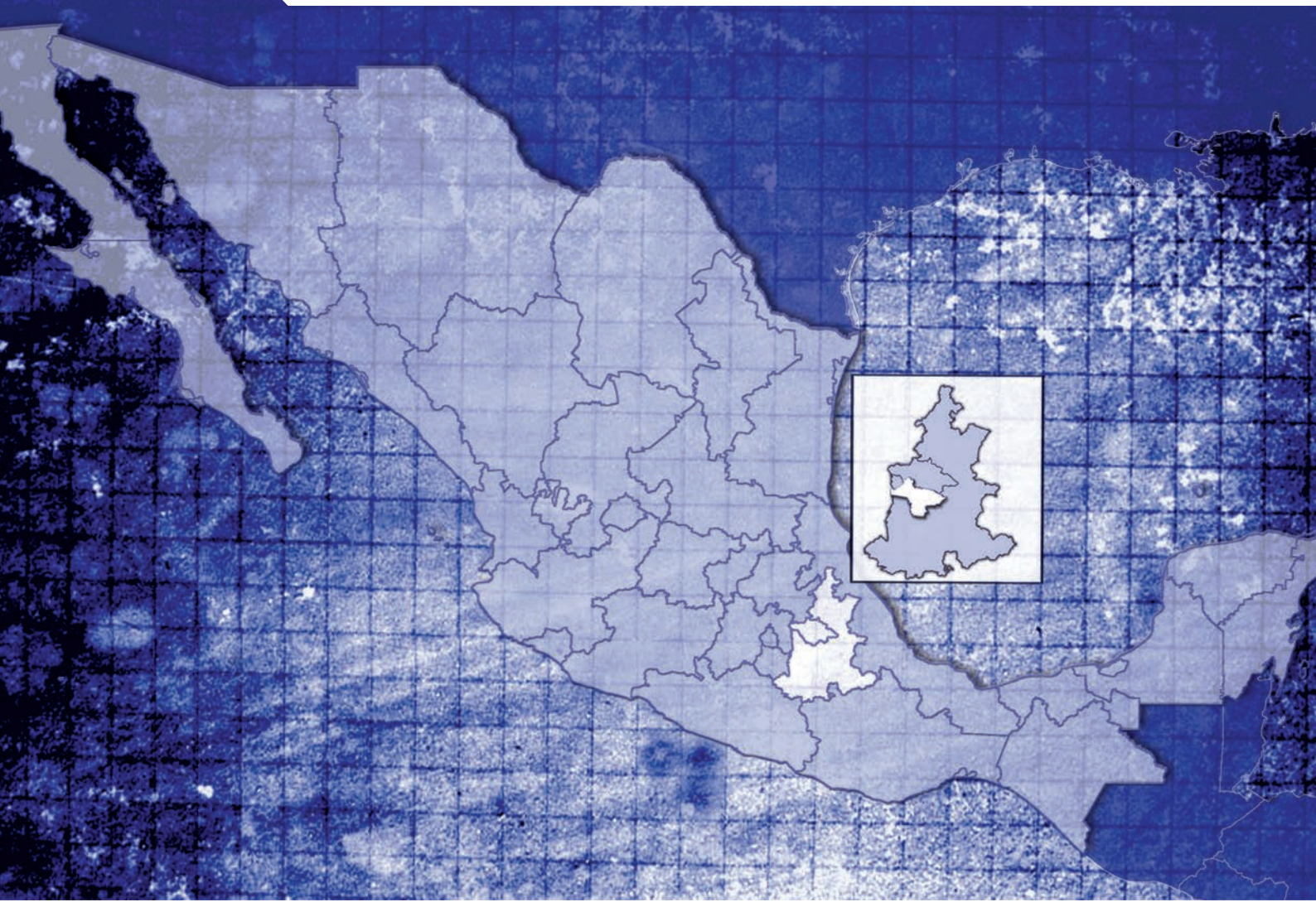
OECD Territorial Reviews

PUEBLA-TLAXCALA, MEXICO



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Foreword

Across the Organisation for Economic Co-operation and Development (OECD), globalisation is increasingly testing the capacity of regional economies to adapt and exploit their competitive advantages, while also offering new opportunities for regional development. More and more, authorities at all levels of government are rethinking their strategies for building competitive, sustainable, inclusive urban areas. Central governments can no longer assume the full responsibility for development policies. Effective relations between different levels of government, as well as greater participation by citizens, firms, education and research institutions, and other non-state actors are required in order to improve the delivery and quality of public services.

The need to maintain regional competitiveness and enhance governance is particularly acute in metropolitan regions. Although they produce the bulk of national wealth, metropolitan economies are often held back not only by unemployment and distressed areas but because opportunities for growth are not fully exploited. Effective metropolitan governance is required if a functional urban region as a whole is to reach its full potential.

In 1999, responding to a need to study and spread innovative territorial development strategies and governance in a more systematic way, the OECD created the Territorial Development Policy Committee (TDPC) and its Working Party for Territorial Policy in Urban Areas (WPURB) as a unique forum for international exchange and debate. Among its activities, the TDPC has developed a series of territorial reviews and case studies on cities, metropolitan areas and countries that follow a standard methodology and conceptual framework. This allows countries to share their experiences and disseminate information on good policy practice.

The present review is the latest in a series of such studies. As such, it both draws on, and contributes to, this ongoing process of policy learning and sharing of good practice. Its findings should therefore resonate far beyond Puebla-Tlaxcala. The OECD is grateful for the opportunity to work with the metropolitan region to contribute to its efforts to build a better future for its citizens and to share its challenges and achievements with a wider audience.

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Table of contents

Acronyms and abbreviations 9

Executive summary 15

Assessment and recommendations 19

Chapter 1 **Economic, urban and social challenges in Puebla-Tlaxcala** 31

Introduction 32
Labour market characteristics and the business environment 46
Human capital and innovation 52
Urban and environmental challenges 69
Social marginalisation 75
Metropolitan challenges in need of metropolitan solutions 81
Notes 83
Annex A1.1 Rates of informal employment in Mexico 84
Bibliography 86

Chapter 2 **Policies for economic and workforce development in Puebla-Tlaxcala** 93

The region's dual assets: A centre for higher education and a manufacturing hub 94
Thinking, and acting, regionally 99
Raising the level of low-skilled workers 108
Improving the business environment, particularly for small firms 119
Notes 126
Bibliography 128

Chapter 3 **Policies to guide urban growth more effectively in Puebla-Tlaxcala** 133

Making the case for urban sprawl in Puebla-Tlaxcala: What is the evidence? 135
What are the causes of urban sprawl in Puebla-Tlaxcala? 140
What are the consequences of sprawl for Puebla-Tlaxcala? 151
What strategies could guide urban growth more effectively? 154
Notes 169
Bibliography 171

Chapter 4 **Governing the Puebla-Tlaxcala metropolitan area** 177

Building capacity in the public sector 179
Metropolitan governance arrangements in Puebla-Tlaxcala 206
Notes 227
Annex A4.1 Institutional mapping of Mexico's water sector 229
Bibliography 231

Tables

Table 1.1. Basic facts about Puebla-Tlaxcala and other large Mexican metropolitan areas 33
Table 1.2. PISA results for the state of Puebla (2003-09)..... 61
Table 1.3. Higher education institutions in Puebla functional urban area (2012)..... 63
Table 2.1. State-accredited degree programmes in Puebla-Tlaxcala 95
Table 3.1. Population density among Mexican metropolitan zones with population over 1 million (2010) 136
Table 3.2. Share of federal housing subsidies and credits in Mexico 142
Table 4.1. Municipalities within the Puebla-Tlaxcala metropolitan zone 180
Table 4.2. Municipal revenues for select municipalities within Puebla FUA..... 183
Table 4.3. Number and distribution of public employees in the state administration (2013) ... 188
Table 4.4. Number and distribution of employees in the municipal administration (2013)..... 188
Table 4.5. Assignment of responsibilities of urban functions 209
Table 4.6. Composition of the Metropolitan Council and its bodies 216

Figures

Figure 1.1. Population growth of OECD functional urban areas (2000-08)..... 37
Figure 1.2. Population growth of Puebla and all other Mexican functional urban areas (1995-2010)..... 38
Figure 1.3. Sprawling development: Growth in the Puebla-Tlaxcala metropolitan zone versus Puebla functional urban area (2000-10) 38
Figure 1.4. Growth rates of Mexico and other OECD countries 39
Figure 1.5. GDP base 100 in 1993, and GDP growth rates (1993-2011)..... 40
Figure 1.6. GDP growth of metropolitan areas (2000-08) 41
Figure 1.7. Evolution of GDP composition in the state of Puebla (2003-2011)..... 42
Figure 1.8. GDP growth rates and manufacturing GDP for Puebla and Tlaxcala (state level) 42
Figure 1.9. Composition of GDP in manufacturing (2003-2011) 43
Figure 1.10. Gross participation rates in the labour market (1960-2010) 46
Figure 1.11. Informality rates in Mexico..... 47
Figure 1.12. Employment by sector in Puebla functional urban area (2009)..... 48
Figure 1.13. Payroll, payroll growth and employment by sector..... 49
Figure 1.14. Doing business in Mexico: Starting a business..... 50
Figure 1.15. Doing business categories and rank..... 50
Figure 1.16. Employment by firm size: State and city of Puebla versus elsewhere in Mexico..... 53
Figure 1.17. Share of population who has completed upper secondary education in OECD countries 54
Figure 1.18. Tertiary education over time at state level (1995-2008) 55
Figure 1.19. Initial levels and improvement in tertiary education attainment for Mexican states..... 55
Figure1.20. Tertiary education as a % of labour force for Mexican states (1995, 2000, 2008)..... 56
Figure 1.21. Share of high-skilled workers and GDP per capita for Mexican metropolitan zones 57
Figure 1.22. Share of the population who has completed upper-secondary or post-secondary education in large Mexican metropolitan zones (2010) 58
Figure 1.23. Share of the population who has not completed secondary education in large Mexican metropolitan zones (2010)..... 58
Figure 1.24. Average years of schooling for the large Mexican metropolitan zones (2010)..... 59
Figure 1.25. Student performance in large Mexican metropolitan zones (2010) 61

Figure 1.26. Share of population who has not completed secondary education 62
Figure 1.27. Parental contributions to public school funding 63
Figure 1.28. Degrees awarded by Mexican universities, by state 64
Figure 1.29. Percentage of students enrolled in VET programmes in Mexican states 65
Figure 1.30. Patent applications in Mexico, by state 67
Figure 1.31. Human capital in science and technology in Mexico, by state 68
Figure 1.32. Emigration rates to the United States for selected Mexican states 68
Figure 1.33. Rental tenure in selected cities in Latin America 70
Figure 1.34. Share of the population without access to piped water 73
Figure 1.35. Share of population connected to public sewerage network in OECD countries (2010) 74
Figure 1.36. Poverty rates across OECD countries 75
Figure 1.37. Share of population living in marginalised areas within large Mexican metropolitan zones 77
Figure 1.38. Share of the population that has not completed secondary education and share of households without a piped water connection 78
Figure 1.39. Share of the population without access to health services and share of households without a refrigerator 78
Figure 1.40. Dispersion and average levels of marginalisation for the metropolitan zones of Mexico 79
Figure 1.41. Map of social marginalisation in Puebla-Tlaxcala 80
Figure 1.42. Share of the population that has not completed secondary education and share of households without toilets connected to the water network 80
Figure 1.43. Municipality of Puebla: Share of population that has not completed secondary education and share of households without access to the water network 81
Figure 1.44. Municipality of San Andreas Cholula: Share of population that has not completed secondary education and without access to the water network 82
Figure A1.1. Informality rates in Mexico, 4th quarter 2012 84
Figure A1.2. Informality rates in Mexico, 4th quarter 2012 85
Figure 2.1. The automotive cluster in Puebla-Tlaxcala 98
Figure 2.2. Access to finance is more difficult for firms to obtain in Puebla than in other states 122
Figure 3.1. Urban expansion in Puebla-Tlaxcala 137
Figure 3.2. Population density in Puebla-Tlaxcala (2010) 138
Figure 3.3. Population change in Puebla-Tlaxcala (2000-2010) 139
Figure 3.4. Share of vacant properties in the Puebla-Tlaxcala metropolitan zone (2010) 140
Figure 3.5. Population without access to water network in Puebla-Tlaxcala (2010) 152
Figure 4.1. Share of sub-central governments in total revenues and spending in OECD countries (2011) 180
Figure 4.2. Sub-central government revenue composition (2010) 181
Figure 4.3. Distribution of general government staff between the central and sub-central levels of government (2008) 182
Figure 4.4. Recurrent taxes on immovable property in select Latin American and Caribbean countries 184
Figure 4.5. The process of building metropolitan governance 211
Figure A4.1. Institutional mapping for water resources management 229
Figure A4.2. Institutional mapping for water and sanitation services 230

Acronyms and abbreviations

AEB	Amsterdam Economic Board
AGEB	Basic Geostatistical Area (*Áreas geoestadísticas básicas*)
AMA	Amsterdam Metropolitan Area
AMDA	Mexican Association of Automotive Distributors (*Asociación Mexicana de Distribudores de Automotores*)
AMIA	Mexican Association of the Automotive Industry (*Asociación Mexicana de la Industriá Automotríz*)
ANAC	National Association of Mayors (*Asociación Nacional de Ayuntamientos y Alcaldes*)
Banobras	National Public Works and Services Bank (*Banco Nacional de Obras y Servicios Públicos*)
BRT	Bus rapid transit
CANACINTRA	National Chamber of Industry Transformation (*Cámara Nacional de la Industria de Transformación*)
CCE	Business Co-ordinating Council (*Consejo Coordinador Empresarial*)
CECyTE	State Centre for Scientific and Technological Studies (*Colegio de Estudios Científicos y Tecnológicos del Estado de México*)
CeDIAM	Centre for Development of the Automotive Industry of Mexico (*Centro de Desarrollo de la Industria Automotriz en México*)
CEMER	State Commission for the Regulatory Reform (*Comisión Estatal de Mejora Regulatoria*)
CETI	Centre for Technical Industrial Education (*Centro de Enseñanza Técnica Industrial*)
CIAPACOV	Inter-municipal Commission for the Provision of Water and Sanitation Services (*Comision Intermunicipal de Agua Potable y Alcantarillado de los Municipios de Colima y Villa de Alvarez*)
CIMA	Centre for Automotive Mechatronics Research (*Centro de Investigación en Mecatrónica Automotriz*)
CMOD	Centre for Management and Organisation Development (Ireland)

COESPO	State Population Council (*Consejo Estatal de Población*)
CONACYT	State Council for Science and Technology (*Consejo Nacional de Ciencia y Tecnología*)
CONAGUA	National Water Commission (*Comisión Nacional del Agua*)
CONALEP	National College of Professional Technical Education (*Colego Nacional de Educación Profesional Técnica*)
CONAPO	National Population Council (*Consejo Nacional de Población*)
CONOCER	National Council for Standardisation and Certification of Labour Competence (*Consejo Nacional de Normalización y Certificación de Competencias Laborales*)
COPARMEX	Employers Confederation of the Mexican Republic (*Confederación Patronal de la República Mexicana*)
COPLADE	State Planning Committee (*Comité de Planeación del Estado*)
COSNET	Council of the National Technological System (*Consejo Nacional del Sistema Nacional de Educación Técnica*)
DGETI	Directorate General for Industrial Technological Education (*Dirección General de Educación Tecnológica Industrial*)
DUIS	Sustainable Integrated Urban Development (*Desarrollos Urbanos Integrales Sustentables*)
EPZ	Export processing zones
FOMIX	Mixed funds (*Fondos mixtos*)
FTA	Free trade agreements
FUA	Functional urban area
GDP	Gross domestic product
GHG	Greenhouse gas
HEI	Higher education institute
I2T2	Institute for Innovation and Technological Transfer
ICATLAX	Institute for Workforce Training for the State of Tlaxcala (*Instituto de Capacitación para el Trabajo del Estado de Tlaxcala*)
ICT	Information and communication technologies
IDB	Inter-American Development Bank
IEU	Institute of University Studies (*Instituto de Estudios Universitarios*)

IMCO	Mexican Institute for Competitiveness (*Instituto Mexicano para la Competitividad*)
IMF	International Monetary Fund
IMMEX	Manufacturing, Maquila and Export Services Industry (*Industria Manufacturera, Maquiladora y de Servicios de Exportación*)
IMPLAN	Puebla Municipal Planning Institute (*Instituto Municipal de Planeación Puebla*)
IMSS	Mexican Social Security Institute (*Instituto Mexicano del Seguro Social*)
INA	National Auto Parts Industry (*Industria Nacional de Autopartes*)
INAOE	National Institute of Optics and Electronics (*Instituto Nacional de Astrofísica, Óptica y Electrónica*)
INEE	National Institute for Educational Assessment and Evaluation (*Instituto Nacional para la Evaluación de la Educación*)
INEGI	National Institute of Statistics and Geography (*Instituto Nacional de Estadística Geografía e Informática*)
ISSSTE	State Employees' Social Security and Social Services Institute (*Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado*
ITESM	Monterrey Institute of Technology and Higher Studies (*Instituto Tecnológico y de Estudios Superiores de Monterrey*)
IMU	Index of Urban Marginalisation (*Índice de Marginación Urbana*)
JIRA	Inter-municipal Environment Board for the Integrated Management of the Lower Ayuquila River Basin (*Junta Intermunicipal del Medio Ambiente para la Gestión Integral de la Cuenca del Rio Ayuquila*)
MRV	Measurement Reporting and Verification
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
OEM	Original equipment manufacturers
OICA	International Organization of Motor Vehicle Manufacturers
OLA	Mexican Labour Observatory (*Observatorio Laboral Mexicano*)
PAE	Employment Support Programme (*Programa de Asistencia a Empleados*)
PCUM	Puebla University Capital of Mexico (*Puebla Capital Universitaria de Mexico*)

PEMEX	Mexican Petroleum Company (*Petróleos Mexicanos*)
PMETYC	Technical Education and Training Modernisation Project (*Programa de Modernización de la Educación Técnica y la Capacitación*)
PET	Temporary Employment Programme (*Programa de Empleo Temporal*)
PIIT	Research and Innovation Technology Park (*Parque de Investigación e Innovación Tecnológica*)
PMD	Performance management and development
PROTRAM	Federal Support for Mass Transit Programme (*Programa Federal de Apoyo al Transporte Masivo*)
PSG	Professional Skills for Government (United Kingdom)
PTTU	Urban Transport Transformation Programme (*Programa para la Transformación del Transporte Urbano*)
R&D	Research and development
RTI	Research Triangle Institute (United States)
RTP	Research Triangle Park (United States)
RUSP	Civil Servant Registry of the Federal Government (Mexico) (*Registro de Servidores Públicos del Gobierno Federal*)
RUTA	Articulated Urban Transport Network (Puebla) (*Red Urbana de Transporte Articulado*)
SARE	System for Quick Business Start-Up (*Sistema de Apertura Rápida de Empresas*)
SAT	Tax Administration Service (*Servicio de Administración Tributaria*)
SECOTRADE	Secretariat for Competitiveness, Labour and Economic Development (State of Puebla) (*Secretaría de Competitividad, Trabajo y Desarrollo Económico [Estado de Puebla]*)
SED	Performance Evaluation System (*Sistema de Evaluación del Desempeño*)
SEDATU	Ministry of Agrarian, Territorial and Urban Development (*Secretaria de Desarrollo Agrario, Territorial y Urbano*)
SEDECO	Ministry of Economic Development (*Secretaría del Desarrollo Económico*)
SEDESOL	Ministry of Social Development (*Secretaría de Desarrollo Social*)
SE	Ministry of Economy (*Secretaría de Economía*)

SEP	Secretariat of Public Education (*Secretaría de Educación Pública*)
SEZ	Special economic zones
SFP	Ministry of Public Administration (*Secretaría de la Función Pública*)
SIFRAGS	System for Planned Developments and Condominiums in Aguascalientes (*Sistema de Fraccionamientos y Condominios de Aguascalientes*)
SME	Small and medium-sized enterprise
SMI	Strategic Management Initiative (Ireland)
SNE	National Employment Service (*Sistema Nacional de Empleo*)
SNI	National Researchers System (*Sistema Nacional de Investigadores*)
SOAPAP	City of Puebla Water and Sewerage Operating System (*Sistema Operador de los Servicios de Agua Potable y Alcantarillado del Municipio de Puebla*)
SPC	Professional Career Service (*Servicio Profesional de Carrera*)
STEM	Science, technology, engineering and mathematics
STPS	Secretariat of Labour and Social Welfare (*Secretaría del Trabajo y Previsión Social*)
SZ	Specialised zones
TDPC	Territorial Development Policy Committee
TOC	Transit-oriented corridors
TOD	Transit-oriented development
TVET	Technical and vocational education system
UDLAP	University of the Americas (Puebla campus) (*Universidad de las Américas Puebla*)
UMAD	University of Madero (*Universidad Madero*)
UPAEP	Popular Autonomous University of the State of Puebla (*Universidad Popular Autónoma del Estado de Puebla*)
VET	Vocational education and training
WPURB	Working Party for Territorial Policy in Urban Areas

Executive summary

Encompassing 39 municipalities in 2 states, Puebla-Tlaxcala is the 4th-largest metropolitan zone in Mexico. Among its principal assets are a strategic location between Mexico City and the port of Veracruz, a manufacturing-based regional economy led by a resilient and vertically linked automotive sector, and its position as one of country's centres for higher education. Together, these competitive advantages have helped the region weather multiple economic crises and continue to attract major economic opportunities. To ensure that Puebla-Tlaxcala remains competitive and grows sustainably over the long term, however, several critical policy challenges need to be addressed.

Improving workforce and economic development

Economic development policies and activities in Puebla-Tlaxcala have remained largely jurisdiction-bound and deal-driven, a sizeable barrier to economic growth in a cross-border region. The region's success in attracting major national and international firms has occurred in the absence of a regional economic development strategy and has been weakly linked to planning for housing or infrastructure development. Further, there is evidence of a critical skills polarisation in the region. Despite 182 higher education institutions (HEI) and an above-average share of the working-age population with high skill levels, nearly 40% of workers have not completed secondary education. This matters: cross-country evidence suggests that reducing the proportion of workers in a region with very low skills can be critical to regional growth. Among the recommendations for imrpvong workforce and economic development:

- Raise the level of low-skilled workers in the formal and informal sectors by expanding certification programmes for skills acquired on the job, rather than through formal education.
- Pursue reforms to improve the business environment, especially for small and medium-sized enterprises (SMEs), by following the lead of other sub-national administrations in Mexico to align state and municipal procedures with those of the federal government for opening a business.
- Mobilise university resources to help achieve the region's economic and educational objectives. The region's plethora of HEIs could be an even greater asset. Recent initiatives to harness this potential and foster links between academia, economic development and policy making should be supported.

Guiding urban growth more effectively

Evidence of urban sprawl in Puebla-Tlaxcala is unmistakable: Puebla-Tlaxcala has the lowest overall density among the ten largest metropolitan zones in Mexico; its urban footprint expanded nearly eight times faster than its population between 1980 and 2010; and demographic growth has been more rapid in the metropolitan periphery than in

Puebla's historic city centre, where vacancy rates can reach 40%. Inadequate service delivery and territorial inequalities are just two of the consequences of the region's sprawled development. In many neighbourhoods in the metropolitan periphery, more than 70% of households lack access to the water network. Moreover, the share of households in Puebla-Tlaxcala living in neighbourhoods of high and very high marginalisation (49%) is more than double the average for large Mexican metropolitan zones (22%), and many of the most marginalised areas are located in the metropolitan periphery. Tackling territorial inequalities and social marginalisation will require an integrated policy approach that aims to improve access to educational and economic opportunities, as well as key urban services – which can benefit from better urban growth management. Proposed policies to guide urban growth more effectively include:

- Link opportunities for land use and transport by leveraging the development potential of the newly introduced bus-rapid transit network (RUTA) and by implementing a value capture tax.
- Tackle the vacancy problem, particularly in Puebla's historic city centre, by establishing a public inventory of vacant properties, imposing taxes or fees on vacant properties and implementing a land value tax (successfully achieved in Mexicali) to encourage properties to be put to higher use.
- Develop tools to balance the costs and benefits of development through developer fees and a progressively stronger role in the development process for the Puebla State Land Bank.

Governing Puebla-Tlaxcala

Efforts to address the region's critical policy challenges are stymied by administrative fragmentation across the region and limited capacity at municipal level. Most of the region's municipalities are small and have little revenue-raising capacity. Moreover, mayors are limited to a three-year mandate that is not immediately renewable, which results in significant – and in many cases, complete – turnover of administrative staff every third year. This contributes to a lack of policy continuity and institutional memory, cripples medium- to long-term planning and generates critical capacity gaps within public administrations. Building capacity in the public sector and working better between and across levels of government, potentially through the development of metropolitan governance arrangements, could help overcome these institutional obstacles to policy reform. Strategies to address these two interrelated governance challenges include:

- Build capacity in the public sector, particularly at the municipal level:
  - Bolster the revenue-raising capacities of municipalities by reforming the property tax, updating fee structures and improving systems to facilitate tax collection.
  - Limit the effects of recurrent political and administrative upheavals by reforming the three-year mandate for mayors and appointing a city manager, which could also help improve the level of professionalisation within public administrations.
  - Build more effective public administrations by investing in the professionalisation of the public workforce and developing a merit-based recruitment process for civil servants.

- Transition to metropolitan governance arrangements to facilitate policy making at a more functional scale and improve intergovernmental co-ordination and policy outcomes:
  - Create political legitimacy through the development of a metropolitan forum and an observatory tasked with collecting metropolitan data.
  - Create operational legitimacy by reforming the use of metropolitan funds in Puebla-Tlaxcala and investigating the feasibility of delivering urban services (transport, water and sewerage, waste management) at a more functional scale.
  - Create institutional legitimacy by operationalising planning at the metropolitan scale. Should the newly formed Puebla municipal planning institute, IMPLAN, pursue this role, several critical reforms would be necessary.

A number of recent reforms undertaken at different levels of government are nonetheless encouraging. To ensure the region's competitiveness and sustainability over the longer term, Puebla-Tlaxcala's leaders will need to build on these early steps and work towards deeper co-operation, on both strategic planning and day-to-day management and service delivery, across the metropolitan region.

Assessment and recommendations

Assessing the challenges and potential of Puebla-Tlaxcala

Puebla-Tlaxcala is a dynamic, fast-growing metropolitan region with significant opportunities ahead. Comprised of 39 municipalities in 2 states, the Puebla-Tlaxcala metropolitan zone is the 4th largest in Mexico. The regional economy is responsible for three-quarters of the state of Puebla's gross domestic product (GDP). The city of Puebla is the region's economic engine, accounting for over half of the metropolitan zone's population and over 60% of its GDP. The region's demographic growth, averaging 1.9% annually between 2000 and 2010, has outpaced the national and OECD averages. Its strategic location, between Mexico City and the port of Veracruz, makes it a key player for regional and international economic activity and trade, where exporting activity has been facilitated by numerous free trade agreements (FTAs), including the North American Free Trade Agreement (NAFTA) and the European Free Trade Agreement (EFTA).

The economy is dominated by manufacturing and a resilient automotive sector.

Puebla-Tlaxcala's economy has been growing on a par with that of Mexico over the last few decades, even outpacing the national average in recent years. Both Mexico and Puebla-Tlaxcala have proven resilient to three economic crises in the past two decades. In the 2009 recession, Puebla experienced a real GDP contraction of 9% but managed to recover quickly and achieve high growth rates in 2010-12.

Manufacturing is the main economic activity in Puebla-Tlaxcala. At the state level, manufacturing accounts for more than 30% of Puebla's GDP and despite a sharp, but short-lived, contraction in 2009, it is still growing relative to other economic sectors. The automotive industry accounts for 60% of total manufacturing. Indeed, Puebla-Tlaxcala is home to the largest automobile plant in Mexico (Volkswagen) and a resilient, vertically linked automotive supply chain. Another foreign auto manufacturer (Audi) is currently building a large plant just outside of the region. Non-durable goods production, such as food, beverages and tobacco, is also a significant part of the state's GDP, representing around 20% of manufacturing output. The production of textiles, which was one of the most important manufacturing activities (in value) in the state of Puebla, has shrunk in the last decade. Manufacturing in the state of Tlaxcala is more diversified than in Puebla. In 2011, manufacturing GDP in Tlaxcala was distributed among food (24.8%), non-metallic metals (17.2%), petroleum derivatives (13.6%) and textiles (12.4%). In the Puebla functional urban area, manufacturing generates more than half of GDP. Indeed, Puebla is one of the few large metropolitan areas in Mexico in which manufacturing is so important (along with Toluca, Ciudad Juárez and Tijuana).

Yet the economy remains vulnerable to economic shocks.

The high degree of specialisation in car production has positive sides which are evident, as state-of-the-art technology and linkages to global supply chains are present in many firms in the region. But it also comes with potential costs and significant risks for long-term growth. Puebla-Tlaxcala is more fragile to industry-level shocks, such as the recession experienced by the car industry in 2009, as the automotive industry is particularly pro-cyclical and volatile. A specialisation in auto production may also imply fewer opportunities to be influenced by other, faster-growing industries or to benefit from innovations in other sectors. Studies have found that urban growth is more likely to occur in cities with an abundance of small, entrepreneurial firms than in cities dominated by large, high fixed-costs industries. Innovations in one industry usually end up affecting other industries as well, so cities which are more diversified end up benefitting from cross-industry knowledge spillovers.

Educational outcomes have improved in both states in recent years.

Progress has been made in terms of educational outcomes in both states in recent years, particularly at lower levels of the education system. Enrolment rates have increased at all levels, and today nearly every child attends primary school and starts lower secondary school. This is encouraging. Despite this progress, both states still rank below the national average for most educational indicators. Given that Mexico fares much lower than other OECD countries and Brazil in terms of educational attainment, this remains a key policy concern for both Puebla-Tlaxcala and Mexico. The recent federal reform, part of the *Pacto por Mexico* agreement between Mexico's three main political parties, targets improvement in such key areas of the education system as the recruitment and promotion of teachers and school leaders.

However, skill levels are polarised, and low skills may represent a drag on future growth.

