomed all participants on behalf of the Delegation. Following these introductions, The Head of the OECD Centre for Skills introduced the framework of the OECD Skills Strategy 2019, and presented the project's objectives and features and the importance of improving skills outcomes in Tlaxcala.
- **Presentation on priority areas (19 October 2020**)**:** The OECD Project Lead for Tlaxcala provided a detailed presentation of Tlaxcala's performance in developing and using skills, leading to the project's four identified priority areas: 1) strengthening the skills of youth; 2) fostering greater participation in adult learning; 3) using people's skills more effectively to raise productivity; and 4) strengthening the governance of the skills system.
- **Question and answer (Q&A) session (19 October 2020**)**:** During this session participants freely asked questions about specific priority areas and reiterated the relevance of the project.
- **Thematic sessions (19/20 October 2020**)**:** All participants were invited to join four sequential thematic sessions, each focused on one of the four priority areas. The first session was held on 19 October, and three sessions followed on 20 October, with the average participation of 90 stakeholders in each session. Active discussion was sustained thanks to the presence of stakeholders from different levels of government, employer and business representatives, academics, and independent experts, among others.

Mission 3: Recommendations Workshop (14-15 December 2020)

The Recommendations Workshop was organised to present the diagnostic analysis of each of the priority areas, discuss recommendations to the identified challenges and collect information about potential recommendations from stakeholders. This mission included the following elements:

- **The plenary session (14 December 2020**): This gathered approximately 130 participants and was opened by the President of the Supérate programme, who highlighted the relevance of the project in tacking Tlaxcala's skills challenges. The First Secretary of the Permanent Delegation of Mexico to the OECD then welcomed all participants and stressed the importance of Mexico continuing to carry out OECD Skills Strategy projects at the subnational level.
- **Presentation on priority areas (14 December 2020**)**:** The OECD Project Lead for Tlaxcala presented the preliminary findings of the diagnostic phase in each of the project's four identified priority areas: 1) strengthening the skills of youth; 2) fostering greater participation in adult learning; 3) using people's skills more effectively to raise productivity; and 4) strengthening the governance of the skills system.

- **Thematic sessions (14-15 December 2020):** All participants were invited to join four sequential thematic sessions, focused on each of the four priority areas. The first two sessions were held on 14 December, and two sessions followed on 15 December, with an average participation of 90 stakeholders in each session. **Active** discussions were sustained thanks to the presence of stakeholders from different levels of government, education and training providers, and independent experts, among others.

Table A A.2. Organisations and stakeholders invited to participate in the workshops, bilateral meetings and working groups

Association of Businesses and Business Owners of Tlaxcala (Asociación de Empresas y Empresarios de Tlaxcala)
Benito Juárez Baccalaureate Studies Center (Centro de Estudios de Bachillerato Lic. Benito Juárez)
Business associations (Asociación de Empresas y Empresarios de Tlaxcala, Canacintra, Canaco Huamantla, Canaco Tlaxcala, Coparmex Tlaxcala)
Business representatives
College of Bachelors of the State of Tlaxcala (Colegio de Bachilleres del estado de Tlaxcala)
Technological Institute of the Altiplano de Tlaxcala (Instituto Tecnológico Del Altiplano de Tlaxcala)
Independent researchers
Industrial Technology and Service Unit of Upper Secondary Education (Unidad de Educación Media Superior Tecnológica Industrial y de Servicios)
Institute for Adult Learning of Tlaxcala (Instituto Tlaxcalteca para Educación de los Adultos)
Institute for Job Training of Tlaxcala (Instituto de Capacitación para el Trabajo de Tlaxcala)
Institutes for Job Training (Institutos de Capacitación para el Trabajo)
Mexican Institute for Social Security (Instituto Mexicano del Seguro Social)
National Council for Standardisation and Certification of Competences (Consejo Nacional de Normalización y Certificación de Competencia Laborales)
National Employment Service (Servicio Nacional de Empleo)
National Employment Service of Tlaxcala (Servicio Nacional de Empleo de Tlaxcala)
Patronato Pro Education For Adult (Patronato Pro Educacion Para Los Adultos)
Polytechnic University of Tlaxcala (Universidad Politécnica de Tlaxcala)
Representative from automotive clusters
Representatives from Tlaxcalan municipalities
Representatives fron the Supérate programme
School of Scientific and Technological Studies of the State of Tlaxcala and Distance Higher Education (Colegio de Estudios Científicos y Tecnológicos del estado de Tlaxcala y Centros de Educación Media Superior a Distancia)
School of Technical and Professional Education of the State of Tlaxcala (Colegio de Educación Profesional Técnica)
Secretariat of Public Education of Tlaxcala (Secretaría de Educación Publica)
Secretariat of Labour and Employment Promotion (Secretaría del Trabajo y Fomento al Empleo)
Secretariat of Economic Development of Tlaxcala (Secretaría de Desarrollo Económico)
Co-ordination of the State System of Employment Promotion and Community Development (Coordinación del Sistema Estatal de Promoción de Empleo y Desarrollo Solidario)
Technological Institute of Apizaco (Instituto Tecnológico De Apizaco)
Technological University of Tlaxcala (Universidad Tecnológica de Tlaxcala)
The School of Tlaxcala (El Colegio de Tlaxcala)
Tlaxco Technological Institute (Instituto Tecnológico Superior de Tlaxco)
Unit of Upper Secondary Education in Agricultural Technology and Marine Services (Educación Media Superior Tecnológica Agropecuaria y Ciencias del Mar)
United Nations Development Programme (Programa de las Naciones Unidas para el Desarrollo)

OECD Skills Studies

OECD Skills Strategy Tlaxcala (Mexico)

ASSESSMENT AND RECOMMENDATIONS

Skills are the key to shaping a better future, and central to the capacity of countries and people to thrive in an increasingly interconnected and rapidly changing world. Megatrends such as globalisation, technological advances and demographic change, compounded by the effects of the COVID-19 pandemic, are reshaping work and society, as well as the types of skills most in demand in the labour market.

OECD Skills Strategy projects provide a strategic and comprehensive approach to assess countries' skills challenges and opportunities and help them build more effective skills systems. The OECD works collaboratively with countries to develop policy responses tailored to each country's specific skills needs. The foundation of this approach is the OECD Skills Strategy Framework, which allows for an exploration of what countries can do better to: 1) develop relevant skills over the life course; 2) use skills effectively in work and in society; and 3) strengthen the governance of the skills system.

This report, *OECD Skills Strategy Tlaxcala (Mexico): Assessment and Recommendations*, identifies opportunities and makes recommendations to strengthen the skills of youth, foster greater participation in adult learning, use people's skills more effectively to raise productivity, and strengthen the governance of the skills system in the state of Tlaxcala, Mexico.

PRINT ISBN 978-92-64-44238-2
PDF ISBN 978-92-64-89199-9