The region is characterised by an educational paradox. It has the highest number of universities per capita in Mexico and is thus an important centre for higher education. Yet, the educational attainment of its population as well as its innovative performance fall short of what could be expected. A relatively high share (44.3%) of Puebla-Tlaxcala's working-age population reports upper-medium or higher education levels, which is close to the average for Mexico's other large metropolitan zones with a population over 500 000. However, Puebla-Tlaxcala also ranks 4th out of 33 in terms of the share of low-skilled individuals in the working-age population. Some 38% of the population lacks a secondary education, compared to an average of 33% across Mexico's metropolitan zones. As regards average years of schooling, Puebla-Tlaxcala ranks sixth from the bottom, at 8.4 years, compared to an average of 9 for all large Mexican metropolitan zones. This matters: a good deal of cross-country evidence suggests that a large share of unskilled or low-skilled workers can act as a drag on the economy and that, overall, reducing the proportion of workers in a region with very low skills may be as important for regional growth as increasing the share with very high skill levels.

Despite the prevalence of manufacturing, a large part of the labour market is informal.

A large and stable proportion of the economically active population participates in the informal economy. In Mexico as a whole, informality (in non-agricultural activities) is estimated to represent more than 50% of total employment. Although informality can be defined in different ways, informality rates in the state of Puebla are among the top seven in the country by all measures. Informal workers tend to be more concentrated in agriculture and retail trade; informality is less common in manufacturing. Given the limited agricultural sector in the Puebla-Tlaxcala metropolitan zone relative to the state of Puebla, informality is probably less prevalent in the region than it is in the non-metropolitan portions of the state. Key factors contributing to informality in Mexican states include income levels, the composition of GDP, the general level of education and business environment variables, such as the cost of starting a business and the level of corruption. The large incidence of informality constitutes a major policy challenge, as it can imply foregone tax revenues; lower labour, health and environmental standards in production; and increased rates of marginalisation.

The business environment has improved but still compares poorly to many other states.

Over the last five years, the states of both Puebla and Tlaxcala have considerably improved the regulatory framework affecting the business environment. However, other states in Mexico have also implemented regulatory reforms, which have in many cases resulted in faster progress; the relative rankings of Puebla and Tlaxcala have thus fallen overall. At sub-national level, Puebla ranks 25th among the 31 states and the Federal District and its relative position has deteriorated over time. On average, the number of procedures, their cost and the time needed to conduct them have fallen in both states, which combined reduce the constraints on investment. These mark important progress, but the time and the cost needed to clear the procedures are still higher in Puebla and in Tlaxcala than in the rest of the country. These trends underscore the reality of the need to "run to stay in place" – that is, even though Puebla and Tlaxcala have improved their performance in recent years, they need to do even more, just to avoid falling behind their peers.

Sprawling development and a depopulating historic core are challenges for urban policy.

In recent decades, there has been an overall trend in Mexico toward sprawling development. Puebla-Tlaxcala is no exception; indeed, urban sprawl may be a more prominent phenomenon there than in most other Mexican metropolitan zones. It ranks last among the ten largest Mexican metropolitan zones in terms of population density. The urbanised area of the Puebla-Tlaxcala metropolitan zone grew nearly eight times faster than its population between 1980 and 2010. This is much faster than the national trend, where urbanised areas expanded at five times the rate of population. Population growth has been fastest in the municipalities surrounding the city of Puebla. Development in the periphery has occurred at the expense of Puebla's once-dense historic city centre, where vacancy rates in some census tracts now reach over 40%. Moreover, the majority of census tracts located in the core of the municipality of Puebla lost population between 2000 and 2010.

Transport and water are critical strategic issues for the region.

Traffic congestion is an increasing challenge in Puebla-Tlaxcala, particularly in the city centre. Transport, both private and public, is mostly motorised in the region, as it is in the rest of Mexico. Between 2000 and 2010, Mexico's motorisation rate nearly doubled. Moreover, the public transport fleet in Puebla-Tlaxcala consists of approximately 6 000 primarily low-capacity vehicles, such as microbuses, minibuses and taxis. This further contributes to congestion and impedes the development of an efficient transport network. Multiple operators cover the same routes (284 in total), especially in the city centre. The inefficiency of the transport system, as well as its cost, represents a particular challenge for lower-income populations, as well as those living in communities located far from the urban core. Households in Puebla-Tlaxcala are accustomed to considerable distances and travel times between their homes and jobs. Many workers, especially those on lower incomes, spend two to three hours a day commuting. This has a potentially huge impact on the competitiveness and productivity of the metropolitan zone. The recent development of a bus rapid transit (BRT) system, RUTA, in three municipalities is encouraging. However, authorities need to incorporate a broader range of actors in subsequent implementation phases to overcome some of the system's initial challenges.

Recent OECD research highlights the critical challenges posed by water governance in Mexico, as well as the important disparities in water quality, quantity and access. In spite of the high coverage of water infrastructure in the Puebla-Tlaxcala metropolitan zone (87%), the frequency of water provision and the quality of infrastructure remain inadequate. The provision of water in the majority of houses is only intermittent, ranging from once a week to two or three days per week. Many localities within Puebla-Tlaxcala face deficiencies in access to potable water networks, ranging from 20.18% in San Martin Texmelucan to 70.3% in San Andres Cholula. Although the wastewater treatment levels have doubled in the last decade to reach 37% in 2009, they are still low compared to other OECD countries. Few of the region's wastewater treatment plants function on a regular basis. In the state of Tlaxcala, for instance, just 30 of the state's 127 treatment plans are currently in operation. Municipal resources for operation and maintenance are often insufficient to ensure stable service. As a result, the region's water sources are reportedly highly contaminated and worsening. The already fragile water supply is further threatened by urban sprawl and population growth, which affect water resources and can generate pollution in river basins. Water quality issues are compounded by challenges of water quantity, as the urbanisation and deforestation of watershed recharge areas has led to diminishing yields from many wells.

Poverty and social exclusion need to be addressed.

Puebla-Tlaxcala registers a higher incidence of poverty and social marginalisation than most other Mexican metropolitan zones. It is also one of the most polarised metropolitan zones, hosting both very affluent and very poor areas. At the state level, Puebla has the 5th-highest poverty level among of the 31 states and the Federal District. Moreover, Mexico's overall poverty rate (21%) is the highest in the OECD, nearly double the OECD average in 2008 (11%). Puebla-Tlaxcala also performs poorly on an aggregate measure of social marginalisation, which reflects a lack of access to basic goods, services and infrastructure. Among the 33 large metropolitan zones in Mexico, it has the

2nd-highest share of population living in neighbourhoods of high and very high marginalisation (49%), more than double the average for large Mexican metropolitan zones (22%).

Opportunities for economic and workforce development

Over the past five decades, Puebla-Tlaxcala has succeeded in attracting major national and international firms, building its reputation as both a manufacturing hub specialising in auto production and as one of Mexico's most important centres of higher education. Nevertheless, the region's success in attracting major firms has occurred in the absence of a clear strategy for regional development, as the 2 states and 39 municipalities compete for investment opportunities and skilled labour. While the federal government has worked to introduce the metropolitan scale as a framework for assessing and addressing policy challenges since 2004, it has so far had little policy relevance in Puebla-Tlaxcala. Some important initiatives have been introduced by the region's major universities, often in partnership with the public and private sectors, but they have largely been pursued in isolation of each other and outcomes have thus far been modest.

There is an urgent need for policy makers to think – and act – regionally.

In Puebla-Tlaxcala, economic development policies and activities are largely jurisdiction-bound and deal-driven, a sizeable barrier to economic growth in a cross-border region. The two state economies are inextricably linked to the metropolitan territory, and while some government and university actors recognise the value of regional partnerships and growth, state and municipal leaders largely fail to think or act as if it were one region. There is very little co-ordination or co-operation among communities within the region on matters of common interest. Instead, as is the case in many cross-border regions across the globe, public authorities from the two states tend to see each other as competitors, rather than partners, in development – even when there is agreement that both the benefits and costs of major investment decisions will be deeply felt by both states. Investment decisions tend to be based on the immediate situation, without regard to a long-term strategic vision.

To overcome these challenges, there is a need for regional stakeholders to start thinking and acting regionally. The development of initiatives like the *Puebla Capital Universitaria de Mexico* suggests that, if encouraged and sufficiently funded through independent sources, universities may be able to take a more visible role in supporting regional policy making by establishing a sustainable working collaboration among business, academia and labour that can serve as a bridge across successive state and municipal administrations. The establishment of a regional think tank could be one means of fostering a regional vision that would not be hamstrung by jurisdictional restrictions or electoral cycles. A less formal university-led effort could be another approach, in which each university focuses on issues pertaining to different areas of economic development. Regardless of its form, a regional economic development body for Puebla-Tlaxcala could prioritise the following tasks: bolstering regional data for evidence-based policy making, exploring strategies for economic diversification and linking economic and urban development initiatives in the region.

Raising the level of low-skilled workers should be a policy priority.

To raise the skill level of the workforce, the authorities in Puebla-Tlaxcala could consider expanding the certification of skills acquired on the job to upskill workers in the formal and informal sectors. This could be built on the National Council for Standardisation and Certification of Labour Competence's (*Consejo Nacional de Normalización y Certificación de Competencias Laborales*, CONOCER) skills certification for workers who have learned on the job by tailoring additional training support to target regional needs. Mexico has made great strides in the development of an interlocking system of occupational skills standards and training and, through the use of assessments based on CONOCER's skills standards, has also developed the means by which individual skills obtained through non-formal means can be recognised. In light of the large number of adults who are able to work but lack the formal educational and occupational credentials to obtain good jobs in the formal economy, CONOCER's skills certifications are an important bridge to greater individual economic success. Also important will be anchoring federal workforce training programmes to the needs of the regional economy. To complement federal training programmes, state and municipal leaders in Puebla-Tlaxcala could build on existing regional strengths in workforce training to establish a comprehensive workforce development policy. Finally, authorities in both states, in partnership with federal and municipal actors, should pursue education reforms to continue to improve overall educational outcomes. Improving educational outcomes will require considerable reform, and results will not be immediate. The recent OECD assessment of the state of Puebla's educational system, *Improving Education in Mexico: A State-level Perspective from Puebla*, proposes a series of recommendations for reforming different aspects of the system.

Improving the business environment can build on existing efforts.

The outdated regulatory framework is also seen to be a key obstacle to competitiveness in the region. Mexico as a whole has made considerable improvements over the past decade. There is scope for easing the regulatory and business environment in Puebla-Tlaxcala. This could help, on the one hand, to improve conditions that would allow start-ups and SMEs to grow and, on the other hand, to foster the formalisation of informal companies, as has been achieved in the municipality of Puebla. Sub-national authorities could work with the federal government to align the national portal for opening a business, *tuempresa.gob.mx*, with state and municipal procedures to enable "one-stop shopping" for entrepreneurs. Several Mexican states, including Colima, Chiapas and Sinaloa, have already begun this process. They could also expand the successful System for Quick Business Start-Up programme (*Sistema de Apertura Rápida de Empresas*, SARE) to other municipalities in the metropolitan region. SARE simplifies the procedures for creating a business at the three levels of government for low-risk businesses by ensuring that the entrepreneur receives a license to begin operations within 72 hours of the request. Another strategy would be to update, and ultimately digitise, municipal land-use plans and establish a regional database with up-to-date land-use, zoning and property information to help potential entrepreneurs locate and acquire suitable sites for business operations.

Strategies to guide urban growth more effectively

Tackling urban sprawl and congestion should be policy priorities.

Urban sprawl is not unique to Puebla-Tlaxcala and its causes are manifold, rooted in a complex combination of policies and policy interactions at multiple levels of government, as well as changing demographics and consumer preferences. One difficulty is that the region's demographic, economic and spatial growth has not been accompanied by adequate development of the infrastructure and urban services. The systematic inability of different levels of government to guide urban development has exacerbated sprawl and contributed to the accumulation of severe service deficits that reduce the overall quality of life and may impair the metropolitan region's future competitiveness. While these challenges are generally well understood by policy makers in Mexico, it has nevertheless proven difficult to address them, due to weaknesses in urban planning. Municipalities regularly authorise land subdivisions without updated master plans and without a metropolitan framework to gauge the long-term costs of sprawl. Moreover, they are often operating with outdated land-use plans – some approved over 25 years ago, when the region was a fraction of its current size – which do little to guide more sustainable development patterns. The limited human, technical and fiscal capacity of most municipalities means that despite significant authority over land use and urban development, municipal administrations are not always equipped to carry out these functions. Efforts to address these challenges are compounded by policy discontinuities that result from a change in the majority of the municipal administrations every three years.

Policy makers are undertaking several major initiatives to address urban sprawl, congestion and service delivery challenges. At the federal level, the new Ministry of Agrarian, Territorial and Urban Development (*Secretaria de Desarrollo Agrario, Territorial y Urbano,* SEDATU) has put forward several interesting policy directions, namely a proposal to limit federal subsidies to development projects that are located within the urban core. Moreover, recent initiatives in Puebla-Tlaxcala involving federal support, such as the development of the RUTA bus rapid transit network and the DUIS redevelopment project in Puebla's historic centre (recognised as a UNESCO cultural heritage site in 1987), represent important opportunities for the metropolitan zone. Nevertheless, without being operationalised at the metropolitan scale, critical and significant investments such as RUTA and DUIS risk only having a limited impact. Further, these initiatives have, unfortunately, largely been pursued in isolation of each other and in the absence of a larger framework for integrated policy making. Leveraging these opportunities and ultimately achieving more efficient urban development outcomes will require the development of effective integrated planning instruments at the metropolitan scale that help structure and link metropolitan investments like DUIS and RUTA. Even worse would be that a lack of co-ordination between these major initiatives would result in additional challenges for the metropolitan area.

Land-use and transport policies need to be better co-ordinated.

In Puebla-Tlaxcala, the development potential associated with the RUTA network has thus far been largely ignored. State and municipal authorities could seek to build on

RUTA's development potential by creating transit-oriented corridors at the metropolitan scale, which are linked to existing and strategically planned urban nodes. RUTA routes should be located where demand is the highest, while BRT stations should be sited in areas with land assemblage potential and in areas that are amenable to higher densities. It may be necessary to revisit existing zoning regulations along BRT routes and particularly near BRT stations to facilitate higher densities and the development of the most appropriate land-uses and site designs. Implementing a value capture tax would be another strategy for facilitating greater linkages between land use and transport investments and contributing to the financing of subsequent phases of the RUTA system. The sale of building rights (a mechanism by which the government charges for special rights it grants, such as allowing higher densities, zoning changes or rural-urban land conversions) may be the preferred form of value capture tax for Puebla-Tlaxcala. This practice has had great success in Brazil and has been shown to have a stronger revenue-generating capacity relative to other forms of value capture, such as betterment contributions.

The vacancy problem in the centre of Puebla needs to be addressed.

Vacant properties can be a significant drag on local economic and fiscal health, exacerbating already intense fiscal stress for local governments. Yet they can also be seen an asset – as opportunities for infill development in proximity to services, thereby limiting the need for further urban expansion. The authorities in Puebla-Tlaxcala have already begun to address the challenges posed by vacant properties in the historic centre of Puebla through the DUIS initiative – an integrated, multi-pronged approach to urban redevelopment. The development and design objectives of the DUIS could eventually be extended to redevelopment efforts in other areas of the metropolitan zone. To do so, authorities could consider developing a public inventory of vacant properties throughout the metropolitan zone to assess their redevelopment potential. The newly created Puebla State Land Bank could be tasked with developing an inventory of vacant properties, potentially beginning with the city of Puebla. Another possibility would be to impose a tax or levy fees on vacant properties. In many cities in the United States, a tax on vacant properties has been implemented to address the challenge of abandoned properties due to mortgage foreclosures. Another approach has been taken by the city of Cleveland, Ohio, which offers loans to developers to redevelop vacant or underutilised properties. Reforms to property tax could be another strategy for encouraging vacant properties to be put to a higher and better use: transitioning to a land value tax could be considered in Puebla-Tlaxcala; this was achieved with success in Mexicali.

Better tools can help policy makers balance the costs and benefits of development.

While urbanisation brings great benefits, including higher incomes and increased accessibility to jobs and services, it also generate costs related to infrastructure provision, as well as a range of economic, social and environmental externalities. It is clear that Mexico, in general, and Puebla-Tlaxcala, in particular, have experienced the benefits, just as they have paid the costs and grappled with managing the externalities associated with a rapid and expansive urbanisation process. Policy makers in Puebla-Tlaxcala could go further to balance the benefits and costs of urbanisation between public and private actors. The recently established Puebla State Land Bank could play a stronger role in

guiding urban development by guarding against real estate speculation and protecting the public interest. For instance, the Puebla State Land Bank could, in partnership with state and municipal authorities, seek to require more of developers in the development process, including, for example, requiring them to meet higher environmental and/or social targets in exchange for reduced transaction costs; imposing developer fees to finance the growth-related capital costs associated with development; and negotiating inter-municipal agreements stipulating that large development projects require the approval of multiple municipalities.

Municipal capacity for planning and land-use management needs to be enhanced.

Building capacity in the public sector, particularly at the municipal level, is a critical policy challenge for Puebla-Tlaxcala and Mexico generally. It will be especially important to build capacity for planning and urban development within the public sector. An exception is the city of Puebla, which in 2011 established its own municipal planning institute, IMPLAN. Policy makers could focus on investing in systems to ensure policy continuity, as well as more targeted training for municipal planners upon their arrival in the administration. The state planning department and IMPLAN and others could play key roles to build these capacities. To enable municipal planners to prepare a diagnosis of the existing challenges and opportunities and ensure that future plans are based upon a sound baseline assessment, there is an urgent need to improve the information base on housing, land use, transport and environmental challenges within Puebla-Tlaxcala. Of equal importance will be to develop systems for managing and updating data; to this end, a digitised database could be developed, with assistance from federal and state authorities, and made accessible to all municipalities in the metropolitan area. To improve the technical knowledge and administrative know-how of municipal planners, state planning authorities could consider developing a simple handbook or guide for municipal planners to communicate everyday functions and processes.

Governing the Puebla-Tlaxcala metropolitan area

Like an increasing number of metropolitan areas around the globe, Puebla-Tlaxcala faces metropolitan challenges in need of effective metropolitan solutions. Actors in the metropolitan zone have yet to think, or act, as a region when pursuing economic development opportunities or managing the metro-wide consequences of these investments. This fragmented approach is one factor contributing to sprawl throughout the metropolitan zone. Current arrangements and outcomes at the metropolitan scale are stymied by ineffective frameworks, institutions and tools, including ambiguous federal frameworks, metropolitan tools in need of reform, outdated planning instruments and a planning institute with great promise, but which is geographically limited in scope. Limited fiscal, technical and human capacity, coupled with short, non-renewable terms for mayors restricts the ability of municipal authorities to develop long-, or even medium-, term strategies to respond meaningfully to these challenges. At the same time, administrative and institutional fragmentation is a barrier to achieving economies of scale and policy coherence, particularly in critically strategic sectors such as water and transport. This fragmentation, coupled with short municipal electoral terms and highly cyclical turnover in administrative staff, is a critical obstacle to developing a shared metropolitan vision of an alternative, more sustainable, future for the region.

Addressing Puebla-Tlaxcala's key policy challenges requires actors to build capacity and capability in the public sector and to work better between and across levels of government, potentially through the development of metropolitan governance arrangements. Indeed, the successful implementation of many of the strategies proposed throughout this review – which address ways to improve economic and workforce development, better manage urban growth and improve service delivery – will require progress on both fronts. For instance, improving revenue-raising capacities, establishing information management systems at relevant scales, increasing the professionalisation of the workforce and developing more strategic training opportunities, all rely on stronger municipal administrations. Moreover, inter-municipal and/or metropolitan arrangements are needed to better manage urban growth and economic development outcomes. This could be in the form of a group of municipalities that create a joint service delivery agreement to improve public service provision or inter-municipal agreements that stipulate that development projects over a certain threshold require the approval of all of the cities concerned. To address these critical policy challenges and identify concrete steps for moving forward, the multitude of public, private and civic actors may find it valuable to determine, collectively, how they see the future of their region.

The financial, policy and administrative capacities of municipalities need to be strengthened.

Sub-national revenues in Mexico are highly constrained, as their responsibilities continue to expand without adequate, parallel efforts to maximise revenue-raising capacities. Municipalities have little or no incentives to increase own-source revenue, since the state and federal governments consistently make up the difference, ultimately generating perverse incentives to stay under-developed. In addition, there are significant disparities in the institutional capacities of public sector actors. The three-year, non-renewable mayoral term severely restricts municipal action and makes municipalities highly vulnerable to political changes. Moreover, every state and municipal election cycle is accompanied by a substantial – and in some cases, complete – overhaul of state and municipal civil servants. The high rate of administrative turnover every three years has clear policy implications, notably a lack of continuity, low capacity and incentive to develop and implement policy, and limited experience and technical capacity.

There are a number of opportunities for building capacity and capability in the public sector within Puebla-Tlaxcala. Municipalities could bolster revenue-raising capacities through property tax reform, updating fee structures and improving systems to facilitate tax collection. Incentives from higher levels of government may be needed to overcome the political unpopularity of raising taxes and fees. To limit the effects of recurrent political and administrative upheavals, the states could move to extend the three-year term for mayors (as has been done in the state of Chihuahua), and/or abolish the non re-election provision. Another strategy to improve municipalities' technical and administrative capacities could be to appoint professional city managers to handle the day-to-day administrative operations. Greater security of tenure for such city managers and for other municipal employees could also reduce the disruptive impact of frequent mayoral elections, allowing greater professionalisation and the accumulation of institutional memory. Building a more effective public administration would require significant efforts, but is bound to have a high impact. Important steps in this direction include developing a merit-based recruitment process for civil servants; investing in the professionalisation of the public workforce as a strategic orientation for the

administration; improving forward-looking planning and management; and enhancing the performance orientation of public officials.

Transitioning to metropolitan governance arrangements could improve service delivery.

OECD experience has shown that greater co-operation between and across levels of government (vertical and horizontal) can help to improve service efficiency and effectiveness as well as the management of urban growth, and lead to more co-ordinated approaches to regional economic development. Developing a metropolitan governance system can be a difficult task, however, as it calls into question the relative roles and responsibilities of diverse actors, intergovernmental co-ordination mechanisms, and the nature of the relationship with the private sector as well as civil society. Important challenges to metropolitan governance in Puebla-Tlaxcala include the administrative and institutional fragmentation of actors and policy mandates, which stands as a barrier to achieving economies of scale and greater policy coherence, as well as outdated, ineffective or partial frameworks, institutions and tools for urban and economic development and co-ordination at the metropolitan scale.

To move beyond the institutional fragmentation experienced in Puebla-Tlaxcala and build a "voice" among key stakeholders, a first step would be to create political legitimacy for metropolitan issues. The objective would be to increase public awareness on the part of public and civic stakeholders about metropolitan issues and the potential solutions, as well as their costs and benefits. Puebla-Tlaxcala could build on recent efforts on the part of IMPLAN to organise a forum to discuss metropolitan issues. It would be important to provide a neutral platform for all stakeholders to discuss their views and priorities. The activities of the metropolitan forum should be closely linked to the functions of information gathering and analysis to improve the decision-making process and increase transparency and accountability in the management of metropolitan affairs. One possibility to consider could be for IMPLAN and the *Colegio de Puebla*, which currently operates an urban observatory financed by the federal government, to join forces.

To create operational legitimacy, a first step could be to reform the current use of the federal Metropolitan Fund in Puebla-Tlaxcala, which is divided between the two states and spent individually. Despite the fund's laudable intent to facilitate metropolitan-scale projects in metropolitan zones across Mexico, it has not yet succeeded in improving metropolitan co-ordination and performance. Importantly, Puebla-Tlaxcala will also need to assess which types of metropolitan governance arrangements have the greatest potential for the region. One promising approach for Puebla-Tlaxcala might be to establish functional metropolitan governance arrangements, which may take the form of public, or public-private, companies that involve the participation of all levels of government (federal, state and municipal). These companies could be tasked with managing key metropolitan infrastructure and services, including water and sewerage, public transport and health services.

Finally, to create institutional legitimacy, Puebla-Tlaxcala could establish a metropolitan planning institution to plan and guide metropolitan development with a long-term vision. This institute could be tasked with the management of land use and environmental issues at the metropolitan scale and jointly owned by the governments of the two states and the affiliated municipalities. Municipalities could retain their land-use and development control authority through their master plans and by continuing to

exercise their development control responsibilities. However, a provision could be introduced into the legislative framework conditioning the approval of master plans by the municipal council upon their coherence with a metropolitan planning framework provided by the institute and approved by the state legislatures. The institute could be responsible for, *inter alia*, preparing a long-term metropolitan development plan; providing technical assistance to the authorities responsible for key urban services (i.e. public transport, water and sewerage, and waste); advising the state-led Metropolitan Council on investments with high metropolitan priority; and preparing integrated metropolitan development projects, co-ordinating the inputs from relevant sub-national governments and sector institutions.

There is interest on the part of IMPLAN to expand its geographic scope to fulfill some or all of these activities. IMPLAN is a well-organised and well-funded institution in Puebla, tasked with planning responsibilities for the municipality. The challenge for IMPLAN over the medium to long term is to determine how to take advantage of these strengths and mitigate the high rotation of managerial and professional staff and the dominance of the Puebla City Council and mayor over the institute. IMPLAN does appear to be equipped to assume some of the responsibilities associated with the metropolitan institution mentioned previously. In the short term, one option could be for IMPLAN to operate as a contractor to the state governments of Puebla and Tlaxcala for specific tasks which could include metropolitan planning, programme design, implementation and evaluation, and technical co-operation to institutionally weak municipalities. However, for IMPLAN to be effective and meaningful over the long term, it will be critical to make three major modifications to its existing structure: *i)* dissociating the institute's managerial and professional staff from political upheaval every three years; *ii)* expanding its sources of funding beyond the municipality of Puebla; and *iii)* allocating meaningful roles to a range of other key public actors in the metropolitan area. The difficulty to overcome these challenges should not be underestimated.

Recent policy and institutional reforms chart the way forward.

While the challenges facing Puebla-Tlaxcala may appear daunting, a number of recent reforms undertaken at different levels of government are encouraging. Proposed policy shifts, such as the federal government's plans to limit housing subsidies to projects within the metropolitan core, could help curb further urban sprawl. Institutional innovations like the establishment of a university consortium as a potential partner to municipalities for development, Puebla's municipal planning institute and the Puebla State Land Bank are signs that leaders in Puebla-Tlaxcala are taking critical first steps to co-ordinate economic development at a regional scale and build capacity for better urban land management. Moreover, there is a growing – if not yet substantial – sense among public and private sector actors in the area that regional development outcomes could be improved by greater co-operation among the 2 states and 39 municipalities. These are all positive developments, but there is more to be done, particularly to improve the business climate and to strengthen governance at a metropolitan scale. To ensure the region's competitiveness and sustainability over the longer term, Puebla-Tlaxcala's leaders will need to build on these early steps and work towards deeper co-operation, on both strategic planning and day-to-day management and service delivery, across the metropolitan region.

Chapter 1

Economic, urban and social challenges in Puebla-Tlaxcala*

This chapter assesses the major economic, urban and social challenges facing Puebla-Tlaxcala. The first section examines demographic and economic trends of Puebla-Tlaxcala, illustrating the region's dynamism relative to other OECD metropolitan areas. The second section characterises the labour market and business environment. The third section assesses Puebla-Tlaxcala's performance as regards human capital, skills, educational infrastructure and innovation. The fourth section examines urban and environmental challenges facing the region, with a particular look at urban sprawl, housing, transport, air quality, water and waste management. The fifth section assesses evidence of social marginalisation and territorial inequalities in terms of access to public services and infrastructure. Finally, the sixth section outlines key governance challenges facing the region, pointing to capacity gaps at subnational level, administration and institutional fragmentation, and outdated and ineffective co-ordination tools.

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

Introduction

A two-state metropolitan region at the historical crossroads of Mexico

Puebla-Tlaxcala is a dynamic and fast-growing metropolitan zone with significant opportunities ahead; however, it also faces important urban challenges. A two-state metropolitan zone and the fourth largest in Mexico, the metropolitan area has formed around the municipality of Puebla, which contains around 56% of the metropolitan area's population. The metropolitan zone has experienced strong population growth, at annual rates of 1.9% during 2000-2010, outpacing national and OECD average growth rates. Puebla-Tlaxcala's economy has been growing on a par with that of Mexico over the last few decades, even outpacing the national average in recent years. Both Mexico and Puebla-Tlaxcala have proven resilient to three economic crises in the two decades. The regional labour market is characterised by a duality, with a dynamic formal sector that is mainly driven by manufacturing and a large informal sector.

Puebla-Tlaxcala's strategic location between the port of Veracruz and Mexico City makes it a key player for regional and international economic activity and trade. The Mexico-Puebla motorway opened in 1962 as a major axis in central Mexico linking Mexico City, Puebla and the port of Veracruz, the main port for international trade at the time. The port of Veracruz is currently expanding to double its size, which would make it easier and less costly to export cars from Puebla-Tlaxcala to the rest of the world. Exporting activity is also promoted by numerous free trade agreements (FTAs) that Mexico has signed with other countries, including agreements with North American countries as part of the North American Free Trade Agreement (NAFTA) and the European Union as part of the European Free Trade Agreement (EFTA). The strong manufacturing industry of Puebla has a long tradition dating to the opening of a cement company, Cementos Atoyac, in 1960, Volkswagen's automotive plant in 1964 and the Hylsa steel plant in 1967. Another major automotive manufacturer, Audi, is establishing a plant just outside the Puebla-Tlaxcala metropolitan zone within the state of Puebla, in the currently sparsely populated municipality of San Jose Chiapa.

Structure of this report

This review analyses the policy challenges facing Puebla-Tlaxcala and identifies cross-sectoral strategies for improving regional competitiveness, with a focus on economic development and workforce policy, urban development, public sector capacity and governance. Chapter 1 assesses economic, urban and social trends and challenges in the metropolitan region, identifying key policy areas for action. Chapter 2 examines the state of economic and workforce development in Puebla-Tlaxcala and identifies strategies for improving economic development and workforce training outcomes. Chapter 3 analyses the policy causes and implications of urban sprawl and proposes strategies for better guiding urban growth. Chapter 4 focuses on the state of public sector capacity and governance arrangements within the metropolitan region and proposes concrete steps forward for building public sector capacity at the sub-national level and improving metropolitan co-ordination and outcomes.

This chapter examines the socio-economic performance of the metropolitan area of Puebla-Tlaxcala and aims to identify the key challenges for its respective states and municipal authorities. It first begins with a description of the demographic and economic trends of the area. Then, it assesses the labour market characteristics and the business environment. Third, there is an analysis of Puebla-Tlaxcala's performance as regards

human capital, skills, educational infrastructure and innovation. Fourth, the chapter examines the urban and environmental challenges facing Puebla-Tlaxcala, with a particular look at urban sprawl, housing, transport, air quality, water and waste management. Fifth, evidence of social marginalisation and territorial inequalities with respect to access to public services and infrastructure is presented. The chapter concludes with a brief discussion of the key governance challenges in Puebla-Tlaxcala, pointing to key capacity gaps at the sub-national level, institutional fragmentation, and outdated and ineffective co-ordination tools.

Units of analysis used in this review

This review uses different spatial units to enhance the analysis: the Puebla-Tlaxcala metropolitan zone of the Mexican federal government (SEDESOL, INEGI, CONAPO), the OECD functional urban area (FUA) of Puebla, as well as the state and municipal level when data availability restrictions require it (see Box 1.1 for relevant information and definitions). The AGEB-level (*Áreas geoestadísticas básicas*, roughly equivalent to census tracts in the United States) is used to assess trends at a finer scale.

Table 1.1. **Basic facts about Puebla-Tlaxcala and other large Mexican metropolitan areas**

	Population			Average annual growth rate		GDP0	
	1990	2000	2010	1990-2000	2000-2010	1999	2009
Puebla FUA	1 364 419	1 771 240	2 135 375	2.6%	1.9%	26 866	32 608
Puebla-Tlaxcala metropolitan zone	1 776 884	2 269 995	2 728 790	2.5%	1.9%		
Puebla (state)	4 126 101	5 076 686	5 779 829	2.1%	1.3%	35 839	42 540
Tlaxcala (state)	761 277	962 646	1 169 936	2.4%	2.0%	4 833	6 859
Mexico	81 249 645	97 483 412	112 336 538	1.8%	1.4%	923 378	1 272 074
						Value added (MXD billions)	Gross production (MXD billions)
						2009	2009
Puebla FUA	1 364 419	1 771 240	2 135 375	2.6%	1.9%	104	290
Guadalajara FUA	2 988 746	3 680 262	4 398 145	2.1%	1.8%	198	462
Monterrey FUA	2 659 633	3 362 432	4 152 115	2.4%	2.1%	338	877
Toluca FUA	1 110 492	1 540 452	1 936 126	3.3%	2.3%	118	279
León FUA	983 050	1 269 179	1 609 504	2.6%	2.4%	59	157
Tijuana FUA	747 381	1 210 820	1 559 683	4.9%	2.6%	71	150
Juárez FUA	798 499	1 218 817	1 332 131	4.3%	0.9%	63	109

Note: 1. Millions of USD PPP, constant (real) prices (2005).

Source: INEGI; SEDESOL/CONAPO/INEGI (2012), *Delimitación de las zonas metropolitanas de México 2010*, SEDESOL/CONAPO/INEGI, Mexico City, available at: *www.conapo.gob.mx/es/CONAPO/Delimitacion_zonas_metropolitanas_2010_Capitulos_I_a_IV* (accessed 13 May 2013).

Box 1.1. **Defining Puebla-Tlaxcala: Units of analysis used in this report**

Several units of analysis will be used to assess the Puebla-Tlaxcala metropolitan area throughout this report: *i)* Puebla-Tlaxcala metropolitan zone; *ii)* Puebla functional urban area (FUA); *iii)* state-level analysis for Puebla and Tlaxcala, in cases where metropolitan data is lacking; *iv)* municipal-level analysis to assess trends and policies at the intra-regional scale; *v)* analysis at the census-tract level), to assess trends at a finer scale. The terms metropolitan area and metropolitan region are used throughout this report to refer to Puebla-Tlaxcala generally, when the precise unit of analysis is not relevant.

- Wherever possible, the metropolitan scale will be preferred. This publication will make reference to two metropolitan units of analysis:
  - The **Puebla-Tlaxcala metropolitan zone (*zona metropolitana*)**, which corresponds to a functional definition jointly developed by three federal institions in Mexico (Ministry of Social Development [*Secretaría de Desarrollo Social*], SEDESOL; the National Institute of Statistics and Geography [*Instituto Nacional de Estadística Geografía e Informática*], INEGI; and the National Population Council [*Consejo Nacional de Población*], CONAPO). The Puebla-Tlaxcala metropolitan zone straddles 2 states and is comprised of 39 municipalities: 19 in Puebla and 20 in Tlaxcala. In 2010, the metropolitan zone had a population of 2 728 790 and a surface area of 239 200 ha (SEDESOL/CONAPO/INEGI, 2012).

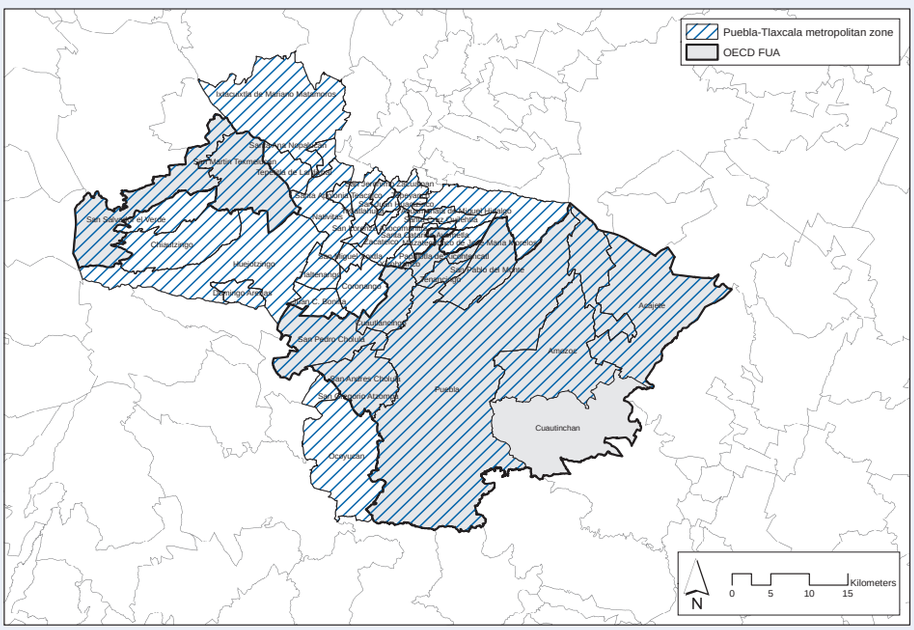
    The methodology applied by SEDESOL, INEGI and CONAPO defines a metropolitan zone as a group of two or more municipalities that form a city of 50 000 or more inhabitants, whose urban area functions and activities extend beyond the limit of each municipality, incorporating other adjacent predominantly urban municipalities with which they share a high degree of economic integration. A given metropolitan zone also incorporates municipalities with specific characteristics that are relevant to planning and urban policies. Also defined as metropolitan zones are those municipalities with 1 million or more inhabitants, as well as municipalities of 250 000 or more inhabitants, which form urban agglomerations with cities in the United States.
  - The **OECD Puebla functional urban area (FUA)** corresponds to a functional definition developed by the OECD that has been applied consistently across OECD metropolitan areas to facilitate international comparison (see below). Based on the OECD methodology for defining functional urban areas, the territory covered by the Puebla-Tlaxcala metropolitan zone results in two separate, smaller FUAs: Puebla FUA and San Martin Texmelucan FUA. The Puebla FUA is comprised of 11 municipalities: 8 in the state of Puebla and 3 in the state of Tlaxcala**.** All but one municipality (Cuautinchán) in the Puebla FUA are part of the Puebla-Tlaxcala metropolitan zone. A number of the municipalities located between the Puebla FUA and San Martin Texmelucan FUA (but outside of these FUAs) are part of the Puebla-Tlaxcala metropolitan zone (see figure and table below).

    The OECD, in co-operation with the European Commission, established a new methodology for defining cities in terms of their FUA. This methodology takes into account population density and commuting between urban areas in order to define the boundaries of cities that correspond to functional entities rather than administrative ones (see OECD, 2012a).
  - The terms **metropolitan area** or **region** are used throughout this report to refer to Puebla-Tlaxcala generally, when the precise unit of analysis is not relevant.

Box 1.1. **Defining Puebla-Tlaxcala: Units of analysis used in this report** (*cont.*)

- **State-level data** will be used when data is not available at the metropolitan zone or FUA level or in order to enable meaningful comparisons (e.g. for education, innovation).
- **Municipal-level data** will be used to assess trends at the intra-regional scale, or when assessing specific public policies undertaken at local level.
- **AGEB-level data** (*Áreas geoestadísticas básicas*, roughly equivalent to census tracts in the United States) are used to allow for intra-city analysis. There are 43 640 census tracts (AGEBs) for the whole Mexico, 931 for the Puebla-Tlaxcala metropolitan zone and 697 for the Puebla FUA.

Comparing the OECD functional urban areas with the Puebla-Tlaxcala metropolitan zone (SEDESOL/INEGI/CONAPO)



Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: based on data from OECD (2012), "Metropolitan regions", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en*, (accessed February 2013); and SEDESOL/INEGI/CONAPO (2012), *Delimitación de las zonas metropolitanas de México 2010*, SEDESOL/CONAPO/INEGI, Mexico City, available at: *www.conapo.gob.mx/es/CONAPO/Delimitacion_zonas_metropolitanas_2010_Capitulos_I_a_IV* (accessed 13 May 2013).

Box 1.1. **Defining Puebla-Tlaxcala: Units of analysis used in this report** (*cont.*)

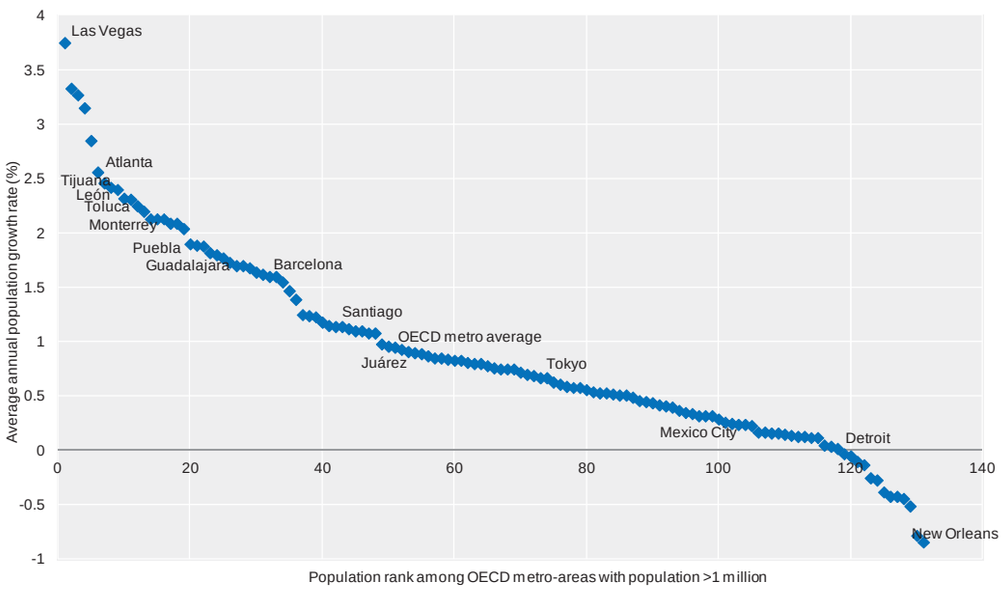
Comparing the OECD functional urban areas with the Puebla-Tlaxcala metropolitan zone (SEDESOL/INEGI/CONAPO)

SEDESOL/INEGI/CONAPO: Puebla-Tlaxcala metropolitan zone		OECD functional urban areas: Puebla and San Martín Texmelucan	
Municipality (State)	Population (2010)	Municipality (State)	Population (2010)
Puebla-Tlaxcala metropolitan zone	**2 728 790**	**Puebla FUA**	**2 135 375**
Acajete (Puebla)		Acajete	60 353
Amozoc (Puebla)		Amozoc	100 964
Coronango (Puebla)			34 596
Chiautzingo (Puebla)			18 762
		Cuautinchán (Puebla)	9 538
Cuautlancingo (Puebla)		Cuautlancingo	79 153
Domingo Arenas (Puebla)			6 946
Huejotzingo (Puebla)			63 457
Juan C. Bonilla (Puebla)			18 540
Ocoyucan (Puebla)			25 720
Puebla (Puebla)		Puebla	1 539 819
San Andrés Cholula (Puebla)		San Andrés Cholula	100 439
San Felipe Teotlalcingo (Puebla)			9 426
San Gregorio Atzompa (Puebla)			8 170
San Miguel Xoxtla (Puebla)			11 598
San Pedro Cholula (Puebla)		San Pedro Cholula	120 459
San Salvador el Verde (Puebla)			28 419
Tepatlaxco de Hidalgo (Puebla)		Tepatlaxco de Hidalgo	16 275
Tlaltenango (Puebla)			6 269
Acuamanala de Miguel Hidalgo (Tlaxcala)			5 711
Ixtacuixtla de Mariano Matamoros (Tlaxcala)			35 162
Mazatecochco de José María Morelos (Tlaxcala)			9 740
Nativitas (Tlaxcala)			23 621
Papalotla de Xicohténcatl (Tlaxcala)		Papalotla de Xicohténcatl	26 997
Santa Ana Nopalucan (Tlaxcala)			6 857
Santa Apolonia Teacalco (Tlaxcala)			4 349
Santa Catarina Ayometla (Tlaxcala)			7 992
Santa Cruz Quilehtla (Tlaxcala)			6 296
San Jerónimo Zacualpan (Tlaxcala)			3 581
San Juan Huactzinco (Tlaxcala)			6 821
San Lorenzo Axocomanitla (Tlaxcala)			5 045
San Pablo del Monte (Tlaxcala)		San Pablo del Monte	69 615
Tenancingo (Tlaxcala)		Tenancingo	11 763
Tepetitla de Lardizábal (Tlaxcala)			18 725
Teolocholco (Tlaxcala)			21 671
Tepeyanco (Tlaxcala)			11 048
Tetlatlahuca (Tlaxcala)			12 410
Xicohtzinco (Tlaxcala)			12 255
Zacatelco (Tlaxcala)			38 654
		San Martín Texmelucan FUA	**141 112**
San Martín Texmelucan (Puebla)		San Martín Texmelucan	141 112

Demographic and economic trends

In the last decade, the population of the Puebla FUA grew at an annual rate of 1.9%, compared to 2.6% in the previous decade, ranking 17th out of 130 OECD FUAs with a population larger than 1 million (Figure 1.1). The demographic growth of Puebla FUA was well above that of the Federal District (0.8%) and the average for all OECD FUAs (0.9%), but still fell short of comparable FUAs within Mexico. Indeed, although it is the fourth largest metropolitan zone in Mexico in terms of population, well behind the leader, Mexico City, and Guadalajara and Monterrey, other metropolitan zones are catching up (Figure 1.2). Toluca, León, Tijuana and Ciudad Juárez are closing the gap in terms of population and GDP. If recent population growth trends continue, Puebla FUA could drop to the fifth position nationwide within the next decade or to the sixth position in two decades.

Figure 1.1. **Population growth of OECD functional urban areas (2000-08)**

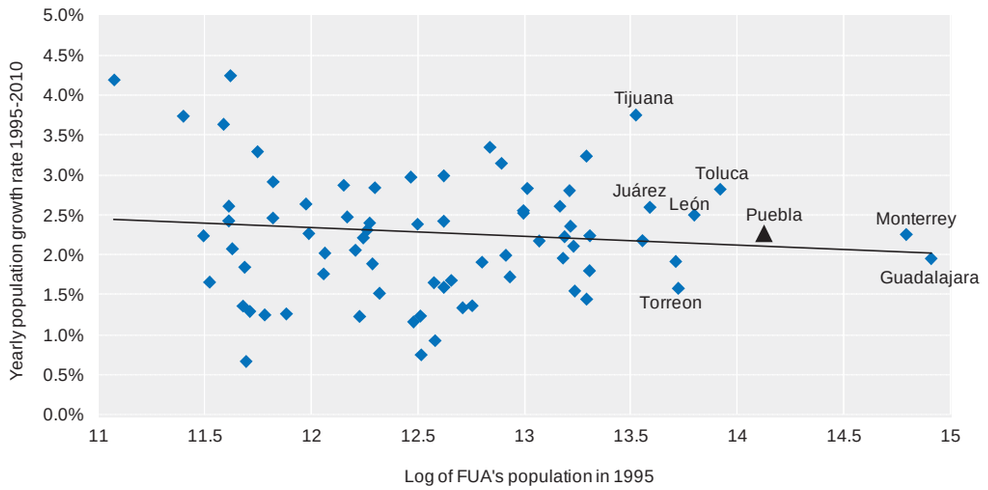


Note: The data for Mexico covers the decade 2000-10.

Source: OECD (2012), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed February 2013).

Growth rates within the Puebla-Tlaxcala metropolitan zone have been uneven, contributing to urban sprawl. The population in the Puebla-Tlaxcala metropolitan zone has grown at the same pace as the FUA, and its growth rate has slightly decreased, from an average annual growth rate of 2.6% from 1990 to 2000 to 1.9% between 2000-10. Moreover, growth within the metropolitan zone has occurred unevenly. In recent decades, population growth has been the fastest in the municipalities surrounding the core municipality of Puebla, which is one contributing factor to the metropolitan zone's urban expansion. The city of Puebla experienced minimal growth between 2000-10 (1.3% annual growth rate), even if in absolute terms the city still accounted for a large volume of the metropolitan zone's additional population during this period (Figure 1.3). The faster increase of settlements outside the core tends to break the metropolitan unity and create greater social costs due to the expense of providing public infrastructure such as water, sewage, waste management and electricity to municipalities farther away from the core. These issues will be discussed in detail in Chapter 3.

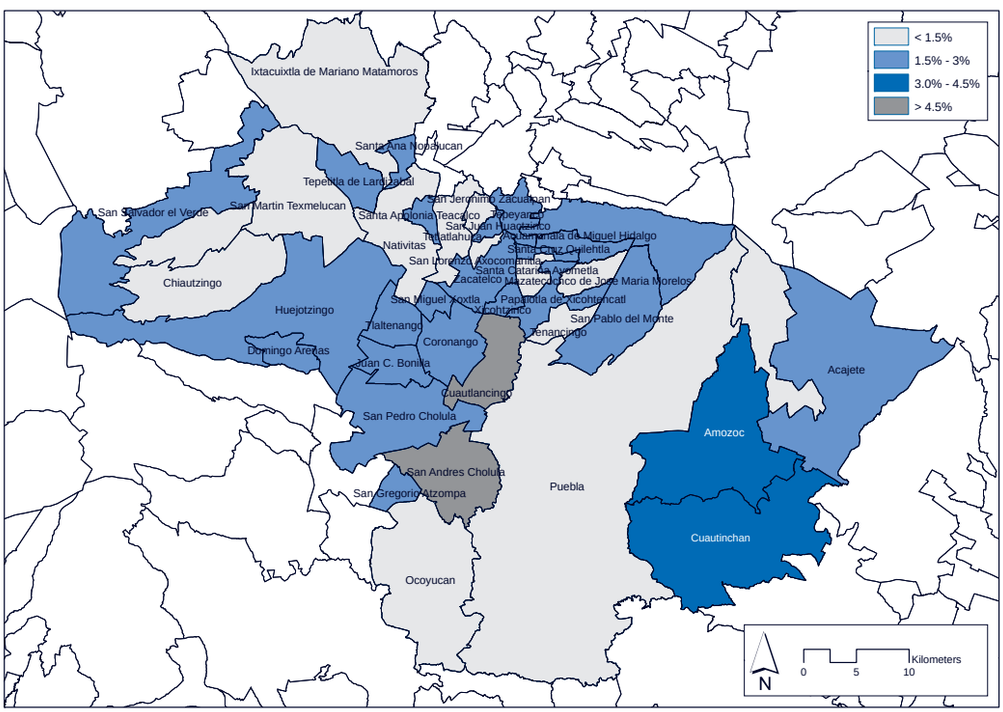
Figure 1.2. **Population growth of Puebla and all other Mexican functional urban areas (1995-2010)**



Note: The data refer to the 76 functional urban areas (FUA) of Mexico. Mexico City FUA has been excluded as an outlier.

Source: OECD calculations and INEGI (1990, 2000 and 2010), Censo de Población y Vivienda, INEGI, Aguascalientes, Mexico.

Figure 1.3. **Sprawling development: Growth in the Puebla-Tlaxcala metropolitan zone versus Puebla functional urban area (2000-10)**



Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

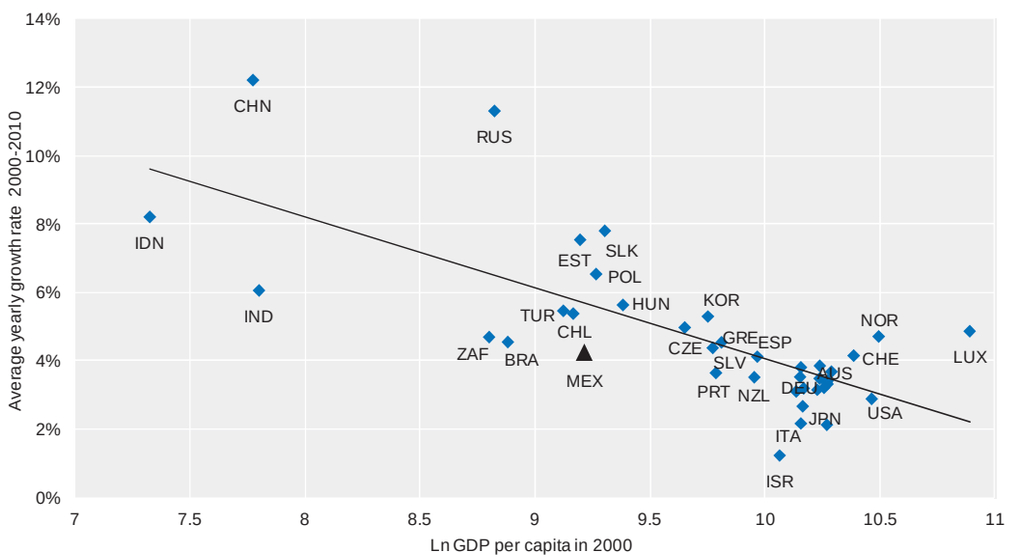
Source: Based on data from INEGI, 2000, and 2010 Population Census.

Regional economic growth outpacing Mexico, showing resilience to shocks

Mexico's economic growth rates have been lower than those of OECD countries with a similar level of income, but still Mexico has proven remarkably resilient to three crises in the last two decades, and current estimates look encouraging for the years to come (Figure 1.4). At 4.2% of annual growth rate of GDP per capita in the last decade (2000-10), GDP growth has been slightly higher than in the previous decade (3.7%) (OECD Statistics). Mexico has weathered three crises that significantly hampered the overall economic outlook: the 1994 sudden devaluation, the 2001-03 US recession and the international financial crisis in 2009. Mexico's economy has nevertheless proven resilient and quickly recovered each time. Following the most recent crisis, Mexico bounced back with strong growth rates in 2010, with manufacturing output even outpacing pre-crisis levels. However, Mexico's current rate of growth still falls behind that of comparable OECD countries in the last decade. Similar-income European countries such as Estonia, Hungary, Poland, the Slovak Republic and Turkey have achieved faster growth rates. In Latin America, Chile has reached slightly higher growth rates in the past two decades, and Argentina, Brazil and Colombia also outpaced Mexico (IMF, 2013). Moreover, Mexico's GDP growth for the overall period is below the trend of what would be expected given its income level. Despite the slower growth, Mexico's outlook still looks encouraging, as FDI levels have increased and the numerous FTAs signed allow Mexico to pursue its integration in international markets.

Figure 1.4. **Growth rates of Mexico and other OECD countries**

Average annual growth rate of GDP per capita (2000-2010)

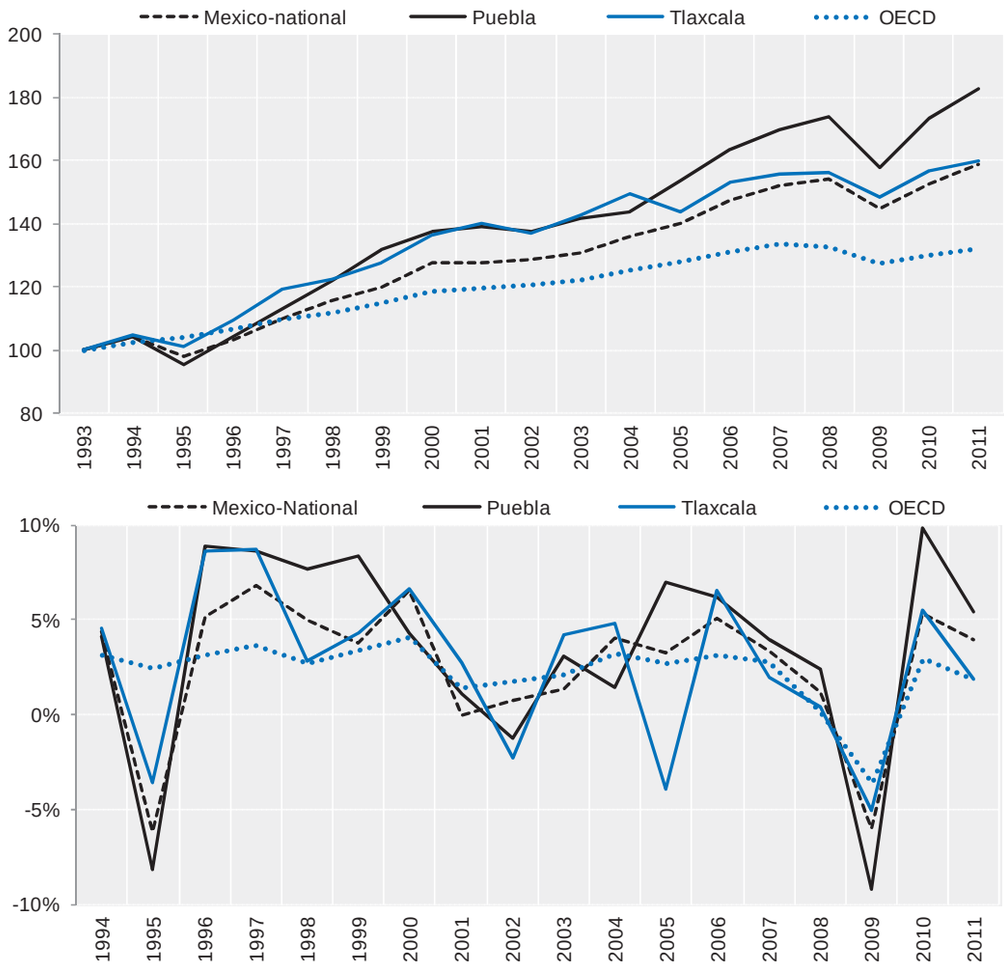


Source: OECD (2012), *OECD.Stat*, (database), doi: *10.1787/data-00285-en* (accessed on 15 April 2013).

At the state level, Puebla's economic performance has been on a par with Mexico's for the past decade, even growing slightly faster than the national average. The share of Puebla's GDP within Mexico's total GDP grew from 3.4% to 3.6% between 1993-2011. In 2009, however, Puebla's economy suffered from a deeper recession than Mexico as a whole. Puebla experienced a real GDP contraction of 9.2% at a time when Mexico's GDP contracted by 6%. This is not surprising, given the weight of manufacturing and tradables

in the state's economy. It has since recovered, however, achieving faster growth rates than the Mexican average in 2010, 2011 and 2012. Manufacturing, which was the most affected sector during the last recession, quickly regained its past levels and continues to grow faster than the rest of Puebla's economy. Tlaxcala's GDP is relatively small (representing only 0.5% of the country's), and has grown at a slightly slower pace than Mexico's total GDP. During the past recession, Tlaxcala's GDP contracted less (5%) than Mexico's GDP, but also grew less in the subsequent three years (Figure 1.5).

Figure 1.5. **GDP base 100 in 1993, and GDP growth rates (1993-2011)**



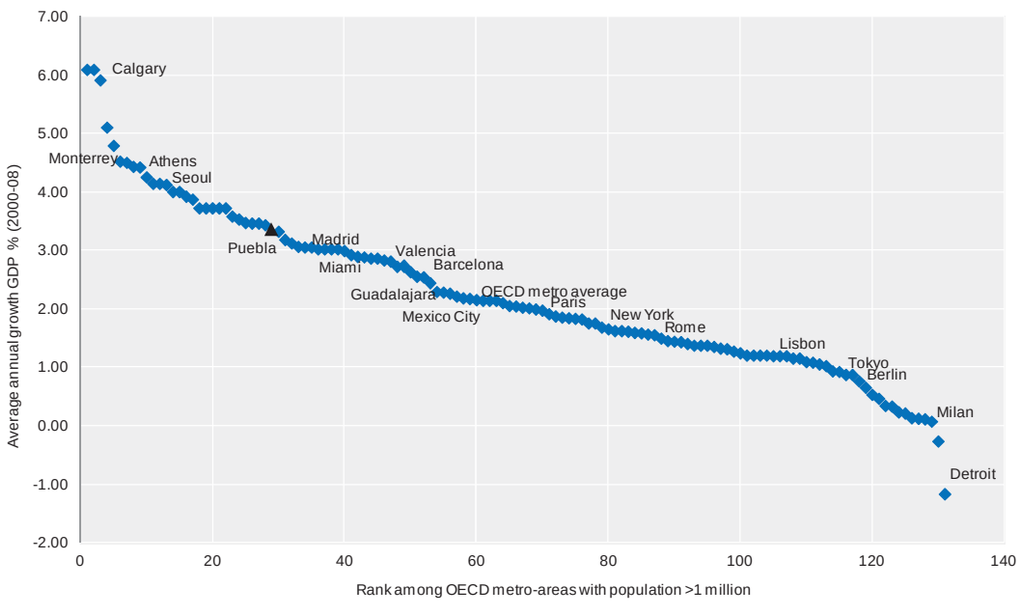
Source: OECD calculations and INEGI (various years), Censo Económico, INEGI, Aguascalientes, Mexico.

Despite Puebla's ability to recover well after an economic crisis, the volatility of its economic model, which relies to a large extent on the manufacturing of durable goods, can be a concern. During recessions, sectors that are most heavily affected are usually the production of durable goods (Engel and Wang, 2011) and construction. Durable goods are affected because people can postpone their purchases more easily than they can non-durable goods and also because they are tradable, and international trade is around three times more volatile than GDP. Given Puebla's heavy reliance on the production of durable goods (and not only the automobile sector), the business cycle is more volatile

than that of other, more diversified states. Comparing the dispersion (as measured by the standard deviation) of the annual growth rates for the period 1994-2011, Puebla's rate appears to be the fourth highest of all states. Recessions will be more hurtful for the local economy and recoveries will be more pronounced. A more volatile business cycle can have strong implications for local tax authorities and the delivery of basic public services.

At the metropolitan scale, Puebla FUA also performed well in terms of GDP growth between 2000-08 relative to other OECD FUAs, ranking above the OECD average. During this period, the GDP of Puebla FUA grew by 3.4%, ranking 29th out of 130 OECD metropolitan areas with a population larger than 1 million (Figure 1.6). Nevertheless, these measures of the region's success should be understood as only one indicator of the region's overall performance. GDP as a measure of the income and economic development of a country is a crucial indicator of success, although it can miss other important characteristics of the economy and society, including distributional, educational and environmental attributes.

Figure 1.6. **GDP growth of metropolitan areas (2000-08)**



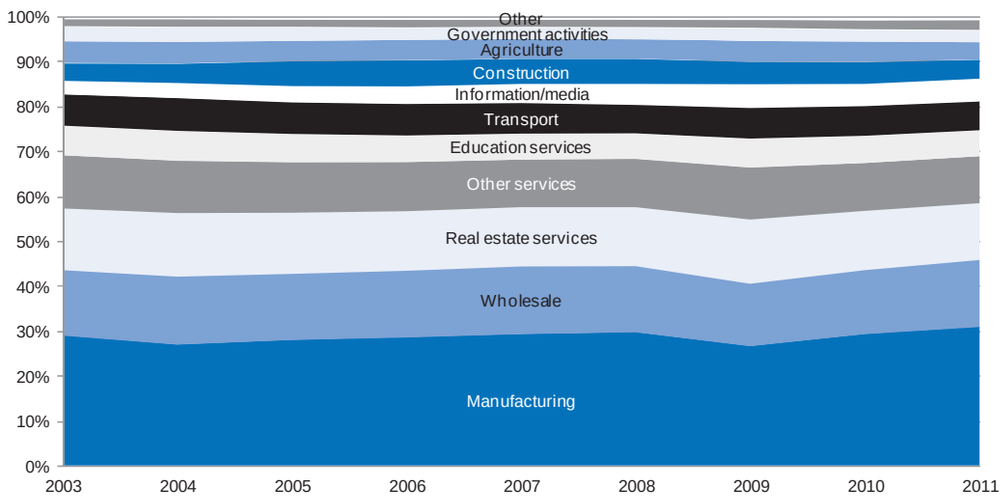
Source: OECD (2012), "Metropolitan regions", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 23 February 2013).

A heavy reliance on manufacturing, particularly auto production

The GDP of the state of Puebla relies heavily on manufacturing in absolute terms and also relative to similarly sized Mexican cities (Figure 1.7). The GDP of Puebla FUA is responsible for 75% of the state's GDP and is similar in composition. The sectoral composition of GDP in the state of Puebla has only slightly changed in the past ten years. Manufacturing accounts for more than 30% of the state's GDP, and despite a small contraction in 2009, it is still growing in relative terms (Figure 1.8). The automotive industry accounts for 60% of total manufacturing (Figure 1.8). Non-durable goods production, such as food, beverages and tobacco, is also a significant part of the state's GDP, representing around 20% of manufacturing output. The production of textiles,

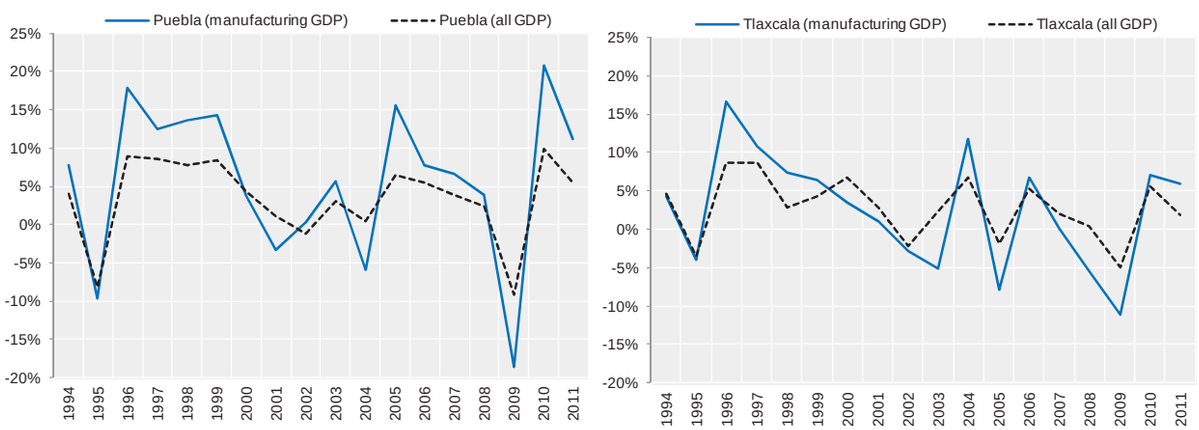
which was one of the most important manufacturing activities (in value) in the state of Puebla, has shrunk from 10% to less than 5% of the state's GDP in the last decade (Figure 1.9).

Figure 1.7. **Evolution of GDP composition in the state of Puebla (2003-2011)**



Source: INEGI (2013), *Banco de Informacion, www3.inegi.org.mx/sistemas/biinegi* (accessed 12 May 2013).

Figure 1.8. **GDP growth rates and manufacturing GDP for Puebla and Tlaxcala (state level)**

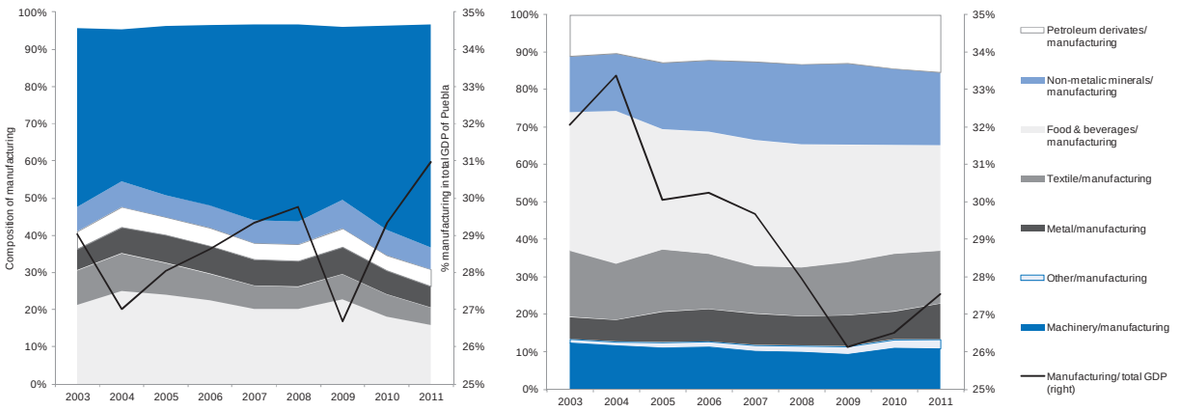


Source: INEGI (2013), *Banco de Informacion, www3.inegi.org.mx/sistemas/biinegi* (accessed 12 May 2013).

Manufacturing in the state of Tlaxcala constitutes 27.5% of total GDP and is more diversified than in Puebla. In 2011, manufacturing GDP in Tlaxcala was distributed among food (24.8%), non-metallic metals (17.2%), petroleum derivatives (13.6%) and textiles (12.4%). While the share of manufacturing in the national economy has remained relatively stable since 2003 at around 18.5%, manufacturing as a share in Tlaxcala oscillated between 29.1% and 31.0% between 2003 and 2011. It gradually diminished from 32.1% of GDP in 2003 to 27.5% in 2011 in Tlaxcala as other sectors have gained in importance (INEGI, 2011b).

Figure 1.9. **Composition of GDP in manufacturing (2003-2011)**

Puebla (left); Tlaxcala (right)



Source: INEGI (2013), *Banco de Informacion*, *www3.inegi.org.mx/sistemas/biinegi* (accessed 12 May 2013).

Manufacturing is equally important in Puebla FUA, where it generates more than half of GDP. When compared to other FUAs of similar size, Puebla is one of the few large metropolitan areas in Mexico in which manufacturing is so important. Ciudad Juárez and Tijuana are the other two FUAs for which manufacturing is also important, but in their case, their proximity to the US border has fostered the development of the *maquiladoras* industry,[1] while this is not the case for Puebla-Tlaxcala. Toluca's manufacturing sector, compared to its state GDP, is also as important as in Puebla, while the economies of Guadalajara and Monterrey are more diversified and less dependent on manufacturing.

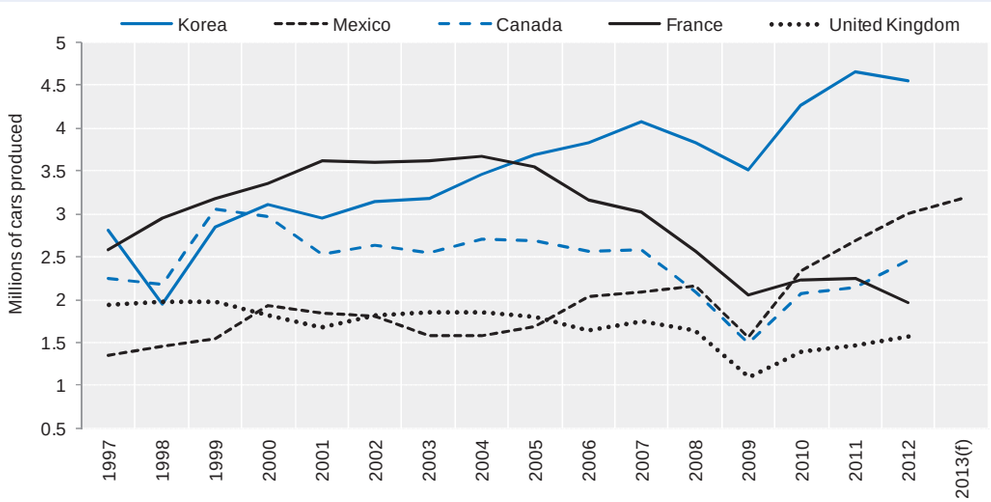
The high degree of specialisation in car production (Box 1.2) has positive sides which are evident, as state-of-the-art technology and linkages to global supply chains are present in many firms in the region. But although specialisation has positive sides, it also potentially comes with costs and significant risks for long-term growth, as Puebla is more fragile to industry-level shocks, such as the recession experienced by the automotive industry in 2009. The automotive industry is particularly pro-cyclical and volatile, having experienced its largest contraction in 2009 (Haugh et al., 2010). Despite the fact that car ownership and demand is expected to increase worldwide, the car industry still suffers from excess capacity, much of which is expected in the developed world (Haugh et al., 2010; The Economist, 2011). A specialisation in auto production may also imply fewer opportunities to be influenced by other, faster-growing industries or to benefit from innovations in other sectors. Studies find that urban growth is more likely to happen in cities with an abundance of small, entrepreneurial firms than in cities dominated by large, high fixed-costs industries (Glaeser et al., 2010). Innovations in one industry usually end up affecting other industries as well, so cities which are more diversified end up benefitting from cross-industry knowledge spillovers.

Box 1.2. **The importance of the car industry in Mexico**

Mexico is the 8th largest producer (in volume) of automobiles in the world, up from 11th in the early 2000s (see figure below). In the next few years it is likely to overtake Brazil for the seventh spot. Mexico's automobile industry is becoming one of the most competitive worldwide, and is expected to expand significantly in the next decade. The factors helping the automobile industry are, first, Mexico's strategic location, from which it can export cars to North America, Asia, Europe and Latin America. Second, its existing and expected FTA agreements facilitate the import of intermediate goods and the export of cars, and large FDI levels have recently been announced by many of the main actors in the car industry. Third, Mexico's long history in car production, with the implantation of large foreign firms since the 1930s (Ford and General Motors) and in the 1960s (Volkswagen), has contributed to the development of considerable know-how and experience.

Mexico is not only a sizeable producer; it is also one of the world's leading exporters. The Mexican automotive industry has become one of the most competitive worldwide, and Mexico, which was the world's 11th largest exporter of cars (in value) during the mid-2000s, is now ranked 4th, behind Germany, Japan and the United States (see figure below). Exports are also diversified geographically. In 2012, 63% of Mexico's exports went to the United States, 16% to Latin America, 9% to Europe, with the balance split evenly between Africa and Asia. Exports are even more important than the domestic market: they represented 83% of the production, higher than in any other major car-producing country. The current levels of production and exports are going to increase in the decade to come, as many large firms are either expanding or building newer, state-of-the-art plants, among those: Mazda in Salamanca (to open in 2013); Nissan in Aguascalientes (to open in 2013); Honda in Celaya (to open in 2014); and Audi in Puebla (to open in 2016). Mexico's car industry is set for further expansion. In 2012, Volkswagen, Toyota, Honda, General Motors, Fiat, Mazda and Daimler all announced plans to expand production by extending current plants or opening new ones.

Global auto production statistics (1997-2012)



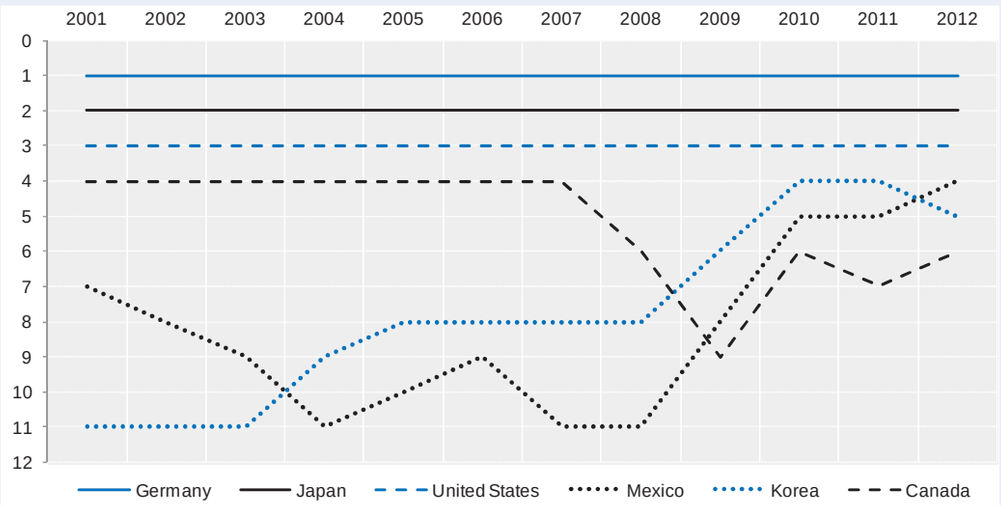
Note: The top three global car producers (Germany, the United States and Japan) are excluded. F = forecast.

Source: OICA (International Organization of Motor Vehicle Manufacturers) website, *http://oica.net.*

Box 1.2. **The importance of the car industry in Mexico** (*cont.*)

Ranking of countries by motor vehicle exports

Exports by value, in USD



Source: COMTRADE data.

Since Volkswagen's arrival in Puebla in 1964, Puebla-Tlaxcala has been one of Mexico's major automobile producers. Volkswagen's plant in Puebla is the company's largest in North America, with a capacity to produce 2 500 cars a day. Car production in Puebla-Tlaxcala is set to expand further as Audi has started to build a new plant in San Jose Chiapa, in the state of Puebla, just outside the Puebla-Tlaxcala metropolitan zone. Elsewhere in Mexico, Volkswagen is expanding operations, having spent USD 550 million to open another plant in Silao in Guanajuato (Volkswagen, 2013), where it will produce engines destined for assembly in Puebla and for the US market.

Puebla's automotive industry consists of a wide variety of firms, including very large to small suppliers, national and international actors, and has simultaneously both terminal sector (assembly) and auto-parts sector businesses. Firms in the car industry in Puebla are also part of the larger metropolitan area of the Mexican Central Valley, where other car factories are present. This gives its tier 1 and tier 2 producers a larger market and allows them to be suppliers to producers other than Volkswagen (Sintonía, 2012; PriceWaterHouseCoopers, 2012). Puebla-Tlaxcala may be able to capitalise on its advantages, given its strong, established supplier base and qualified labour supply. It sits at a strategic location for car producers, as it has easy access to the port of Veracruz and to north of the country via highways. Its connectivity is important because the FTA agreements with many countries allow imports of intermediate goods and help in promoting the competitiveness of the auto industry. Looking ahead, the challenge of Puebla-Tlaxcala's automotive industry will be to shift towards higher productivity and innovation in the global supply chain (Sintonía, 2012). These topics will be discussed further in Chapter 2.

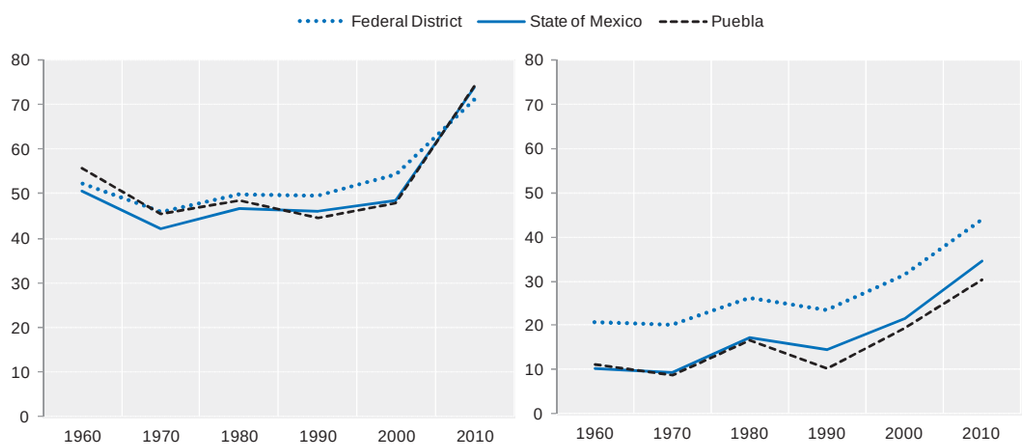
Labour market characteristics and the business environment

Participation rates on the rise, informal labour among the highest in Mexico

Participation in the labour market has increased considerably all across Mexico in the past 20 years, for both genders. In Puebla, women's participation rates were very low (just 10% of women were formally working in 1990), but have since increased threefold to 30%, as for the first time a large part of working-age women are participating in the labour market. As for men, participation rates are also much higher than in previous decades, with an increase from 48% to 74% between 2000 and 2010 (Figure 1.10).

Figure 1.10. **Gross participation rates in the labour market (1960-2010)**

Men (left); Women (right)



Source: INEGI (2013), *Banco de Informacion, www3.inegi.org.mx/sistemas/biinegi* (accessed 12 May 2013).

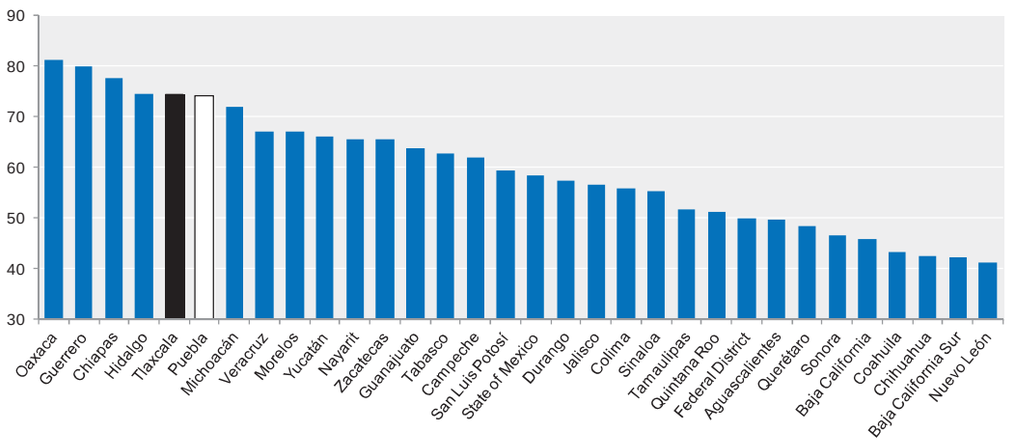
A large and stable proportion of the economically active population participates in the informal economy. In Mexico as a whole, informality (in non-agricultural activities) is estimated to represent more than 50% of employment. The share of informal employment tends to increase slightly during recessions and to decrease in years of fast GDP growth (INEGI, 2013a). Although informality can be defined in many ways, informality rates in the state of Puebla are among the top six or seven in the country by all measures, and are also high in the neighbouring states of Oaxaca, Veracruz, Guerrero and Michoacan, while they are lower in the northern states[2] (Figure 1.11; see also Annex 1A.1). Informal workers are also more concentrated in agriculture and retail trade and lower in manufacturing (Aleman-Castilla, 2006). As found by Dougherty and Escobar (2013), the main correlates of informality across Mexican states are the level of income, the composition of GDP, the general level of education, and business environment variables such as the cost of starting a business and the level of corruption. These data also show minimal progress in terms of reduction of informality between 2005 and 2010.

The effects of informality on the economy are nevertheless not straightforward. Informal workers are worse off in terms of protection, working conditions, medical coverage and career advancement. Informality reduces tax revenues, affecting the quality of services provided by the public sector. It can also hamper productivity growth. Economic growth alone does not necessarily reduce informality – as such, policies that seek only to boost economic growth will not reduce levels of informality (OECD, 2008).

High informality rates might be an indication of distortions in the labour markets that should be addressed to improve the general level of well-being. But cross-country evidence shows that informality rates decrease with income, while in many developing countries labour markets are competitive but informality rates are high. As Puebla and Tlaxcala transition towards higher incomes and facilitate the procedures for entrepreneurs to become formal, informality rates may fall.

Figure 1.11. **Informality rates in Mexico**

4th quarter 2012



Source: INEGI (2013), *Banco de Informacion Economica*, *www3.inegi.org.mx/sistemas/biinegi/* (accessed May 2013).

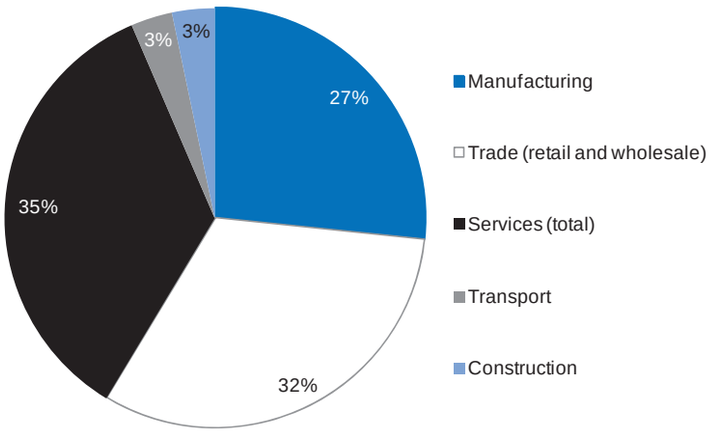
Some evidence suggests that informality is not necessarily a disadvantaged status. For example, Maloney (2004) found that, first, transitions between formal and informal jobs are very frequent, and that the overall turnover rate is higher in Mexico than in the United States. Such a high mobility between jobs implies that labour market distortions preventing hiring and firing are not very binding in Mexico. Second, workers transitioning out of the formal sector increased their earnings by about 25%, while those transitioning to the formal sector were gaining around 15%. These findings suggest that, in some cases, informality might be a preferred option for specific individuals in Mexico, although it can still have a suboptimal outcome for the economy as a whole.

Employment split among services, trade and manufacturing

Employment in the Puebla FUA is less concentrated than the metropolitan area's GDP: 32% of total employment is in trade and retail, 27% in manufacturing and 35% in the services sector (Figure 1.12).

Within the Puebla FUA, the total payroll is heavily concentrated in two municipalities. Puebla (66%) and Cuautlancingo (26%), home to part of the Volkswagen plant which straddles two municipalities, together account for 92% of the FUA's GDP. San Andres Cholula and San Pedro Cholula (5% combined) cover the majority of the remainder. These four municipalities represent 86% of the population at the FUA level and 97% of its GDP (INEGI, 2009). The GDP of the FUA represents more than 75% of the state's GDP, and the FUA's relative importance has increased by 2 percentage points in the past decade.

Figure 1.12. **Employment by sector in Puebla functional urban area (2009)**



Source: INEGI (2009), *Censo Económico 2009*.

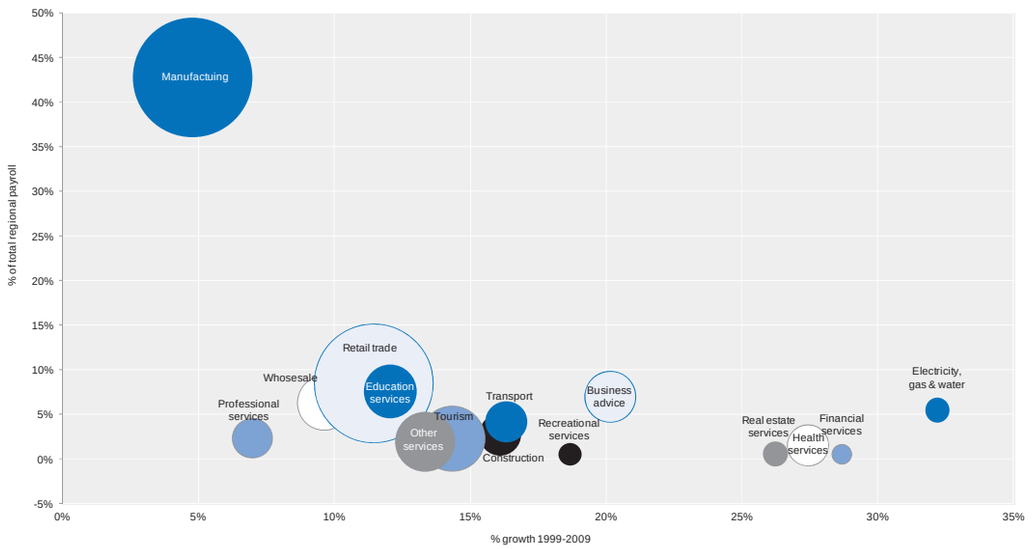
Furthermore, there is a considerable spatial dispersion in wages, as earnings in the municipality of Puebla are 25% higher than those in Cuautlancingo, which hosts the Volkswagen production site, and the earnings in the affluent municipalities of San Petro Cholula and San Andres Cholula, are 50% higher than the average earnings of the FUA as well. Over the past decade, some of the region's smaller industries have grown faster than the well-established, large industries. Manufacturing employs 26% of the total labour force while the payroll of manufacturing with respect to the FUA's total payroll represented 43%. This suggests that wages and value-added are much higher in manufacturing than in other industries. However, although manufacturing enjoys higher wages and employs many workers, wage growth in manufacturing has been much smaller than for other industries (Figure 1.13), probably reflecting a Balassa-Samuelson effect, as productivity increases in the export sector (tradable) leads to a wage increase in the non-tradable sector through competition in the labour market. Although retail trade employs almost a third of Puebla's labour force, it only accounts for 15% of the payroll. This indicates that retail is likely an easy-entry and low value-added sector in which wages are low compared to the rest of the economy.

The business environment is improving, yet still lags behind other states

The overall business environment in Mexico improved significantly between 2005 and 2013. According to the World Bank's "Doing Business" indicators,[3] Mexico's worldwide relative ranking on the overall ease of doing business changed for the better, advancing from 62 in 2005 to 48 in 2013. In Latin America, Mexico stands behind only Chile (37) and Colombia (45). Moreover, between 2007 and 2012, Mexico reduced the distance to the most efficient practices in seven of the ten categories measured (International Bank for Reconstruction and Development/World Bank, 2013). For instance, Mexico has significantly eased the administrative burden of tax compliance in the past years, reducing by almost 40% the amount of time needed to file taxes through an online payment system, and reducing the number of procedures from 27 to 6, without significantly reducing the overall tax rate. It has also improved its ranking in investor protection and in the overall ease of starting a business.

Figure 1.13. **Payroll, payroll growth and employment by sector**

Puebla functional urban area (1999-2009)



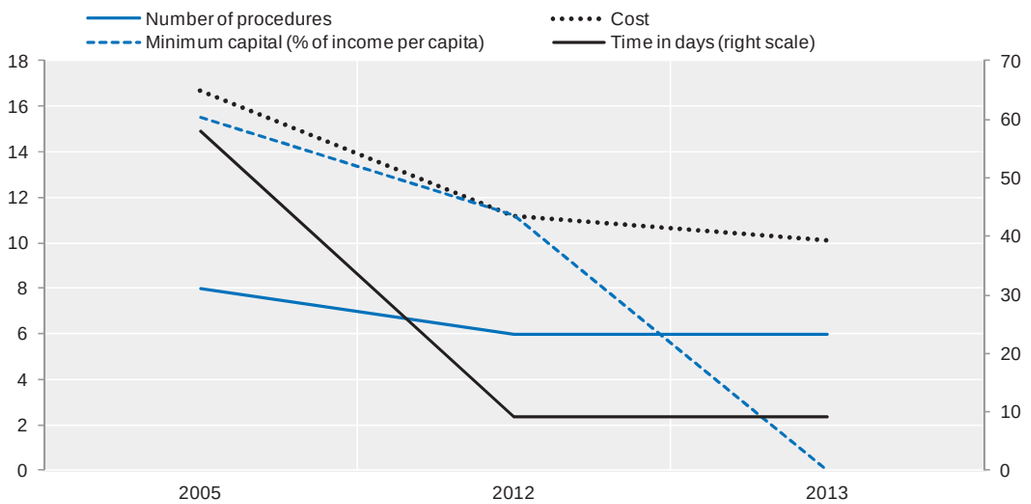
Source: INEGI (1999, 2009), *Censo Económico*.

Despite this progress, Mexico still lags considerably behind in other measures of doing business. Connecting to the electrical grid for a new business is more difficult, time-consuming and costly in Mexico than in any other Latin American country except Colombia; indeed, Mexico is ranked 130th worldwide in this indicator. Despite tangible improvements, the areas in which Mexico has not reduced the distance to the most effective practices (above 70 percentage points) are in the ease with which firms are able to access finance, deal with construction permits, register property, enforce contracts, start a business and trade across borders. As regards the four indicators measuring the ease of starting a business, the number of procedures needed to register a business fell from eight to six, while the overall cost of the registration fell from 17% to 10% of Mexico's annual income per capita (Figure 1.14). In part thanks to an innovative one-stop shop to register a business online, the number of days needed to open a business fell dramatically from over 60 in 2005 to 10 in 2012. The pace of reform has not stopped: in 2013, the minimum-capital requirements for opening a business, which were set at 16% of income per capita, were abolished nationwide.

Over the last five years, the states of both Puebla and Tlaxcala have considerably improved the regulatory framework that affects the business environment. However, many other states in Mexico have also implemented regulatory reforms and these have in many cases resulted in faster progress; the relative rankings of Puebla and Tlaxcala have thus fallen overall. At sub-national level, Puebla ranks 25th and its relative position has deteriorated over time (Puebla was ranked 19th as recently as 2009). Comparing the states of Puebla and Tlaxcala to Guanajuato – which hosts León, a major metropolitan zone that may overtake Puebla-Tlaxcala in size and GDP in the next decades – illustrates the weaker performance of Puebla and Tlaxcala (Figure 1.15). The economic composition of León is similar to that of Puebla-Tlaxcala and it also shares a geographic proximity to the Federal District. In all five categories, Guanajuato scores higher than Puebla and Tlaxcala, showing that the business environment is not a matter of location or of city size. Monterrey, the third largest metropolitan zone in Mexico, is another example. Compared

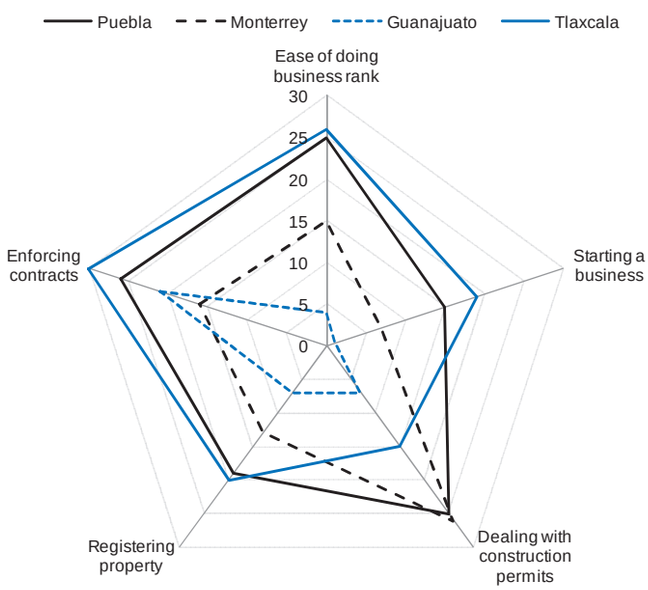
to Puebla, Monterrey is more populous but still makes it easier for firms to enforce contracts, register property or start a business. Puebla and Tlaxcala's performance for a range of these indicators is summarised below.

Figure 1.14. **Doing business in Mexico: Starting a business**



Source: World Bank (2013), World Bank "Doing Business" Indicators, *www.doingbusiness.org/data/exploreeconomies/mexico* (accessed 19 July 2013).

Figure 1.15. **Doing business categories and rank**



Source: World Bank "Doing Business" Indicators, *www.doingbusiness.org/data/exploreeconomies/mexico* (accessed 19 July 2013).

- **Starting a business.** The state of Puebla ranks relatively well on the "starting a business" indicator. Between 2007 and 2012, the number of procedures needed to register a business decreased from 9 to 7, the time (in days) from 42 to 11, and the total cost fell from 10.6% to 7.9% of a Mexico's per capita annual income. Although progress was made, especially in the number of days needed, other states have progressed much faster and Puebla slipped from being the second best state in 2009 to being ranked 15th. Tlaxcala ranks 16th, just behind Puebla. It also reduced the number of days needed to register a business, from 42 to 24 and is still the 3rd worst state in terms of time needed to register a business. The paid-in minimum capital requirements have decreased nationwide to 0% in 2013.

- **Registering property.** In the "registering property" indicator, Puebla lost two places and now ranks 19th, as the time needed to register a property went from 63 to 40 days, while at the country level, the average fell from 43 to 29 days. The cost of registering property fell from 3% to 2.6% of the property value, while at the country level it stayed almost constant. In Tlaxcala, registering property became more difficult between 2007 and 2012, as the cost increased from 3.4% to 4.3% of the property's value and the time needed stayed constant at 34 days, which places Tlaxcala 20th nationwide for registering property.

- **Enforcing contracts.** When businesses face litigation, it can be a costly, lengthy and uncertain procedure in any part of the world, but it can be made easier if courts are functioning rapidly, if the cost is low and if the uncertainty surrounding the outcome is reduced. Puebla fares poorly on all of these measures, compared to the other Mexican states, as it ranks 26th out of 32. Although the number of procedures does not vary by state (38), the legal costs and the length of the litigation vary significantly within Mexico. In Puebla, the average amount of time to enforce a contract is 391 days. Twenty-two states do better than Puebla in this regard. Given that 8 states have averages below 300 days, Puebla has still considerable room for improvement in this regard. As for the cost of enforcing a contract, it reaches 30.2% of the claim in Puebla (24 states do better). Tlaxcala ranks 30th, near the bottom, when it comes to enforcing contracts. Enforcing a contract through the courts takes on average 455 days and costs 32% of the claim, and no positive progress has been achieved on this indicator in the last 5 years.

- **Processing construction permits.** Puebla has recently agreed to maintain constant communications with the states of Hidalgo, Morelos and Queretaro, meeting every two months to share experiences on best practices and their improvement plans. Puebla has also started introducing reforms in the areas of registering property as well as for starting a business. Yet progress has been slow, and in terms of processing construction permits, Puebla's relative standing within Mexico is low (25). It takes 85 days to get a construction permit, while 23 states take less time. It also costs much more than in the average state: 117% of Mexico's income per capita while the average cost is at 83%, down from 97% in 2009. Tlaxcala does significantly better on processing construction permits, as it ranks 15th. The main difference between the two states is that in Tlaxcala it costs less than 40% of the income per capita to get a construction permit.

The overall picture that emerges is that the business environment has improved, yet not as quickly as in other areas of Mexico. The number of procedures, their cost and the time needed to conduct them have fallen, which reduces the constraints on investment all across the country. Comparing Puebla-Tlaxcala with the other Mexican states shows that the pace of reform is faster in other states. Although the number of procedures does not vary substantially, the time and the cost needed to clear the procedures is still higher in Puebla and in Tlaxcala than in the rest of the country. At this stage, the most binding constraints are more likely to be the cost and time required, rather than the number of procedures necessary to conduct business. These trends underscore the reality of a "need to run to stay in place" – that is, even though the two states have improved their performance in recent years, they need to do even more, just to avoid falling behind their peers.

The effect of the business environment on firms' performance

In their daily operations, Puebla's firms have to face a challenging institutional framework, which affects how they plan their investments, their expenses in working capital, the contracts they make with other firms as well as their hiring process. Financing for firms in Puebla is more difficult to obtain than in other states (World Bank, 2013). In the Mexican states where enforcing a contract is harder, productivity levels for smaller firms were lower, but larger firms were not affected (World Bank, 2013). Large firms usually have more resources and can wait the necessary time for the litigations to be solved. Smaller firms do not have that freedom: a long, costly trial with a supplier or a client often leads to their bankruptcy, thus forcing them to limit their engagement in business only with people whom they trust. The Enterprise also shows that it is harder for firms in the state of Puebla to have access to banking services and external finance, relative to other states in Mexico, which can affect firms' productivity, competition and the entry/exit rate Survey (International Bank for Reconstruction and Development/World Bank, 2013). These topics will be discussed further in Chapter 2.

The state of Puebla has a larger proportion of workers in micro and small firms than other Mexican states. Figure 1.16 shows that in Puebla, workers are more likely to work in a small firm (less than five employees) than in the rest of the country. Large companies are also less important for employment in Puebla than in the rest of Mexico. Comparable cities such as León, Guadalajara and Monterrey have a smaller share of employment in micro-firms than Puebla, and have more employment in middle-sized firms. The distribution of employment by firm size suggests that despite their potential, smaller firms might have more difficulties expanding in Puebla than in other states. The size of the firm can also influence the likelihood of using informal labour (Dougherty and Escobar, 2013). ILO (2003) and Bosch and Maloney (2006) point out that small scale is an important characteristic of informal enterprises, particularly of family-based ones.

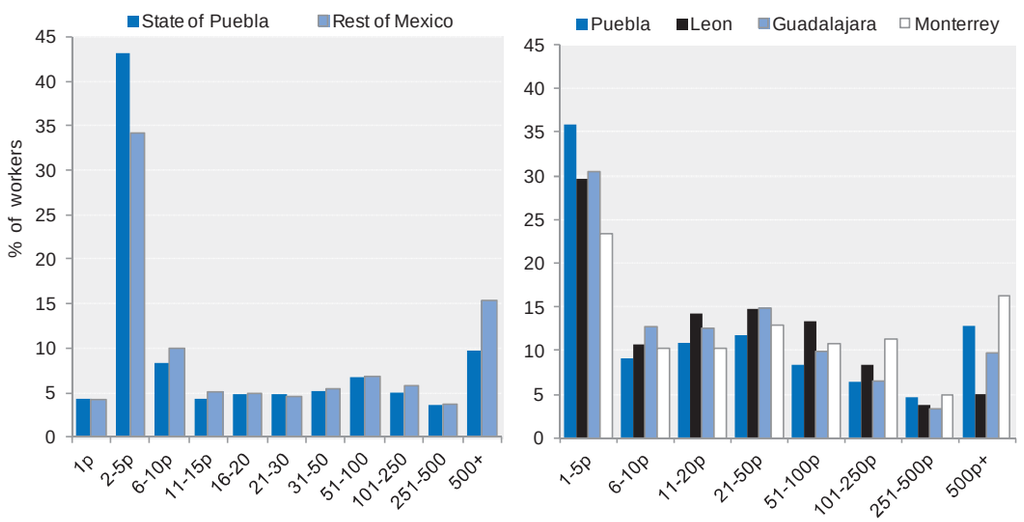
Human capital and innovation

Human capital is a key factor for the social and economic development of a region. Skills, innovation and knowledge are considered vital sources for the economic growth of countries and regions and a factor of production that can affect endogenously long-term growth. Investment in human capital can mitigate the diminishing returns to capital and have positive spillover effects to the economic path of the country (Barro and Sala-i-Martin, 1995; Romer, 1986, Lucas, 1988, Aghion and Howitt, 1998). National and local governments can thus pursue policies to increase the educational attainment of the

population and unleash the productive potential and creativity of its labour force. Education can increase the economic rewards of individuals and thus lift them and their households out of poverty. But education can have a positive return not only to the individuals who acquire it, but may also generate wider social benefits. These benefits can be of an economic nature and arise at the local labour markets by interaction of the workers and the firms, enabling knowledge transfers. There is an extensive stream of literature that studies returns to human capital for cities and regions and finds evidence of positive external effects in their productivity, exceeding the individual returns (Rauch, 1993, Acemoglu and Angrist, 2000; Moretti, 2004b). Aside from productivity effects, research suggests that education might have positive outcomes on a broader range of social issues, like crime, social unrest, segregation, corruption and democratic functioning (Moretti, 2004a; Dee, 2004; Milligan et al., 2004), and even positive effects on happiness and savings behavior (Oreopoulos and Salvanes, 2009). Recent research on Mexico's states has also shown the negative relationship between education and informality levels (Dougherty and Escobar, 2013).

Figure 1.16. **Employment by firm size: State and city of Puebla versus elsewhere in Mexico**

State of Puebla (left); municipality of Puebla (right)



Source: Based on data from INEGI (2012), *Encuesta Nacional de Ocupaciones y Empleo*, INEGI. *www.inegi.org.mx/est/contenidos/proyectos/encuestas/hogares/regulares/enoe/default.aspx* (accessed 19 July 2013).

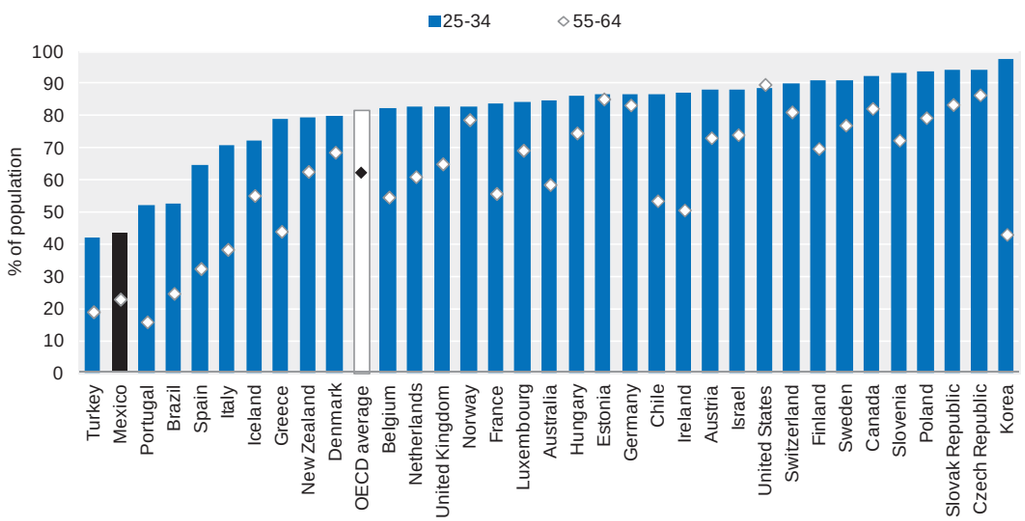
Educational outcomes are improving, albeit unevenly, throughout region

Progress has been made in terms of educational outcomes in the states of both Puebla and Tlaxcala in recent years, particularly at lower levels of the education system. Enrolment rates have increased at all levels, and today nearly every child attends primary school and starts lower secondary school. This is encouraging. Even so, both states still perform below the national level for most educational indicators. Given that Mexico fares much lower than other OECD countries in terms of educational attainments (Figure 1.17), this remains a key policy concern for both Puebla and Mexico as a whole. The recent federal reform, as part of the *Pacto por Mexico* agreement between Mexico's three main political parties, targets improvement in such key areas as the recruitment and promotion

of teachers and school leaders (Government of Mexico, 2012). As will be addressed in Chapter 2, proposed reforms to Puebla's education system will be important to improve student outcomes. Making more deliberate links between education, workforce and economic development could help leverage the strong potential of the region's education infrastructure.

Figure 1.17. **Share of population who has completed upper secondary education in OECD countries**

By age group (2010)



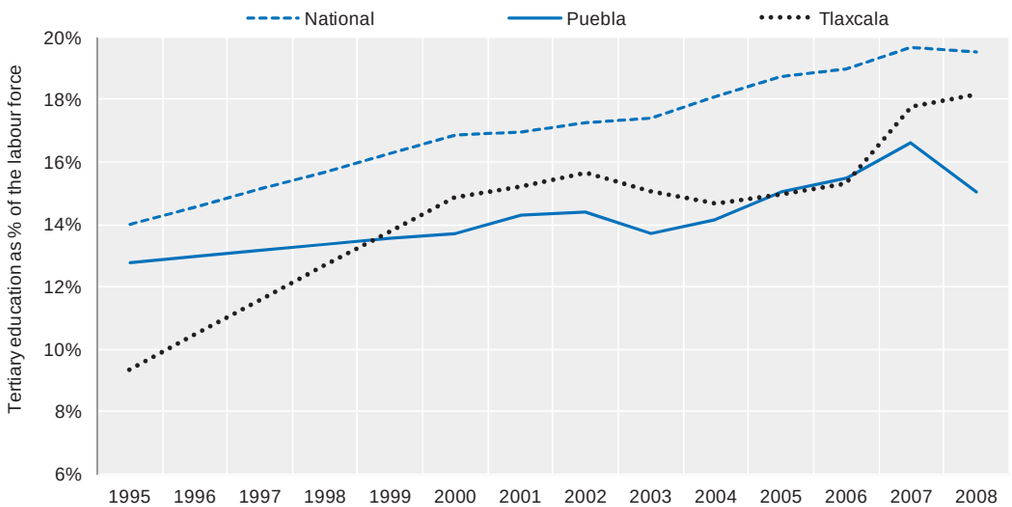
Note: Data for Brazil refers to 2009.

Source: OECD (2012), *Education at a Glance 2012: OECD Indicators*, OECD Publishing, *http://dx.doi.org/10.1787/eag-2012-en*.

Between 1995 and 2008, the state of Puebla made improvements in terms of the share of population with a university degree, from 13% in 1995 to around 16% by the end of the last decade (Figure 1.18). However, other Mexican states improved faster, and the improvement of Puebla over time in terms of higher skills falls short of that for Mexico overall. The state of Tlaxcala, on the other hand, doubled its tertiary education in the period 1995-2008 and managed to reach a level of 18%, just 2 percentage points below the national level. The evolution of tertiary education for other Mexican states illustrates a slight negative relationship with the states that had low initial levels catching up with the others (Figure 1.19). Besides the Federal District and Nueva León, which have stagnated in the last eight years, all other Mexican states made larger improvements in higher skills attainment. Puebla, however, is one of the few states with low initial levels of tertiary education that has not managed to achieve the same scale of improvements to education outcomes over the last decade relative to other Mexican states, and even lost positions in the relevant educational ranking (Figure 1.20). As a result, in 2008 Puebla was the state with the 5th lowest rate of individuals with tertiary education amongst the 31 Mexican states and the Federal District.

Figure 1.18. **Tertiary education over time at state level (1995-2008)**

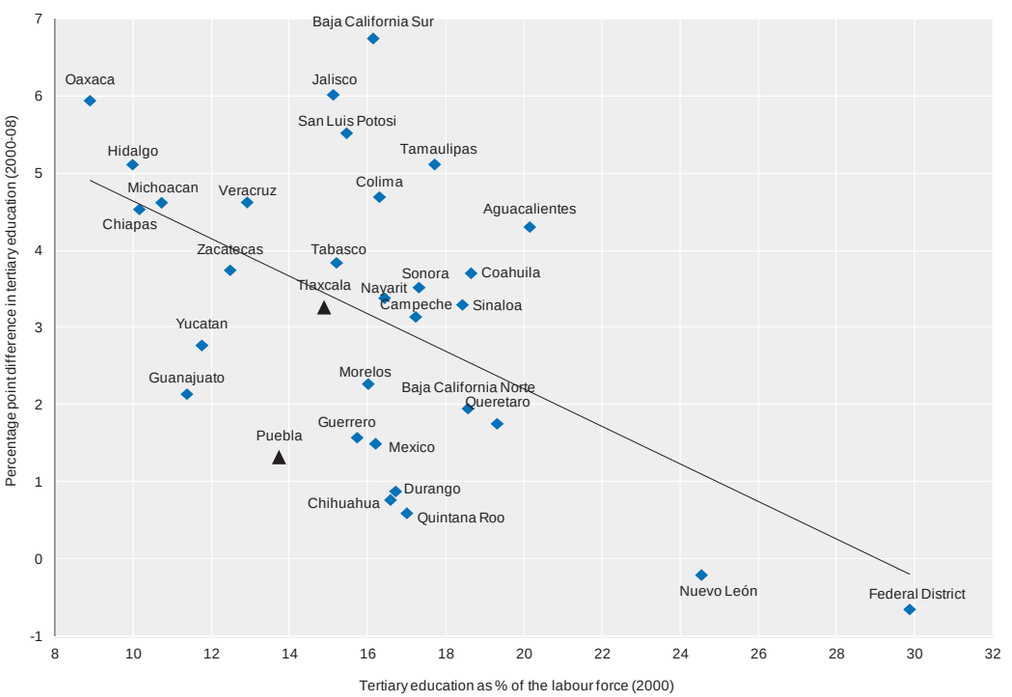
As a % of the labour force



Notes: Data for the individual years of the period 1996-99 were not available and have been linearly interpolated.

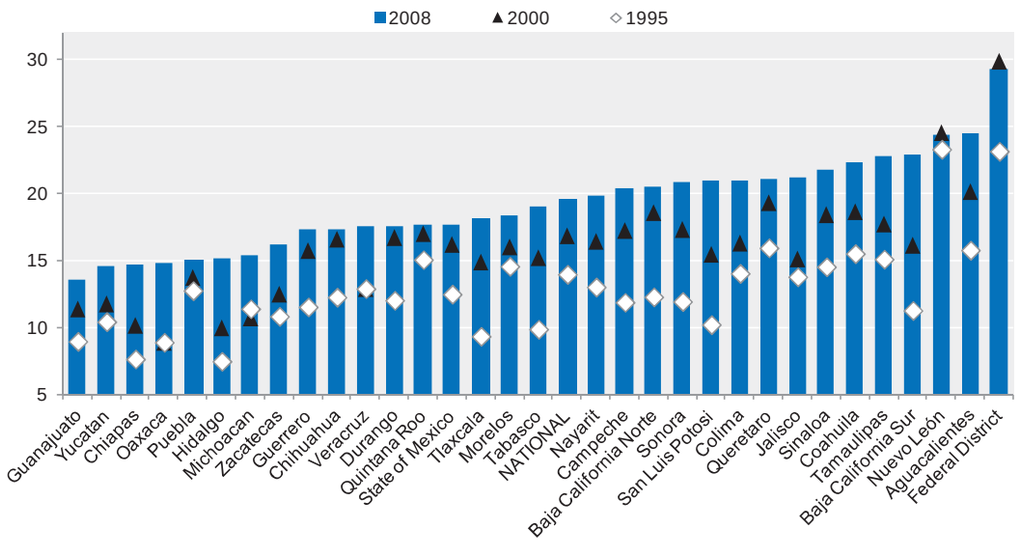
Source: OECD (2012), "Metropolitan regions", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed February 2013).

Figure 1.19. **Initial levels and improvement in tertiary education attainment for Mexican states**



Source: OECD (2012), "Metropolitan regions", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed March 2013).

Figure1.20. **Tertiary education as a % of labour force for Mexican states (1995, 2000, 2008)**



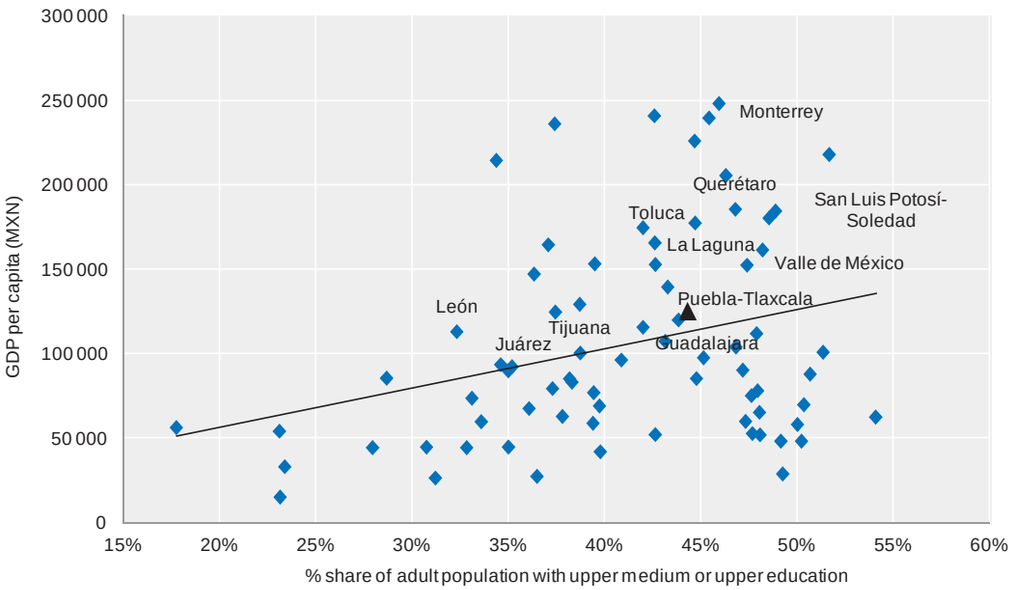
Source: OECD (2012), "Metropolitan regions", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed March 2013).

Skills in the regional labour force

A high-skilled labour force is not only more productive, but can also enhance knowledge spillovers and thus the aggregate city productivity (Charlot and Duranton, 2004; Moretti, 2004b). Since high-skilled individuals tend to make more use of urban and consumption amenities, they can give an important boost towards the social, cultural and economic resurgence of cities (Glaeser et al., 2001; Glaeser and Gottlieb, 2006). Indeed, evidence has been found that cinemas, restaurants and cafes tend to proliferate in cities with skilled labour forces (Shapiro, 2006) and employment rises in the relevant sectors of the urban economy (Manning, 2004; Kaplanis, 2010). In that respect, Puebla-Tlaxcala could consider advancing its efforts to improve its attractiveness and livability in order to offer high living standards in all areas of city life: social, economic, cultural and environmental. This could help to maintain a young and dynamic skilled labour force and attract the best talent from neighbouring states and abroad. Sustaining a dynamic skilled labour force will be crucial both for the region's economic growth and for promoting a more diversified industrial and occupational mix, which amongst others can arise through consumption of urban services. The benefits are most notable at city level, since urban agglomeration economies have a positive effect on the productivity of city workers, implying higher wages and employment rates. There is a strong positive relationship between GDP per capita and high-skilled workers for the metropolitan zones of Mexico (Figure 1.21). The causality of this relationship can go in either direction, since skilled labour in the urban economy generates higher urban wages and living standards, which in turn attracts more high-skilled individuals in a virtuous cycle of prosperity and growth.

Figure 1.21. **Share of high-skilled workers and GDP per capita for Mexican metropolitan zones**

% of population with upper-medium/upper education versus GDP per capita (2010)



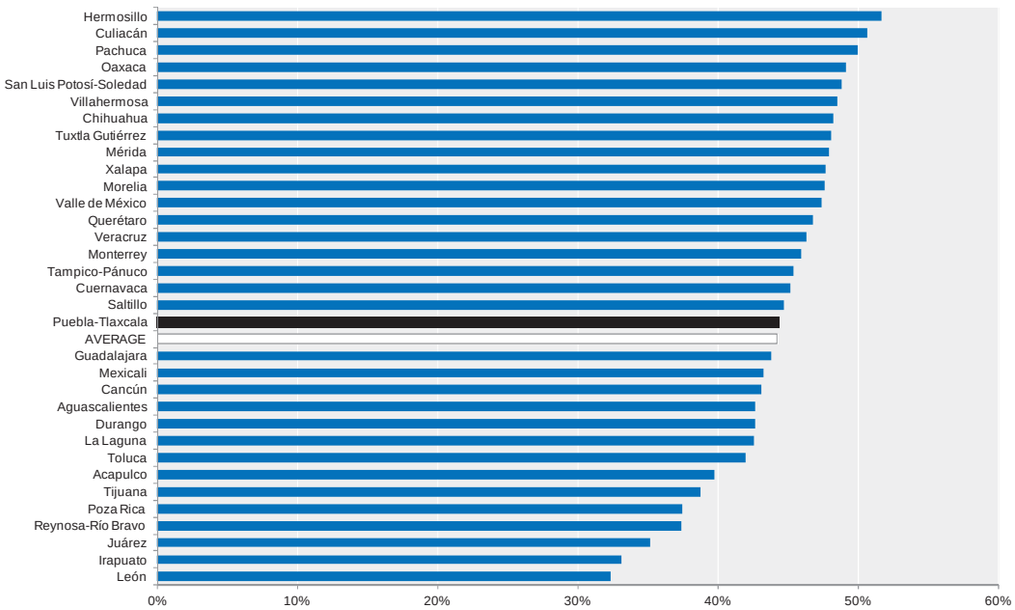
Note: The figure shows the names of the 11 metropolitan zones with a population greater than 1 million.

Source: IMCO (2012), Urban and Municipal Competitiveness Dataset, *http://porciudad.comparadondevives.org* (accessed 19 July 2013).

Disparities in educational outcomes are greater in the Puebla-Tlaxcala metropolitan zone than in other similar-sized metropolitan zones. Compared to the other large Mexican metropolitan zones (more than 500 000 inhabitants), Puebla-Tlaxcala hosts disproportionally more individuals with low and high qualifications. Puebla has a relatively high share (44.3%) of population with upper-medium or upper education levels, which is close to the national average for the 33 metropolitan zones with a population more than 500 000 (Figure 1.22). This should not come as a surprise, as urban centres have employment opportunities and urban amenities that make them more attractive places for skilled workers to reside. However, examining lower educational levels, Puebla-Tlaxcala performs poorly: it has the fourth lowest performance among Mexico's largest metropolitan zones, with 38% of its population without a secondary education, compared to an average of 33% among the other cities (Figure 1.23). As regards average years of schooling, Puebla-Tlaxcala's position is still very low, ranking 6th from the bottom, with a level of 8.4 years compared to the 9 years average of the other cities (Figure 1.24).

Figure 1.22. **Share of the population who has completed upper-secondary or post-secondary education in large Mexican metropolitan zones (2010)**

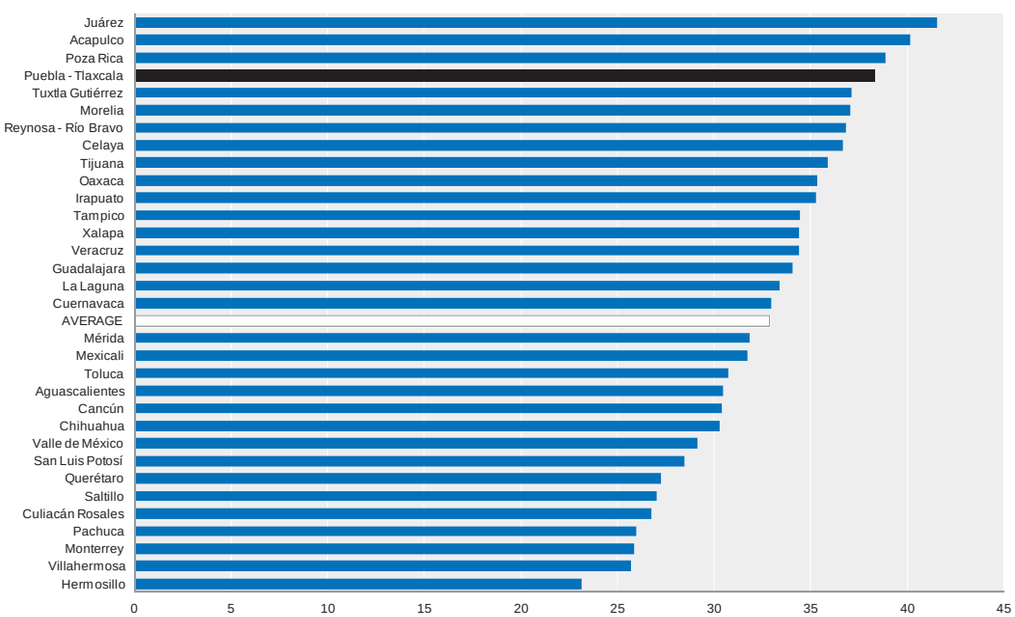
Mexican metropolitan zones with a population greater than 500 000; population aged 18 or older



Source: IMCO (2012), Urban and Municipal Competitiveness Dataset, *http://porciudad.comparadondevives.org* (accessed 19 July 2013).

Figure 1.23. **Share of the population who has not completed secondary education in large Mexican metropolitan zones (2010)**

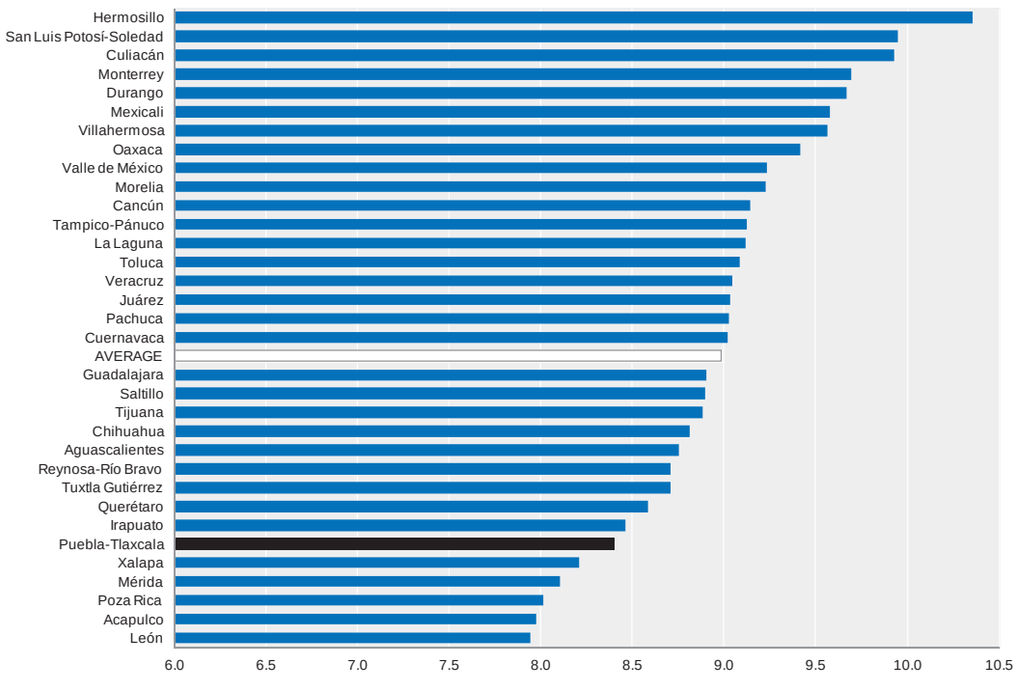
Mexican metropolitan zones with a population greater than 500 000



Source: Urban marginalisation data from CONAPO (2010).

Figure 1.24. **Average years of schooling for the large Mexican metropolitan zones (2010)**

Mexican metropolitan zones with a population greater than 500 000



Note: Percent out of those aged 18 or older.

Source: IMCO (2012), *Urban and Municipal Competitiveness Dataset, http://porciudad.comparadondevives.org* (accessed 19 July 2013).

Although, it is quite common in big cities to find polarised outcomes with large shares of individuals with both low and high skills, the poor performance of Puebla-Tlaxcala relative to other large metropolitan zones in Mexico implies that it is more polarised in terms of educational outcomes. Evidence has been found that is not only the high skills that matter and that a large share of unskilled or low-skilled workers can act as a drag on the economy and impede overall regional growth (Box 1.3; OECD 2009a; 2012c). In that manner, Puebla-Tlaxcala would benefit substantially by addressing this issue with strategies to reduce secondary dropout rates, and training and re-skilling policies to support individuals with lower skills. The recently published OECD report on education, *Improving Education in Mexico: A State-level Perspective from Puebla* (OECD, 2013b), analyses basic and upper secondary education in the state of Puebla and proposes policies to improve the education system (see Box 2.14 for a summary of OECD recommendations). These issues will be discussed further in Chapter 2.

Box 1.3. **What makes urban areas grow?**

Economic growth in urban areas is driven not only by endogenous factors such as human capital, physical capital – including infrastructure, and innovation, but also by spatial factors such as agglomeration economies and proximity to markets. Using a number of econometric techniques, the OECD has developed a regional economic growth model that takes into account endogenous factors and new economic geography elements. Among the results are:

1. Human capital is the most robust factor – taking into account both the presence of workers with tertiary educational attainments and the absence of workers with low skills – and takes about three years to have an impact.
2. Infrastructure has an impact if other factors, such as human capital and innovation, are also in place.
3. Innovation has a positive impact on growth and takes five to ten years for its benefits to materialise.
4. Agglomerations in services (measured by a region's specialisation index times its size in financial intermediation) has a positive impact on growth. This result can have particular implications for urban regions, since financial intermediation (or knowledge-intensive services) is confined principally to metropolitan areas.
5. Accessibility to markets has a positive impact on growth, but this result is not very robust, since it is only statistically significant in one model.
6. Urban regions with low employment rates can generate growth if they can manage to mobilise their labour force.

Source: OECD (2009), *How Regions Grow: Trends and Analysis*, OECD Publishing, *http://dx.doi.org/10.1787/9789264039469-en*.

Educational quality and social inequality

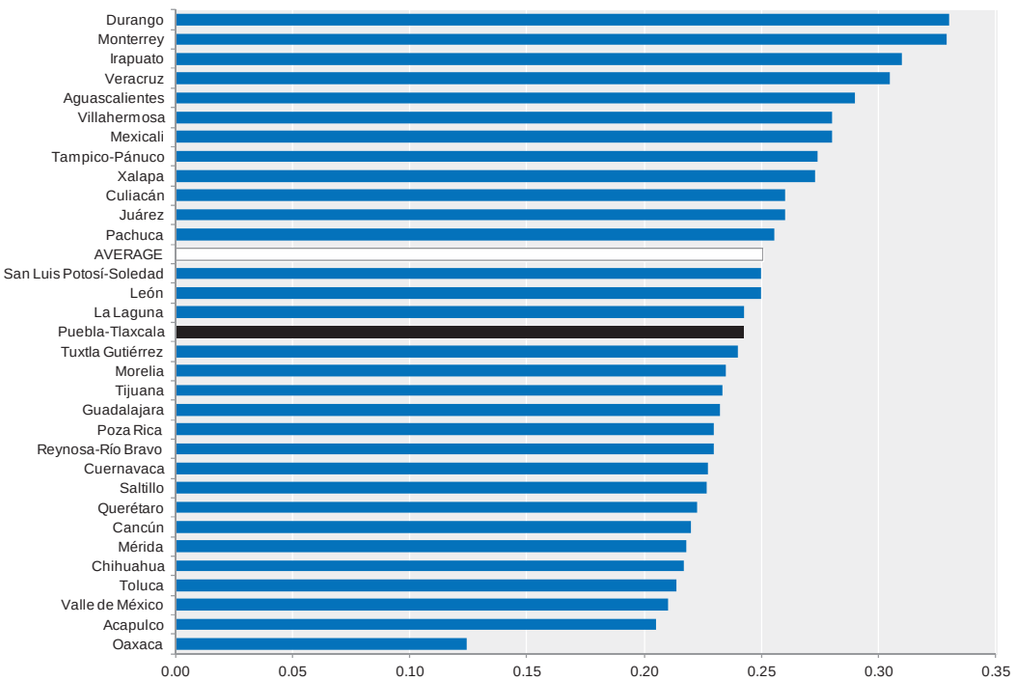
Evidence has shown that it is not only the qualification achievements of the labour force that matter for growth, but also the quality of the education and the content learnt in classrooms. Based on the indicator for student performance from the Mexican federal government (SEP, ENLACE) that measures students' performance in mathematics,[4] the Puebla-Tlaxcala metropolitan zone performs just below the average of the metropolitan zones and takes the median position in the relative ranking (Figure 1.25). Results from the OECD PISA study indicate that students' performance in the state of Puebla increased between 2003 and 2009 and succeeded in surpassing the national average. Nevertheless, there is still room for improvement given that Puebla ranks only eighth and is falling short by more than one standard deviation from the frontrunner, the Federal District (Table 1.2). Tlaxcala's performance in 2009 was below the national average, but has progressed since 2003, reducing the gap with the national average.

Educational performance varies substantially within the Puebla-Tlaxcala metropolitan zone. Looking at the share of residents who have not completed secondary education, it can be observed that the better performing areas are in the centre of the municipality of Puebla and the inner areas of San Andres Cholula and San Pedro Cholula with rates below 20% (Figure 1.26). However, there are substantial differences within these municipalities, in which peripheral areas exhibit poorer performance relative to the municipal core. The problem is particularly acute in the north, northwestern and southern areas of the municipality of Puebla, where rates are above 65%. Poorly performing areas are also found in Acajete and Amozoc in the east, San Pablo del Monte in the northeast,

as well as Huejotzingo in the northwest, and the northern and northwestern areas of the metropolitan zone that belong to the state of Tlaxcala.

Figure 1.25. **Student performance in large Mexican metropolitan zones (2010)**

Based on ENLACE results for Mexican metropolitan zones with a population greater than 500 000



Source: IMCO (2012), Urban and Municipal Competitiveness Dataset, *http://porciudad.comparadondevives.org* (accessed 19 July 2013).

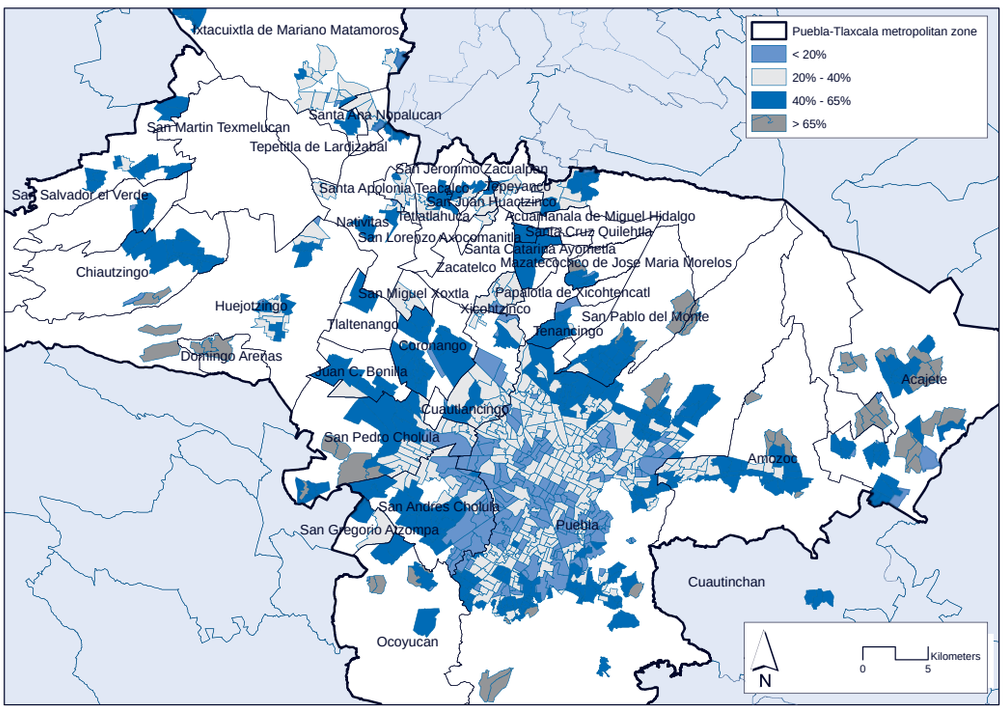
Table 1.2. **PISA results for the state of Puebla (2003-09)**

Rank	State	Score 2003	Score 2009	Variation
1	Federal District	455	469	14
2	Nuevo León	416	450	34
3	Chihuahua	422	449	27
4	Aguascalientes	441	449	8
5	State of Mexico	403	440	37
6	Jalisco	434	438	4
7	Colima	461	436	-25
8	**Puebla**	**395**	**433**	**38**
	National average	*400*	*425*	*25*
25	**Tlaxcala**	**361**	**414**	**53**
29	Oaxaca	343	395	52
30	Tabasco	346	391	45
31	Guerrero	362	374	12
32	Chiapas	357	364	7

Source: OECD (2013), *Improving Education in Mexico: A State-level Perspective from Puebla*, OECD Publishing, *http://dx.doi.org/10.1787/9789264200197-en*.

Figure 1.26. **Share of population who has not completed secondary education**

931 census tracts (AGEBs) in Puebla-Tlaxcala

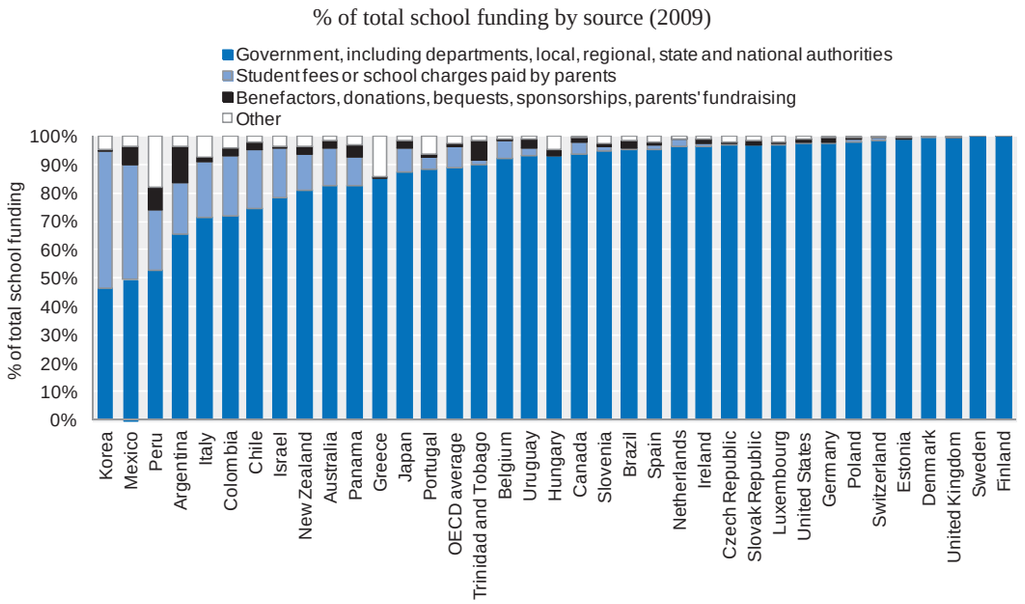


Notes: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map. The variable used measures the percent share of the population over 15 who have not completed secondary education.

Source: Based on data from the Index of Marginalisation CONAPO (Census 2010).

The recently published OECD report on the state of Puebla's education system examines educational inequality and argues for policies that will support individuals from the most disadvantaged groups, as well as those residing in remote areas. Family income, for instance, is an important determinant on whether a student will continue to attend upper secondary education. The share of 15-17 year-olds who enroll in upper secondary education on time is 76% for the highest income decile, while the respective share is only 22% for the lowest income decile. In some cases, schools may not receive sufficient funds for regular operations (e.g. maintenance, office supplies, cleaning equipment) and ask for voluntary parental contributions. Indeed, in Mexico, the average student attends a public school where only 49% of school funding comes from government sources (compared to 89% in OECD countries), while over 41% of school funding comes from arents (Figure 1.28). The significance of parental contributions can be partly explained by the large amount of in-kind provision of resources to schools in Mexico, but the aggregate proportion of parental contributions indicates that when public resources are insufficient, these play an important role in financing schools.

Figure 1.27. **Parental contributions to public school funding**



Note: Non OECD member economies are included for comparison.

Source: OECD (2012), *Public and Private Schools: How Management and Funding Relate to their Socio-economic Profile*, PISA, OECD Publishing, *http://dx.doi.org/10.1787/9789264175006-en*.

Substantial tertiary education infrastructure

Second only to Mexico City in total number of universities, Puebla has the highest number of universities per capita in Mexico, hosting 182 higher education institutions within Puebla-Tlaxcala (Table 1.3). The vast majority of these, around 90%, are located in the municipality of Puebla (some in the historical centre) with a few in San Andres Cholula and San Pedro Cholula, which have large campuses. Many of the universities are small. The largest one, *Benemérita Universidad Autónoma de Puebla* (BUAP) is public, although there are also many private universities. Puebla's strong tertiary infrastructure is in stark contrast to its poor performance in secondary educational outcomes. Many students have never succeeded in formally graduating, as Puebla state ranks among the bottom five states for the respective indicator (Figure 1.28). One possible barrier is the cost of the *titularización*, or the fees required for degree awarding once all coursework has been completed.

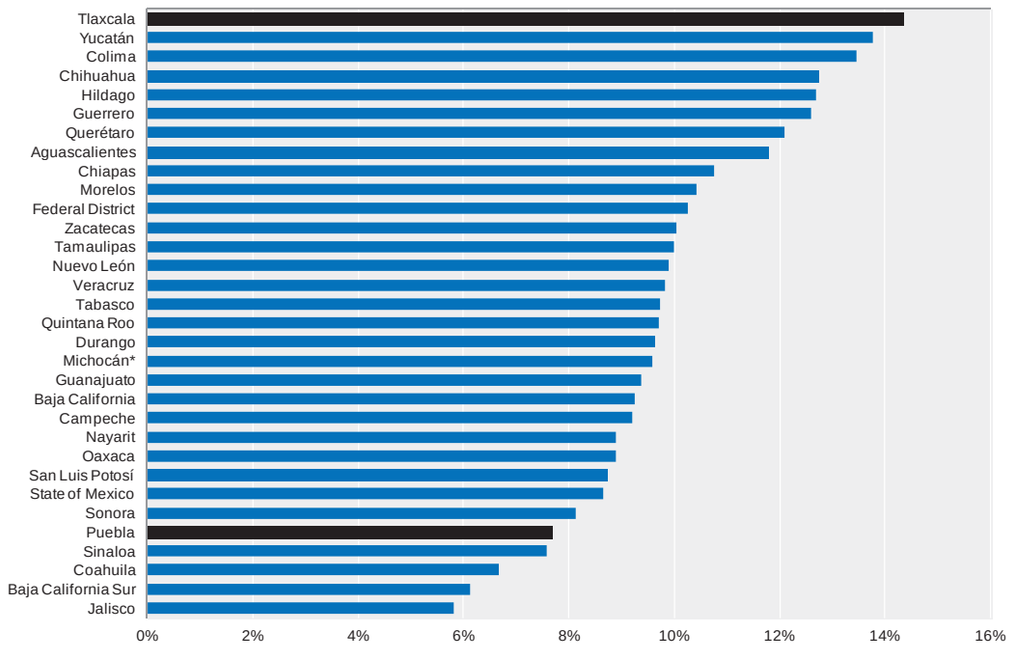
Table 1.3. **Higher education institutions in Puebla functional urban area (2012)**

Municipality	Number of higher education institutions
Amozoc	3
Cuautlancingo	3
Puebla	164
San Andrés Cholula	5
San Pedro Cholula	7
Total	182

Source: COESPO (2012), Background report prepared by COESPO for the OECD in view of the Territorial Review of Puebla-Tlaxcala, unpublished.

Figure 1.28. **Degrees awarded by Mexican universities, by state**

Percent of total university enrolment (2008-09)



Note: (*) The statistical data is for the school year 2007-08.

Source: Asociación Nacional de Universidades e Instituciones de Educación Superior (ANUIES) (2010), *Estadisticas de Educacion Superior*, ANUIES, Mexico City.

The right mix of skills?

Another important factor that can enhance or impede growth is whether Puebla-Tlaxcala's labour force offers the skills that employers demand. Following interviews and discussions with stakeholders in Puebla, concerns have been raised from local employers that they cannot find the skills they need in the local labour market. According to some local economic development officials interviewed for this review, "the Mexican educational system does not work for us".[5] This statement appeared to be less true for some of the larger companies, such as Volkswagen, which conduct their own in-house training programmes for new employees. Nevertheless, any skills mismatch may be related to the focus of upper secondary education on general programmes rather than technological and professional ones. Indeed, Puebla only has 18% of its students enrolled in vocational education and training programmes (VET), the lowest rate across all Mexican states (Figure 1.29). As OECD (2013b) argues, the limited coherence and co-ordination on the upper secondary education systems, which involve many different providers and programmes of study, may lead to inefficiencies. Moreover, students receive little guidance and relevant VET options might not be locally available.

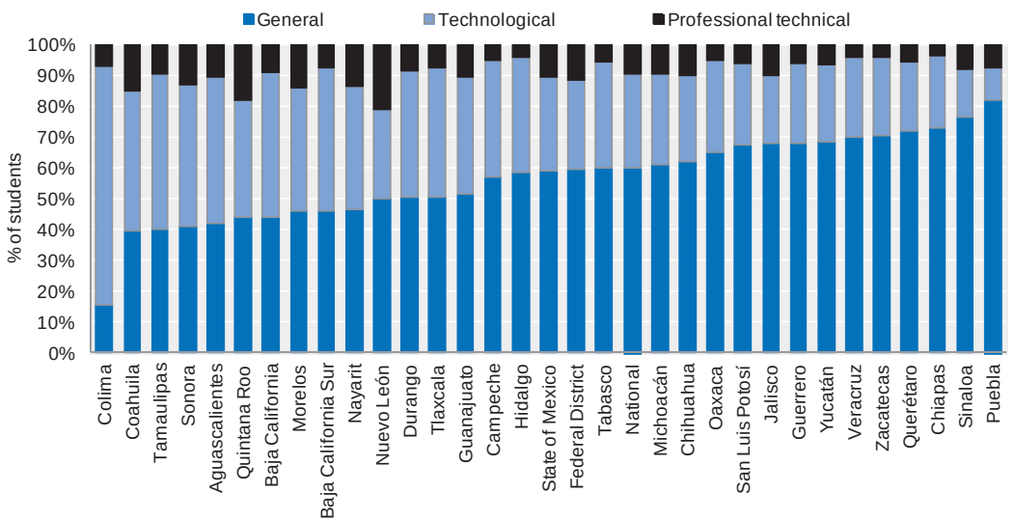
Despite a strong university base, innovation and R&D outcomes remain modest

Innovation is a key driver for economic growth and development (OECD, 2010). Innovation can be defined as the capacity to introduce new products, processes, services, business models and organisational methods in firms. The level of a country's or region's

innovation depends on its capacity to generate and diffuse knowledge and technology, which can be instigated by investment in basic and applied research and development (R&D), the technology transfer efforts of public and private bodies, as well as the strength of the educational system in science and engineering (OECD, 2008). Innovation is not evenly distributed across space, with almost half of the R&D investment in OECD taking place in only 13% of its regions, and half of the patenting activity in only 20%. In that respect, place and locational characteristics matter for innovative activity. Research has found that the main sources of productivity advantages in successful regions can be rooted to the circulation of people and knowledge, the generation of innovative ideas and the development of new products and technologies. Recent research on regional innovation in Mexico has identified key obstacles that Mexican states should address in order to boost their innovative capacity (Box 1.4).

Figure 1.29. **Percentage of students enrolled in vocational education and training programmes in Mexican states**

Percent of students enrolled in upper secondary per type of programme and state (2009/10)



Source: OECD (2013), *Improving Education in Mexico: A State-level Perspective from Puebla*, OECD Publishing, *http://dx.doi.org/10.1787/9789264200197-en*; Instituto Nacional para la Evaluación de la Educación (INEE) (2012), *Panorama Educativo de México 2011: Indicadores del Sistema Educativo Nacional: Educación Básica y Media Superior*, INEE, Mexico City.

The state of Puebla performs below the national average for a number of innovation indicators, including innovations within manufacturing firms, the creation of new products, investment in improving the workforce, process certifications and investment in R&D (OECD, 2009c). The state of Puebla also benefits from a State Council for Science and Technology (*Consejo Nacional de Ciencia y Tecnología*, CONACYT). On the contrary, Tlaxcala does not have a state programme on sciences and technology and is the only state in Mexico that does not have a branch of CONACYT. CONACYT's FOMIX, or mixed funds (*fondos mixtos*), is the most direct instrument aimed at promoting scientific and technological development at the state and municipal level. Government participation in federal programmes of sciences and technology has not been constant.

Box 1.4. **Obstacles to innovation in Mexico**

The *OECD Reviews of Innovation Policy: Mexico* (2009) has identified a number of framework conditions that impede innovation processes throughout Mexico:

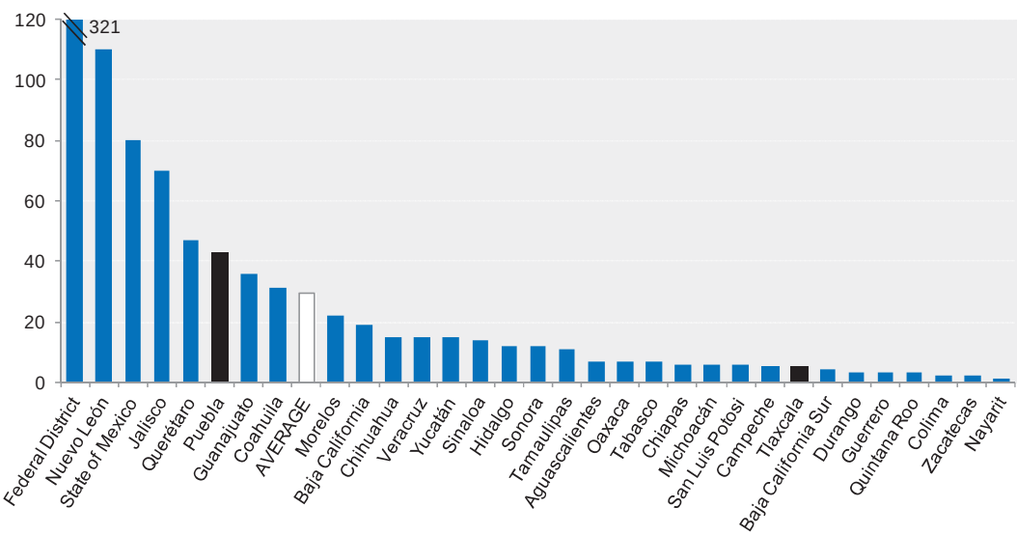
- Unexploited benefits from Mexico's integration in the global economy, including through further boosting international trade, attracting more FDI and strengthening the spillovers of FDI projects to domestic firms, including SMEs. This requires fostering the absorptive capacities of Mexican firms, including through improvements in the adequate formation and efficient use of human capital. Expanding exports will require a diversification towards goods and services with greater knowledge content.
- Difficulties in accessing capital. Access to financing capital by new technology-based and more generally innovative firms remains difficult, as the effects of the traditional conservatism of the banking system, inherently adverse to financing intangibles, are compounded by scarce and costly systems of guarantees and the paucity of alternative sources of finance. Financing instruments such as private investment and venture capital funds remain notoriously underdeveloped.
- Lack of competition. There is still a significant potential to boost innovation and productivity by strengthening competition through better regulation, notably in network industries and rigorous enforcement of competition policy. Notwithstanding an improvement of competition regimes in the markets for goods and services, competition remains low in several key sectors.
- Problems concerning intellectual property rights, standards and quality certification. In other areas of the business environment that are more directly related to the technological infrastructure and that affect the capacity or propensity of firms to innovate, the impact of advances in institutional development in Mexico has not always met expectations.
- Barriers to entrepreneurship. There are still many barriers that hamper entrepreneurial activity, although it is recognised that some administrative barriers have decreased.
- Lack of private intermediary institutions. Most public research institutions, in particular CONACYT research centres, play a positive role in metrology services and technology transfer. However, contrary to the majority of OECD countries, Mexico suffers from a lack of private intermediary institutions such as "technology brokers" active in knowledge transfer and the provision of technology upgrading services.
- Shortcomings in the physical infrastructure. Existing weaknesses in the physical infrastructure hamper productivity growth and international trade performance and reduce the attractiveness of Mexico as a destination of FDI and thus are a factor in determining the level of innovative activity.
- Deficiencies exist in corporate governance, notably in the public sector, which reduce the incentives for pursuing efficiency gains and introduce a bias against R&D and innovative activity.
- Investment in human capital is a key factor of growth and competitiveness in knowledge-based economies while at the same time contributing to the reduction of inequalities and alleviation of poverty. Despite the recognition of its importance and the major efforts undertaken over the last 20 years to expand education services, by OECD standards, Mexico still fares poorly in the quantitative and qualitative formation of human capital at all stages of education, from primary schooling to life-long learning.

Source: OECD (2009), *OECD Reviews of Innovation Policy: Mexico 2009*, OECD Publishing, *http://dx.doi.org/10.1787/9789264075993-en.*

As OECD has reported in its Skills Strategy (2012f), it is important to increase education that focuses on STEM skills (science, technology, engineering and mathematics), as these skills can be pivotal for generating innovation and triggering growth. In 2010-11, only 6% of Puebla's state undergraduate and graduate programmes were devoted to natural and exact sciences and computing. The rate of engineering was substantially higher at 23% (COESPO, 2012). STEM skills might also prove beneficial in increasing Puebla's innovative capacity to foster future growth. This is another area in which Puebla could do better, especially given its potential and extensive educational infrastructure. Patent activity in the state of Puebla is above average, but still just a third of the patenting performance of the leading states, Jalisco and the Federal District (Figure 1.30). In terms of researchers affiliated to the National Researchers System (*Sistema Nacional de Investigadores*, SNI), Puebla ranks 5th, with 4% of country's total affiliated researchers, while the majority of the research is concentrated in the Federal District, with close to 40% of the country's SNI-affiliated researchers (Figure 1.31). The state of Tlaxcala performs poorly in both indicators of innovation and is one of the least-performing states in terms of patent applications and SNI-affiliated researchers.

Figure 1.30. **Patent applications in Mexico, by state**

Per 100 000 inhabitants (2010)



Source: COESPO (2012), Background report prepared by COESPO for the OECD in view of the Territorial Review of Puebla-Tlaxcala, unpublished; based on data from CONACYT (2012).

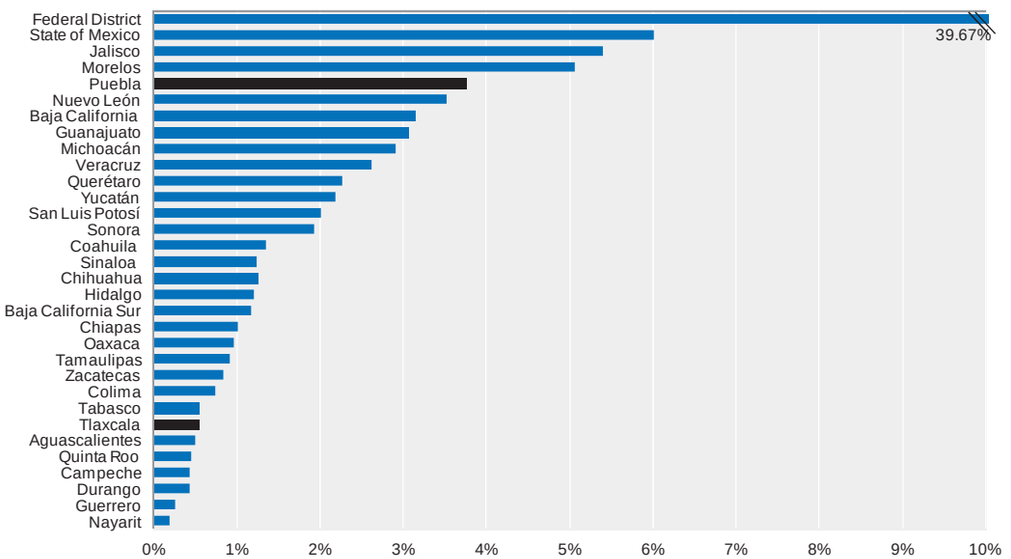
Emigration, brain drain and internal commuting

To boost the region's ability to attract and retain skilled labour, Puebla-Tlaxcala would also benefit from reducing the brain drain to the United States and other large Mexican cities, which has an adverse impact on the region's social and economic life. Within Mexican states that are home to the country's largest cities, Puebla is the only state where emigration rates to the United States have not fallen below their 1987 rates, although there has been progress in the last decade (Figure 1.32). The state of Puebla has an emigration rate of around 14%, substantially higher than the Federal District and the State of Mexico with levels of around 5%, and higher than Nuevo León (9%). Urban amenities and the re-densification of the centre of Puebla may have beneficial effects for

the whole state by attracting a skilled labour force, boosting innovation and entrepreneurial activity, and serving as the growth engine for the entire region. On top of the 593 000 individuals who live and work in the municipality of Puebla, there are about 56 000 who commute to the city of Puebla from the rest of the state, of which 44 000 come from the neighbouring municipalities within the FUA. Finally, there are about 22 000 workers commuting from the state of Tlaxcala and 10 000 from other states.

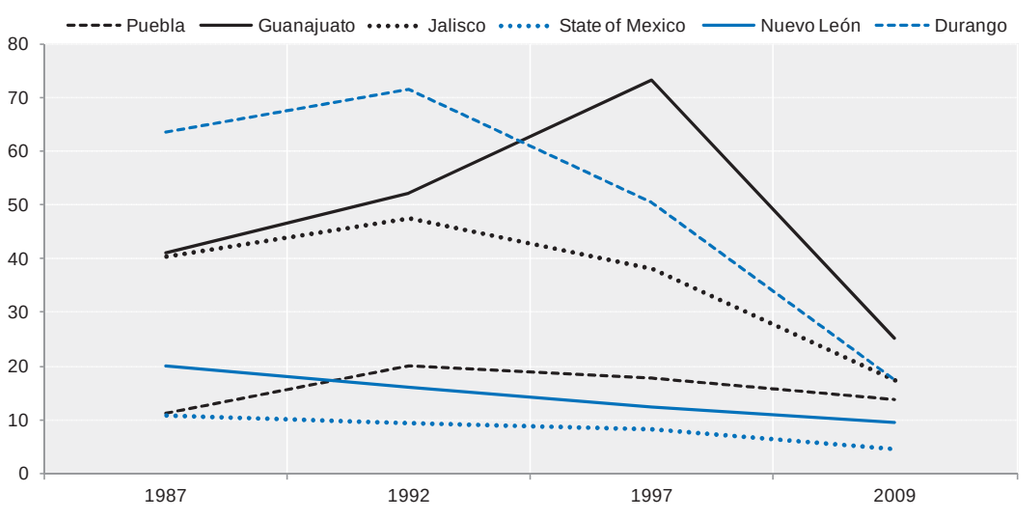
Figure 1.31. **Human capital in science and technology in Mexico, by state**

% of researchers affiliated to the National Researchers System that reside in each state (2009)



Source: OECD (2012), *OECD Territorial Reviews: Chihuahua, Mexico 2012*, OECD Publishing, *http://dx.doi.org/10.1787/9789264168985-en*; CONACYT (2010).

Figure 1.32. **Emigration rates to the United States for selected Mexican states**



Source: INEGI (2010), *Banco de Informacion Economica*.

Urban and environmental challenges

Sprawling development and a growing urban footprint

Sprawling development has characterised urban expansion over the past three decades in Puebla-Tlaxcala, and throughout Mexico. The country's urban footprint expanded five times faster than its population in the past 30 years, while in Puebla-Tlaxcala the urbanised area of the metropolitan zone grew nearly eight times faster than its population between 1980 and 2010, pushing urbanisation further into the periphery, often on farmland (SEDESOL, 2012). As discussed previously, population growth has been fastest in the municipalities surrounding and outside the core municipality of Puebla, while the city of Puebla experienced minimal growth between 2000-10 (1.3% yearly growth rate) (Figure 1.4). In recent decades, population growth has been fastest in the municipalities surrounding the core municipality of Puebla, even if in absolute terms the city of Puebla has still accounted for a large share of Puebla-Tlaxcala's growth. Between 1980-2010, the highest growth rates within the metropolitan region are reported for Amozoc (5.0%), Cuautlancingo (4.9%) and San Andrés Cholula (4.6%), more than double the growth rate for the city of Puebla (2.1%) and higher than the average growth of the metropolitan zone (2.5%) (INEGI, 1980, 1990, 2000, 2010a; SEDESOL/INEGI/CONAPO, 2012).

The Puebla-Tlaxcala metropolitan zone ranks last among Mexico's ten largest metropolitan zones with a population over 1 million in terms of population density (SEDESOL, 2012) and also has high vacancy rates, particularly in the city of Puebla, which signals inefficiencies in housing and land markets. Seven of the 39 municipalities in Puebla-Tlaxcala have vacancy rates above the national average (14%), ranging between 15% in Amozoc (Puebla), Coronango (Puebla) and Santa Cruz Quilehtla (Tlaxcala), and 25% in Cuautlancingo (Puebla). The municipality of Puebla's vacancy rate is equivalent to the national average (14%) (INEGI, 2010a). However, analysis at the census-tract (AGEB) level reveals much more heterogeneous patterns. In Puebla's centre city, vacancy rates can reach as high as 41.83% (INEGI, 2010a).

As will be discussed in Chapter 3, urban sprawl is not unique to Puebla-Tlaxcala. The trend towards urban sprawl has been driven by fundamental economic factors such as land prices, the decrease in transport costs and rising incomes, but also by policies, policy interactions and, even, policy failures that have ultimately encouraged development in the urban periphery. The increased difficulty and cost in dealing with construction permits discourages construction in the core of the city. Housing finance policies and weak urban planning have also, in recent decades, encouraged development in the urban periphery. There is, nonetheless, a large potential for urban density to increase within the metropolitan zone. A considerable percentage of developable land within the perimeter of the metropolitan zone and inside the core municipality is currently undeveloped, despite its potential access to urban infrastructure. In the core of the Puebla FUA the built area is much smaller than the available developable land (COESPO, 2012).

Moreover, the important rural-to-urban migration of the past decades has increased the demand for land in the metropolitan area faster than the ability of public officials to provide infrastructure (Gilbert, 1998). In the case of Puebla-Tlaxcala, this has contributed to an increase in dispersed and informal settlements in the metropolitan area, breaking the metropolitan unity. Sprawl and the rise of informal settlements have generated higher social costs due to transport, such as increased congestion and pollution. Sprawl also increases the costs of providing local public services and infrastructure such as water, sewage, waste management and electricity to the municipalities further away from the

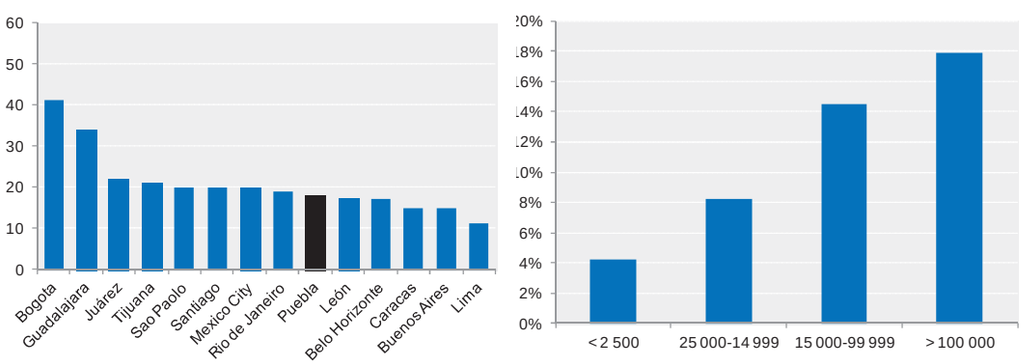
core. As will be discussed later in this chapter, access to basic services in Puebla-Tlaxcala is characterised by considerable intra-metropolitan disparities, with much lower access to infrastructure in the outskirts of the metropolitan zone. Fostering a more compact city for which urban infrastructure is less costly can help to reduce disparities in the access to infrastructure and boost growth.

An underdeveloped housing market

In Latin America in general and in Mexico in particular, the housing rental market is shallow and underdeveloped. Given that home ownership is not the optimal choice for everyone at all times, a well-functioning rental housing market is crucial to any city to facilitate greater labour mobility. Yet, by international and even national comparisons, Puebla's rental market is underdeveloped. Just 18% of the city of Puebla's inhabitants are renters, compared to 41% in Bogota, 34% in Guadalajara and 22% in Ciudad Juárez. This is even more surprising because larger cities generally have a larger share of rental housing (Figure 1.33). It is also surprising considering the large student population in the metropolitan area. In Latin America, housing tenure increases sharply with age: rental housing is more common among the young, couples without children and divorced individuals (Bouillon (ed.), 2012). Given Puebla's demographic composition, with an over-representation of youth students, it would be expected to have a much larger rental housing market. Rental tenure is also correlated with higher densities (Bouillon (ed.), 2012), which suggests that the region's rental market has a large potential for development if current constraints – many of them requiring reform at federal level – are lifted.

Figure 1.33. **Rental tenure in selected cities in Latin America**

% renters in select Latin American cities (left) and % renters by city size in Mexico (right), 2010



Source: Based on data from Bouillon, C. (ed.) (2012), Room for Development: Housing Markets in Latin America and the Caribbean, Inter-American Development Bank, Palgrave McMillan, New York; ENIGH 2010, *www.inegi.org.mx/est/contenidos/proyectos/encuestas/hogares/regulares/enigh/enigh2010/ncv/default.aspx* (accessed 19 July 2013); and OECD calculations.

There are two key constraints to the development of the rental housing market, both in Mexico and in Puebla-Tlaxcala, in particular. First, public policies tend to promote homeownership, such as the INFONAVIT public mortgage entity, and the implementation of the *Esta Es Tu Casa* subsidy programme to foster homeownership for lower-income households. Second, the regulatory framework tends to favour the rights of tenants at the expense of landlords, and Puebla's court system is among the least efficient

in Mexico, which increases the cost of enforcing contracts. The state of Puebla ranks 29th out of 32 for the length of its foreclosure procedures, which take 31 months to complete (Bouillon (ed.), 2012). This deters potential investors and homeowners from opening up properties for the rental market (Casas-Arce and Saiz, 2006). Bouillon (2012) identifies two additional constraints that impede the development of the formal rental market in Latin American countries: limited availability of urban land with services and underdeveloped credit markets, which limit access to long-term financing for landlords.

Expanding the rental market could have a number of positive impacts in the metropolitan zone, requiring reform at federal, and to a lesser extent sub-national, levels. It would help to broaden housing options and increase mobility in the labour market, in turn boosting the earnings potential for all households (UN HABITAT, 2011). In Mexico, given that rental is slightly more prevalent in lower-income households, expanding the rental market could have a larger beneficial effect on the poor. A better functioning rental market also encourages a household to diversify its investments. Moreover, facilitating rental housing could help address the high level of vacancies in the Puebla centre city. It could also reduce the housing deficit and alleviate urban sprawl by using serviced land more effectively, which could, in turn, alleviate the demand for transport by increasing density. Finally, fostering the development of housing rental markets could be a very cost-effective policy for providing better housing for low-income households.

Increasing motorisation rates and persistent air pollution challenges

Mexico's car fleet has tripled in the last 15 years from 7 million vehicles in 1995 to 21 million in 2010 (INEGI, 2013a). The motorisation rate doubled in the last 10 years, from 10 vehicles per 100 people in 2000 to 20 vehicles per 100 people in 2011. These trends are not particular to Mexico. The aggregate travel demand of a country rises, albeit in a non-linear fashion, with income per capita, and for middle-upper income countries, most of the rise in transport demand is allocated to private vehicles (Goodwin et al., 2004).

In Mexico's case, the motorisation rate is expected to continue to increase at the same pace in the next decade, due to five factors. First, the rise of GDP per capita predicts that at the current level of income, Mexicans will demand more cars (Fouquet, 2012). Mexico is still far from the saturation rate observed worldwide, which stands at around 80 cars per 100 persons (Dargay et al, 2007). Second, fuel subsidies in Mexico have sheltered the population from the large price increases seen worldwide and kept the price of fuel among the cheapest in the world. In 2012, fuel prices in Mexico were still around three times cheaper than in EU counties and more than 30% cheaper than in the United States. Although Mexico is implementing a gradual elimination of the subsidy, the price levels will take time to reach those of other OECD countries. Thirdly, the relative price of cars has decreased significantly, mainly because of trade, competition and productivity increases. Fourth, the availability of more and better roads has improved connectivity and contributed to the rise in the demand for cars. Finally, the form of Mexico's increasing urbanisation rate is also pushing the demand for cars because of sprawl. Automobile dependence tends to be greater in low-density suburban neighbourhoods than in high-density core districts. When public mass transit systems are absent or poorly designed, people will depend mostly on private motorised vehicles for their mobility.

Moreover, the public transport fleet consists almost exclusively of low-capacity vehicles such as microbuses, minibuses and taxis, further contributing to congestion and impeding the development of an efficient transport network. Urban passenger transport

service is mostly supplied by informal groups of individuals called *hombre-camión* ("man-and-a-truck"), who own a concession to operate one or several vehicles. Approximately 6 000 public transport vehicles circulate in the metropolitan zone. Multiple operators cover the same routes (284 in total), especially in the city centre, thus aggravating congestion and pollution, given that many of the vehicles in operation are of poor quality. The volume of low-capacity vehicles results in part from an uncontrolled proliferation of concessions to individual operators. In Tlaxcala, the state government has frozen new concessions for more than a decade and even suspended some existing concessions, based on technical studies. In Puebla as well, the state government is currently taking steps to reduce the supply. Nevertheless, exceptions to the rules are common.

The expected future increase in motorisation rates comes with costs. Large metropolitan zones such as Puebla-Tlaxcala already must tackle two growing problems that are not addressed by markets: pollution and congestion. These problems are exacerbated in metropolitan areas, where the demand for transport is concentrated and the costs of not addressing pollution and congestion are higher, due to higher congestion levels and higher cost of space. There is a clear link between vehicle traffic and air pollution (Nechyba and Walsh, 2004). According to ProAire, motor vehicles are responsible for 85% of emissions in Puebla-Tlaxcala (Municipality of Puebla, 2013). Although Puebla-Tlaxcala's emission levels are lower than those of other Mexican metropolitan zones, the number of days that have passed the pollution threshold has remained constant in the last decade, at around 25 per year. This is lower than Ciudad Juárez, León and Mexico's Central Valley.

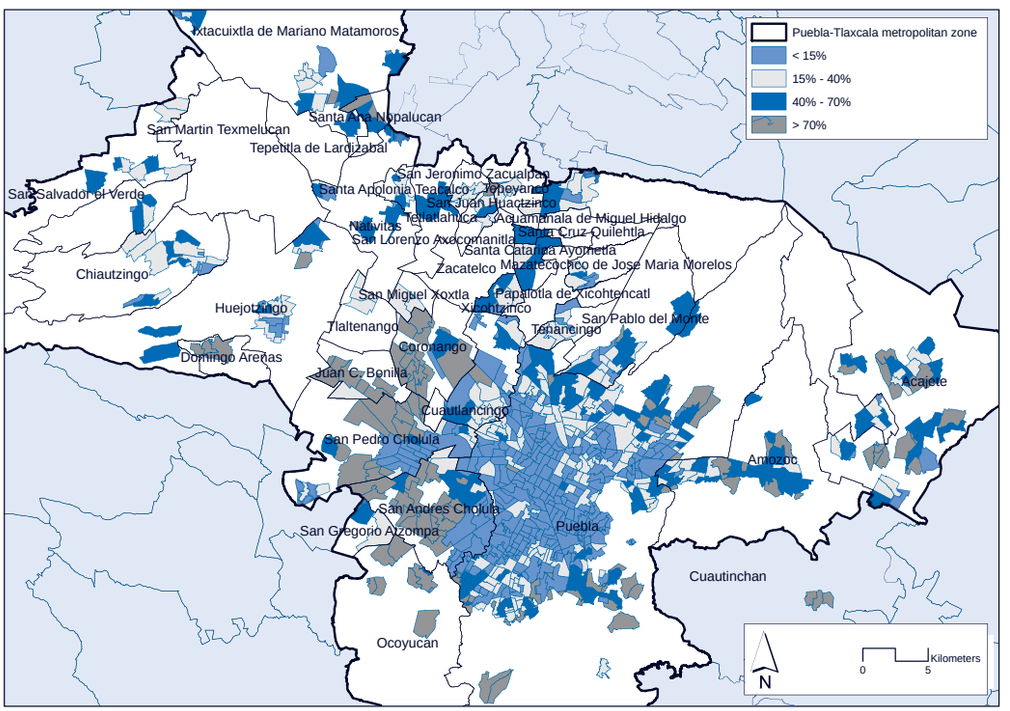
Water as a critical strategic challenge for the region

Recent OECD research highlights the critical challenges posed by water governance in Mexico, as well as the important disparities in water quality, quantity and access across Mexican states. Responsibility for water resources management has become increasingly decentralised in Mexico since the 1992 National Water Law, while responsibilities for water supply and sanitation are enshrined at municipal level by the Constitution (Article 115). For both sub-sectors, important gaps in technical, human and fiscal capacity at municipal and watershed level have been identified as barriers to effective, sustainable and cost-efficient water management (OECD, 2013c). Currently, 91.3% of the population has access to drinking water services, and 89.9% of the population has access to sanitation services. Considering the country's existing coverage, and the future population growth in the next 20 years, Mexico will need to provide an additional 36 million inhabitants with drinking water services and 40 million inhabitants with sanitation services. The states facing the greatest challenges in this regard are Baja California, Chiapas, the State of Mexico, Jalisco, Puebla and Veracruz (OECD, 2013c). Demand for water supply in Puebla-Tlaxcala has increased in recent decades due to the growth of population and economic activity. However, the area's water provision comes predominately from the extraction of groundwater resources, which are conducted with little incentives for rational use (e.g. energy subsidies allocated to farmers and working against water policy objectives) resulting in overexploitation of the region's aquifers, in turn increasing pumping costs, lowering water quality, destroying wetlands and lowering the quality of soil (State of Puebla, 2011).

In spite of the high coverage of potable water and wastewater treatment in the Puebla-Tlaxcala metropolitan zone (reported at 87% and 96%, respectively [SEDESOL, 2012]), the frequency of water provision and quality of infrastructure remains inadequate. The majority of houses have only intermittent provision of water, ranging from once a week to two or three days per week.[6] Many localities within Puebla-Tlaxcala face deficiencies in access to potable water networks, ranging from 20.18% in San Martin Texmelucan to 70.3% in San Andres Cholula. In these cases, potable water is delivered through artisanal wells. And in some localities within the region, the absence of drainage systems results in contamination. These trends are even more evident at the census-tract (AGEB) level (Figure 1.34).

Figure 1.34. **Share of the population without access to piped water**

931 AGEBs of the Puebla-Tlaxcala Metropolitan Zone



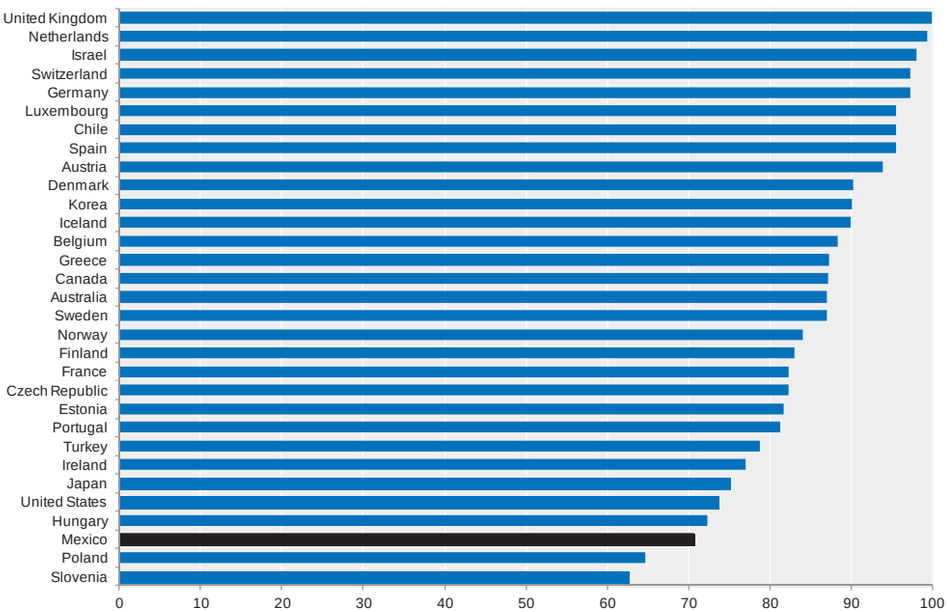
Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: Based on INEGI (2010), *Censo de Población y Vivienda*, INEGI, Aguascalientes, Mexico.

Wastewater management is also a major issue. Although the wastewater treatment levels have doubled in Mexico in the last decade to reach 37% in 2009 (CONAGUA 2010, 2011), they are still low compared to the other OECD countries (Figure 1.35). On a state level, Puebla treats 35% of its municipal water whereas Tlaxcala treats 50% (CONAGUA, 2012). In the city of Puebla, it is estimated that 25% of wastewater is dumped back into water basins (Municipality of Puebla, 2006). Few of the region's wastewater treatment plants function on a regular basis, reflecting the lack of municipal resources to manage operation and maintenance. As reported by representatives of the Tlaxcala Water Commission, just 30 of the state's 127 treatment plans are currently in operation.[7] As a result, the region's water is reportedly highly contaminated and getting

worse (Iracheta Cenecorta, 2012). The already fragile water supply in Puebla is further threatened by urban sprawl and population growth, which unfavourably affect water resources and can generate pollution in rivers basins (Municipality of Puebla, 2006). Water quality issues are compounded by challenges of water quantity, as the urbanisation and deforestation of watershed recharge areas has led to diminishing yields of many wells[8] and recent floods (2010) have had major impacts on the water table.

Figure 1.35. **Share of population connected to public sewerage network in OECD countries (2010)**



Note: Public treatment: national population connected to public sewage treatment network. Includes primary, secondary and tertiary treatment. May include wastewater delivered to treatment plants by trucks. Population connected to public sewerage network without treatment is excluded. Baseline year 2010 except for Estonia (2011); Belgium, Canada, Chile, Ireland and Portugal (2009); United States (2008); Iceland (2005); and Australia and France (2004).

Source: OECD Environment Statistics, *http://dx.doi.org/10.1787/env-data-en.*

Lack of operational capacity for waste management

Waste management is another important, and increasing, challenge. Urban sprawl and population growth exacerbate the lack of operational capacity of waste collection and disposal systems (Municipality of Puebla, 2006). Per capita waste generation rates in both the states of Puebla and Tlaxcala were lower than the national average in 2010 (SEMARNAT-SNIARN, 2012). The National Water Commission (*Comisión Nacional del Agua*, CONAGUA) estimated that approximately 400 tonnes of solid waste (nearly 10% of all solid waste in the city) are not disposed of properly, of which 20% ends up in rivers or surrounding ravines of the Puebla-Tlaxcala metropolitan area (Municipality of Puebla, 2006). As to the share of waste disposed of in controlled sites, in 2011 Tlaxcala and Puebla performed better than the national average (87% and 85% compared to 72%, respectively) (SEMARNAT-SNIARN, 2013). The remainder ends up in uncontrolled landfills or ravines. Although there are 22 landfills in the state of Puebla, 4 of which are located within and surrounding the city of Puebla, most will reach capacity within the next 3 years.

Social marginalisation

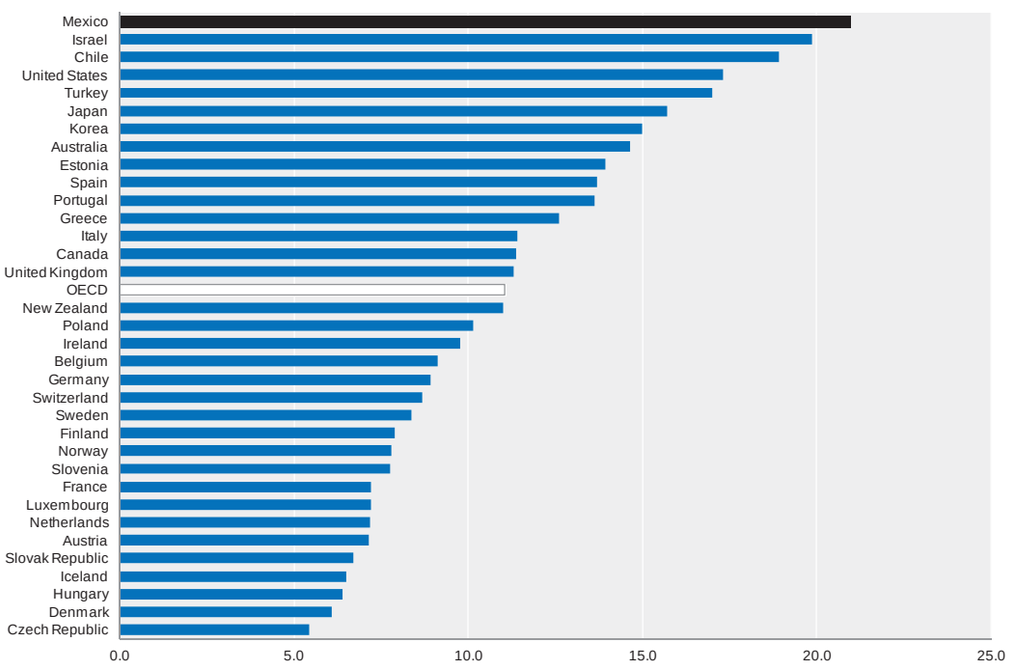
Among the most marginalised and polarised metropolitan zones in Mexico

Puebla-Tlaxcala registers a higher incidence of poverty and social marginalisation than most other Mexican metropolitan zones. It is also one of the most polarised metropolitan zones, hosting both very affluent and very poor areas. The state of Puebla ranks 5th in terms of poverty out of the 31 states and the Federal District. This is all the more worrisome given that Mexico is the OECD country with the highest poverty rate. Mexico's overall poverty rate (21%) was nearly double the OECD average in 2008 (11%) (Figure 1.36). The situation for Mexico has not improved since the mid-1980s, when it had a level of poverty of 20.7%.

Puebla-Tlaxcala also performs poorly on an aggregate measure of urban marginalisation (Figure 1.37), which reflects a lack of access to basic goods, services and infrastructure (Box 1.5). Among the 33 large Mexican metropolitan zones, it has the second-highest share of population living in neighbourhoods of high and very high marginalisation (49%), more than double the average for Mexican metropolitan zones (22%). Approximately 57% of census tracts in Puebla-Tlaxcala are classified as highly or very highly marginalised, while the average for the large metropolitan zones is just 28%.

Figure 1.36. **Poverty rates across OECD countries**

Percentage of persons living with less than 50% of median equivalised household income (late 2000s)



Source: OECD *Income Distribution and Poverty Database* (*www.oecd.org/els/social/inequality*).

Box 1.5. **The Index of Urban Marginalisation (CONAPO, 2010)**

The Index of Urban Marginalisation (*Índice de Marginación Urbana*, IMU) is an aggregate measure to capture the multi-dimensional nature of socio-economic marginalisation that characterises Mexican states, municipalities and finer geographies, as described below. It takes into account a number of indicators that measure impoverishment and lack of access to goods and services. It considers marginalisation as a multi-faceted phenomenon that adversely affects different aspects of social and economic life, including access to education and health services, basic infrastructure and adequate housing. CONAPO has been constructing indices of marginalisation since the 1990s and has used them as a tool to identify areas that lag behind and need targeted policy interventions. The 2010 Index of Marginalisation has information at the census-tract (AGEB) level, thus allowing intra-city analysis of spatial disparities at the very localised level. There are 43 640 census tracts (AGEBs) for the whole Mexico, 931 for the Puebla-Tlaxcala metropolitan zone, and 697 for the Puebla FUA. The analysis shows large inequalities even within municipalities, revealing pockets of affluence and deprivation.

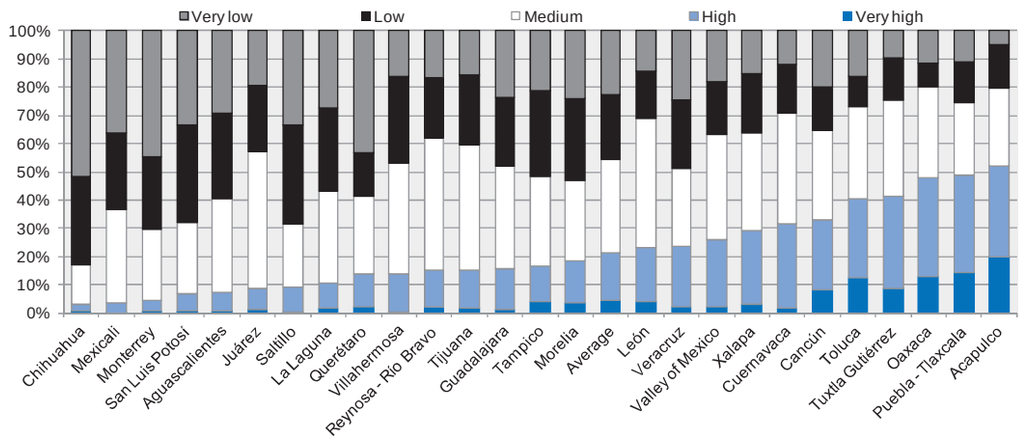
The socio-economic indicators that are used to construct the Index of Urban Marginalisation are:

- Education:
  - Percentage of population aged 6-14 years not attending school; and
  - Percentage of the population 15 years or older without complete secondary education.
- Health:
  - Percentage of population without medical health services; and
  - Percentage of children who died with mothers aged 15-49 years old;
  - Percentage of private homes without running piped water inside the house;
  - Percentage of private homes without drainage connected to the public network or septic tank;
  - Percentage of private homes without toilet with water connection;
  - Percentage of private homes with soil floors; and
  - Percentage of private homes with some level of overcrowding.
- Goods:
  - Percentage of private homes without refrigerators.

Source: CONAPO (2010), *Indice de Marginación Urbana 2010*, CONAPO.

Figure 1.37. **Share of population living in marginalised areas within large Mexican metropolitan zones**

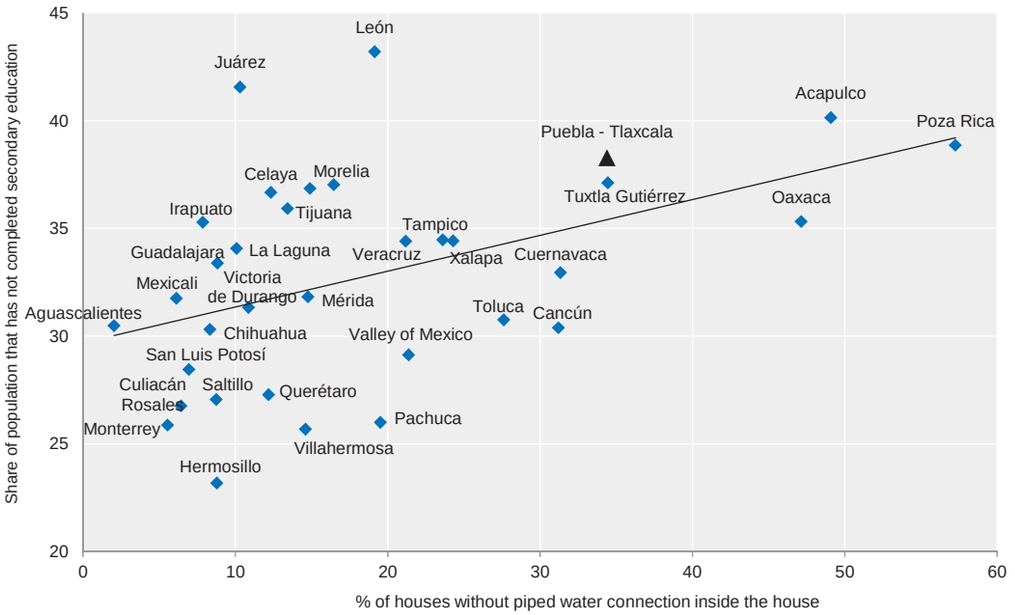
Includes metropolitan zones with population greater than 500 000;
categories range from "Very low" to "Very high" levels of marginalisation within census tracts (AGEBs)



Source: CONAPO (2010), *Indice de Marginacion Urbana 2010* (Index of Urban Marginalisation), CONAPO.

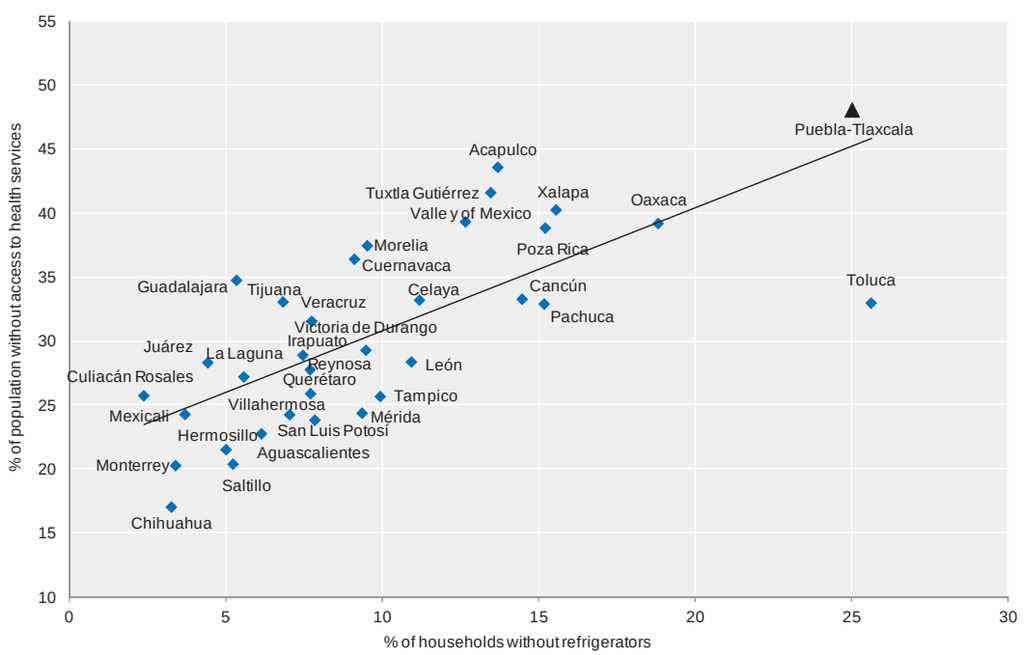
A further examination of the social indicators that comprise the IMU reveals the multi-faceted nature of marginalisation, in which there is a high correlation between measures of marginalisation. Puebla-Tlaxcala performs poorly in most of these indicators. Nearly 40% of the houses in the metropolitan zone do not have piped water connections and 38% of the working-age population is without a secondary education. While the former indicator reflects access to a basic infrastructure and the latter to education services, it can be seen that there is a strong correlation between the two variables, revealing that there are processes of marginalisation that are interconnected and jointly affect the most disadvantaged areas within the metropolitan zone (Figure 1.38). Similarly, an analysis of the relationship between the share of population lacking access to health services and households without a refrigerator, shows that there is a strong relationship, suggesting that exclusion from services and material deprivation affect the same segments of the population. Puebla-Tlaxcala registers a high incidence of both variables, as it is the metropolitan zone with the largest share of the population without access to medical services (48%) and has the second-highest share of households without a refrigerator (25%) (Figure 1.39).

Figure 1.38. **Share of the population that has not completed secondary education and share of households without a piped water connection**



Source: Based on marginalisation data from CONAPO (2010); INEGI (2010), *Censo de Población y Vivienda*, INEGI, Aguascalientes, Mexico.

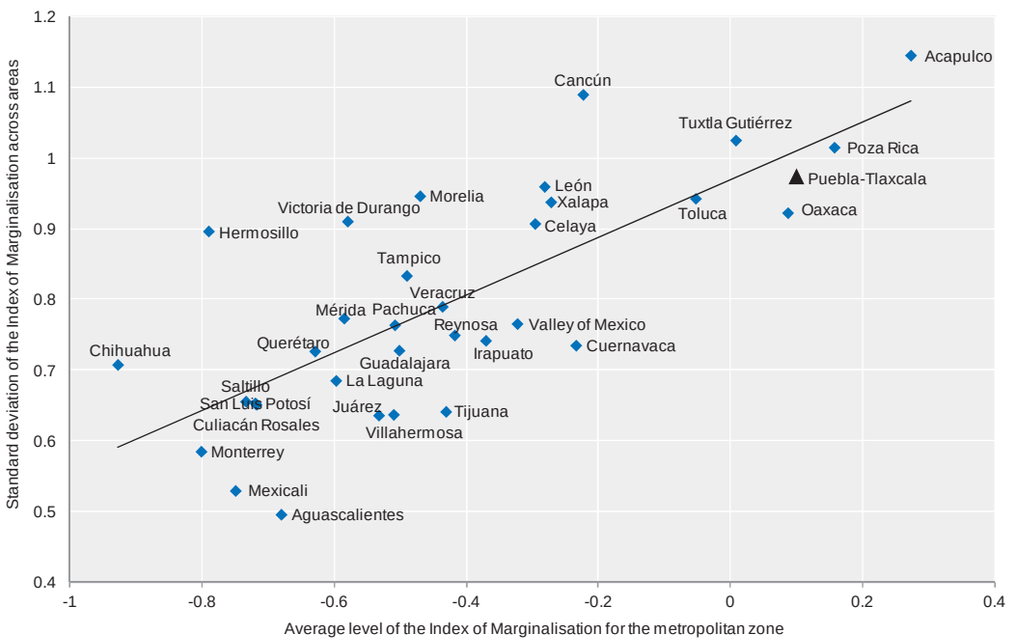
Figure 1.39. **Share of the population without access to health services and share of households without a refrigerator**



Source: based on data from CONAPO (2010), *Indice de Marginacion Urbana*.

Moreover, marginalisation levels vary widely within the metropolitan zone. A strong positive relationship can be observed between average levels of marginalisation and dispersion within metropolitan zones. Puebla-Tlaxcala exhibits the 4th-highest level of dispersion among 33 large Mexican metropolitan zones, close to one standard deviation of the total distribution. Metropolitan zones like Acapulco and Puebla-Tlaxcala that have the highest marginalisation of their population are also the ones that have the largest urban disparities within their territory (Figure 1.40). Mapping the census tracts (AGEBs) in Puebla-Tlaxcala according to their marginalisation index, the large discrepancies in the relative performance can be seen, as well as the emerging spatial pattern (Figure 1.41). The high and very high marginalised areas tend to be in the periphery of the metropolitan zone of Puebla-Tlaxcala, while the city-centre of the Puebla municipality, as well as parts of San Andres Cholula and San Pedro Cholula, are the most affluent, with negative values of the marginalisation index.

Figure 1.40. **Dispersion and average levels of marginalisation for the metropolitan zones of Mexico**



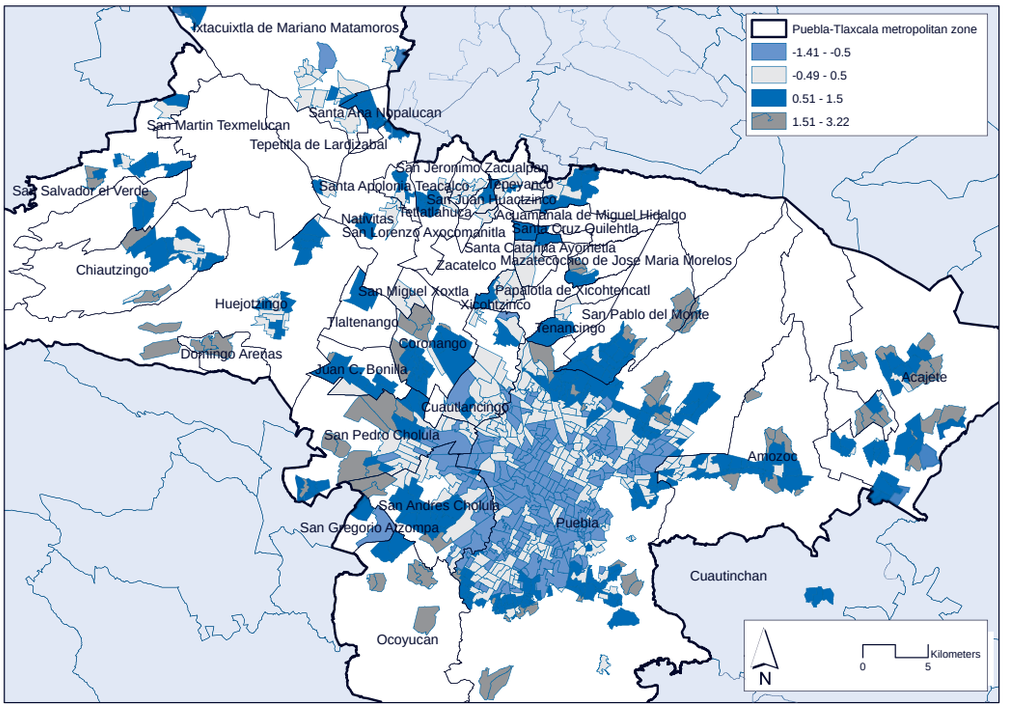
Note: Average level of marginalisation refers to the mean of the Index of Marginalisation for the AGEBs that are part of the metropolitan zone. The dispersion of marginalisation is measured as the standard deviation of the Index of Marginalisation for the AGEBs that are part of the metropolitan zone.

Source: Based on data from CONAPO (2010), *Indice de Marginacion Urbana 2010*.

The high correlation between marginalisation indicators holds true at the census tract (AGEB) level in Puebla-Tlaxcala. The share of population who have not completed secondary education exhibits an almost linear relationship with the share of houses without a toilet with access to the water network (Figure 1.42). The top percentile of AGEBs in terms of marginalisation have more than 78% their population without a secondary education, while the respective figure is 6% for the bottom percentile (i.e. least marginalised). Regarding access to a toilet connected to the water network, the range varies from 96% for the most marginalised to 0% for the least marginalised. Similarly, large disparities between AGEBs can be observed for other social indicators, such as access to medical services and the share of overcrowded houses.

Figure 1.41. **Map of social marginalisation in Puebla-Tlaxcala**

Index of Urban Marginalisation at the AGEB level for the metropolitan zone

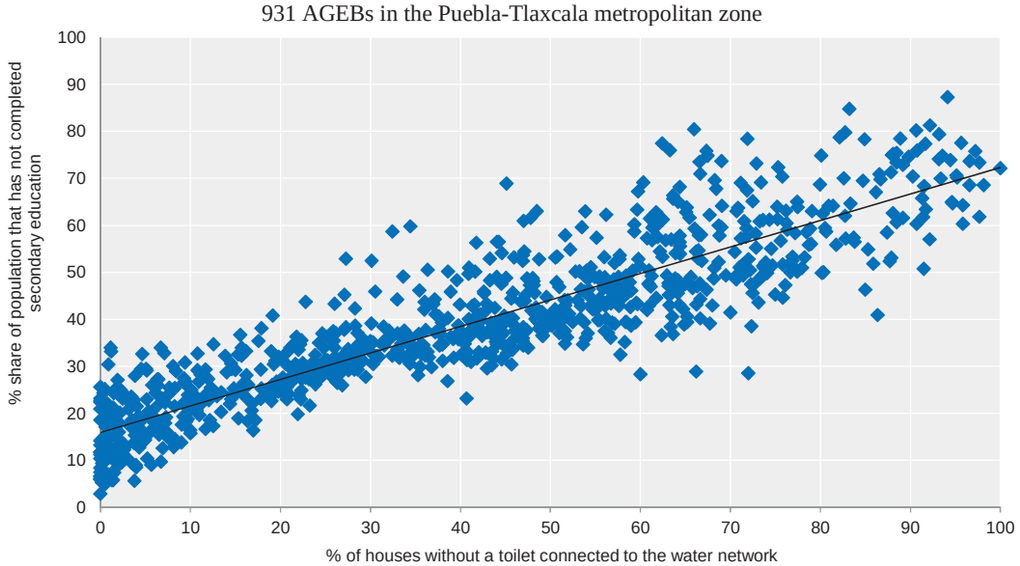


Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: Based on data from CONAPO (2010), *Indice de Marginacion Urbana 2010*.

Figure 1.42. **Share of the population that has not completed secondary education and share of households without toilets connected to the water network**

931 AGEBs in the Puebla-Tlaxcala metropolitan zone

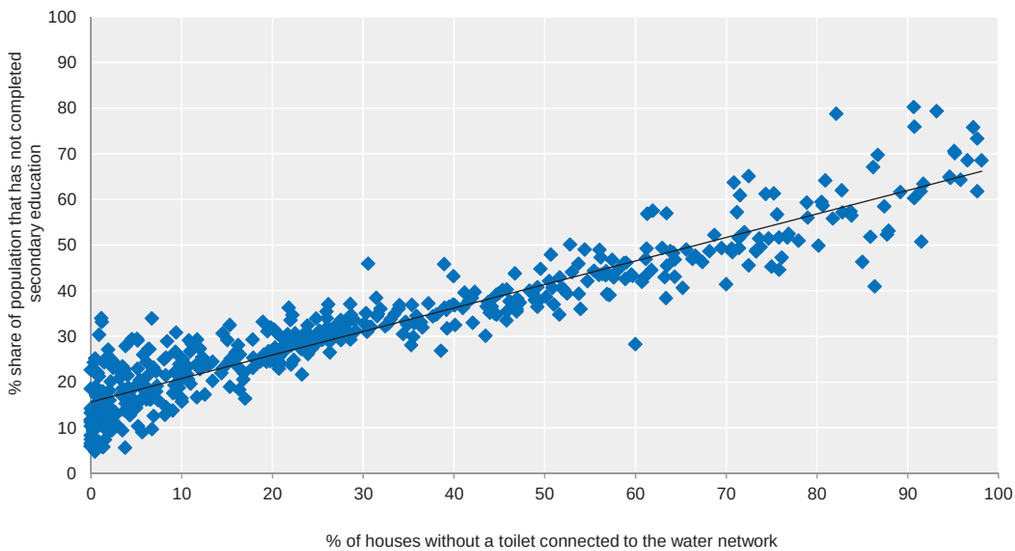


Source: Based on data from CONAPO (2010), *Indice de Marginacion Urbana 2010*; and INEGI (2010), *Censo de Población y Vivienda*, INEGI, Aguascalientes, Mexico.

There is considerable heterogeneity within municipalities. The city of Puebla registers considerable disparities in marginalisation levels among its 476 census tracts (AGEBs) (Figure 1.43), as does one of the most affluent municipalities, San Andres Cholula, which has pockets of high marginalisation within its territory (Figure 1.44). Within the municipality of Puebla, there are both affluent areas in the centre as well as marginalised ones at the north, northeast and south. Similarly, San Andres Cholula, San Pedro Cholula and Cuautlancingo have affluent areas in their core and marginalised areas in their peripheral areas. These core municipalities still, generally speaking, have lower overall marginalisation levels than those in the periphery of the metropolitan zone.

Figure 1.43. **Municipality of Puebla: Share of population that has not completed secondary education and share of households without access to the water network**

476 AGEBs in the municipality of Puebla



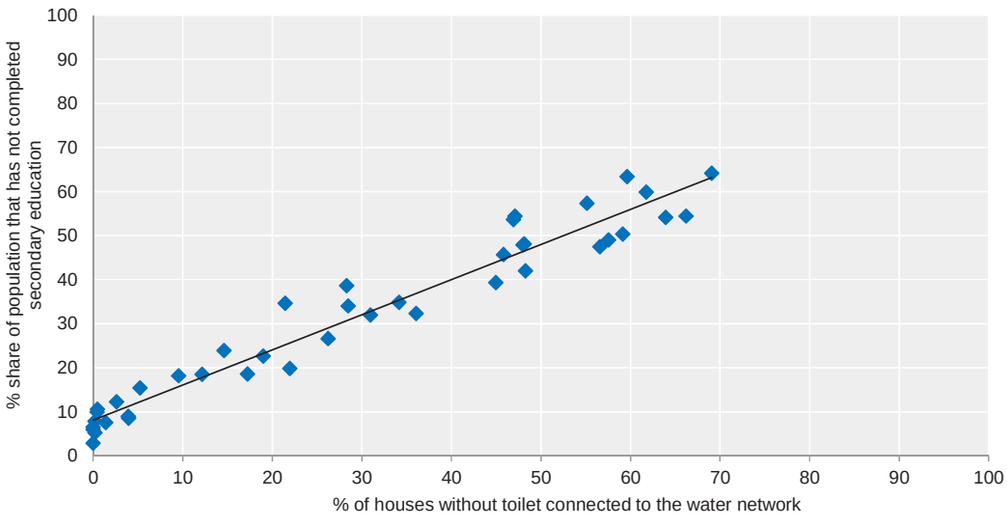
Source: Based on data from CONAPO (2010), *Indice de Marginacion Urbana 2010* (Index of Urban Marginalisation), CONAPO; and INEGI (2010), Censo de Población y Vivienda.

Metropolitan challenges in need of metropolitan solutions

No fewer than 39 municipalities, 2 states and the federal government play a role in governing the Puebla-Tlaxcala metropolitan zone. The multiplicity of public actors must also contend with the complexities of governing a dynamic metropolitan region that has undergone dramatic demographic and urban expansion over the past 30 years, as a large share of the urbanised territory in existence today did not exist three decades ago. The character of Puebla-Tlaxcala's urbanisation has also changed to include sizable commercial centres, industrial plants and technological and logistical parks in the urban periphery, as well as socially exclusive gated neighbourhoods, known as *fraccionamientos*. Moreover, the region's demographic, economic and spatial growth has not been accompanied by adequate development of the infrastructure or urban services. In fact, the systematic inability of different levels of government to guide urban development has contributed to increasing levels of urban sprawl and the accumulation of severe service deficits that reduce the overall quality of life and may impair the metropolitan region's future development.

Figure 1.44. **Municipality of San Andreas Cholula: Share of population that has not completed secondary education and without access to the water network**

41 AGEBs in the municipality of San Andres Cholula



Source: Based on data from CONAPO (2010), *Indice de Marginacion Urbana 2010* (Index of Urban Marginalisation), CONAPO; and INEGI (2010), *Censo de Población y Vivienda*, INEGI, Aguascalientes, Mexico.

Yet, even though most of the region's municipalities face similar challenges, developing common solutions to shared problems has proven difficult. Many factors contribute to the lack of inter-municipal collaboration:

- First, the significant human, technical and fiscal capacity gap at the municipal level cobbles the effectiveness of policy design and implementation, generates policy discontinuities and represents an obstacle to inter-municipal collaboration. Mayors may not be immediately re-elected after their three-year term and the change in administration generally implies a significant overhaul in the municipality's professional and managerial staff.
- Second, the fragmentation of institutional actors and policy mandates is a barrier to achieving economies of scale and greater policy coherence. As a result, there are few frameworks for co-ordinating service provision or distributing the costs and benefits among multiple entities in efficient and equitable terms.
- Third, outdated and ineffective frameworks, institutions and tools for urban and economic development and co-ordination limit policy outcomes. Governance arrangements at the metropolitan level remain ambiguous in Mexico's legislative framework. In short, the region suffers from a host of metropolitan challenges, yet lacks adequate frameworks, institutions, tools and incentive mechanisms to develop effective metropolitan solutions.

Strategies to build capacity in the public sector and develop more effective and operational metropolitan governance arrangements within Puebla-Tlaxcala will be explored further in Chapter 4.

Notes

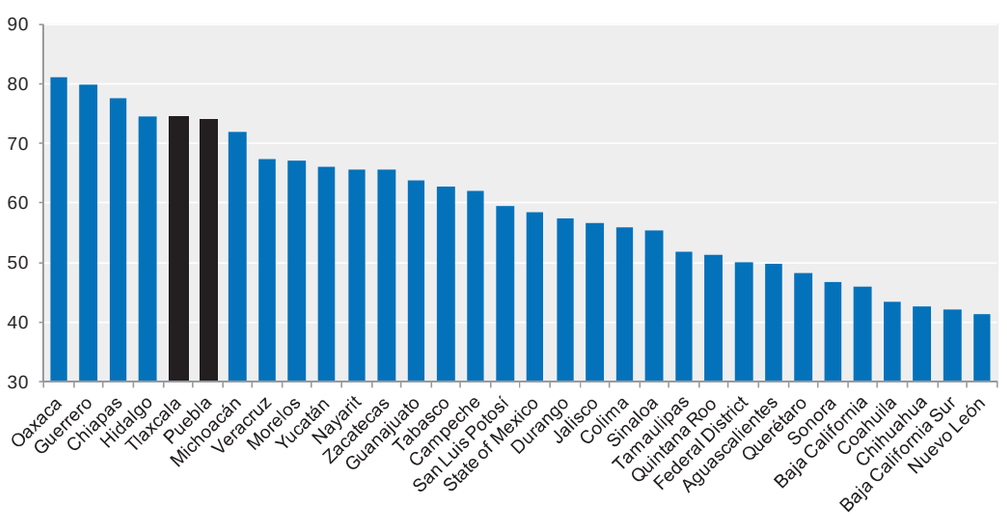
1. The term *maquiladora* corresponds to manufacturing operations in a free trade zone, where factories import material and equipment on a duty-free and tariff-free basis for assembly, processing or manufacturing and then export the assembled, processed and/or manufactured products.
2. INEGI defines "informal" as those who work with household inputs and are not constituted as an enterprise. Non-registered self-employment and household work enter this category.
3. The World Bank "Doing Business" indicators measure and track changes in the regulatory framework that affect particularly small and medium-sized firms, with the aim of describing the ease of doing business around the world and of fostering efficient regulations.
4. This indicator of educational quality, produced by the SEP, measures the share of students with good or excellent performance in mathematics.
5. Reported during interviews with state and municipal economic development officials during an OECD visit to Puebla-Tlaxcala in October 2012.
6. Based on field interviews in Puebla-Tlaxcala conducted by the OECD in January 2013.
7. Based on field interviews in Puebla-Tlaxcala conducted by the OECD in January 2013.
8. Information provided by officials of SOAPAP and the Tlaxcala Water Commission to the OECD mission team in January 2013.

Annex A1.1
Rates of informal employment in Mexico

INEGI distinguishes between the informality rate (definition 1; Figure A1.1) and the rate of occupation in the informal sector (definition 2; Figure A1.2). For each of these definitions, INEGI proposes one measure that **includes** the agricultural sector – which employs a very large share of informal workers – and a separate measure that **excludes** the agricultural sector. According to both measures, Puebla is among the states with the highest rate of informality, ranking 6th and 7th, respectively, among the 31 states and the Federal District.

Figure A1.1. **Informality rates in Mexico, 4th quarter 2012**

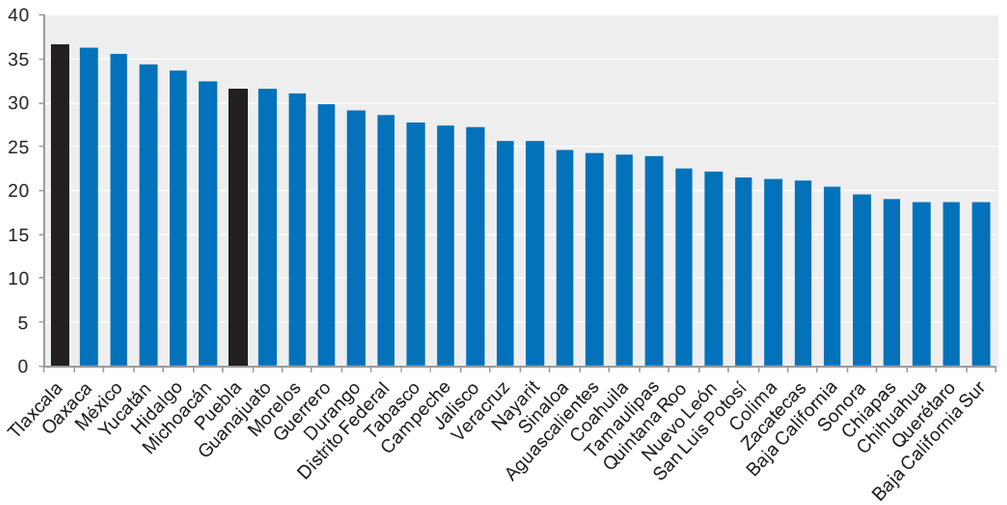
Definition 1, for both genders



Source: INEGI (2013), *Banco de Informacion Economica*, *www3.inegi.org.mx/sistemas/biinegi* (accessed May 2013).

Figure A1.2. **Informality rates in Mexico, 4th quarter 2012**

Definition 2, occupation rate in the informal sector



Source: INEGI (2013), *Banco de Informacion Economica*, *www3.inegi.org.mx/sistemas/biinegi* (accessed May 2013).

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Chapter 2

Policies for economic and workforce development in Puebla-Tlaxcala

This chapter assesses two major assets of the Puebla-Tlaxcala metropolitan zone – its higher education base and resilient, vertically integrated manufacturing sector – and considers potential obstacles to the region's future growth. In particular, the chapter addresses the following questions: What strategies can facilitate greater regional co-operation for economic development? How can Puebla-Tlaxcala transition from a largely deal-driven, jurisdiction-bound approach to economic development toward a regional economic development strategy to guide policy making and investment decisions? How can workforce development policies be better tailored to address the region's large share of low-skilled workers? What can be done to improve the business environment to facilitate growth and ease the transition from informal to formal labour? Finally, how can university resources be mobilised to achieve these objectives?

Over the past five decades, Puebla-Tlaxcala has succeeded in attracting major national and international firms, building its reputation as both a manufacturing hub specialising in auto production and one of Mexico's most important centres of higher education. Nevertheless, the region's success in attracting major firms has occurred in the absence of a clear strategy for regional development, as the 2 states and 39 municipalities which comprise the region compete for investment opportunities and skilled labour. While the federal government has, since at least 2004, aimed to introduce the metropolitan scale into the Mexican landscape as a framework for assessing and addressing policy challenges, it thus far has had little policy relevance in the Puebla-Tlaxcala metropolitan zone.[1] Some important initiatives have been introduced by the region's major universities, many of these in partnership with the public and private sectors, yet they have largely been pursued in isolation of each other and have, as a result, generated only modest outcomes.

This approach to economic development has come with other costs as well. As will be explored further in Chapter 3, the region's deal-driven, jurisdiction-bound efforts have most often been negotiated without anticipating the impacts on land use, housing and, crucially, service provision. Complicating the resolution of such challenges, public administrations are hampered by the short, three-year electoral terms at municipal level and are thus unable to engage in policy design or implementation beyond the short term. Moreover, the region as a whole lacks a common database to understand the particular composition, vulnerabilities and opportunities of regional firms and workers. Evidence suggests that Puebla-Tlaxcala is home to a disproportionate share of low-skilled workers and a high volume of informal workers, which could represent obstacles to future growth.

This chapter will begin with an assessment of the region's primary assets: a strong higher education base and a resilient, vertically integrated manufacturing sector. It will then explore several potential bottlenecks to the region's competitiveness and possible ways forward: *i)* transitioning from a largely deal-driven, jurisdiction-bound approach to economic development toward a regional economic development strategy to guide policy making and investment decisions; *ii)* raising the skill level low-skilled workers, who make up a disproportionate share of Puebla-Tlaxcala's workers relative to other Mexican metropolitan zones and may represent a bottleneck to future growth; and *iii)* pursuing efforts to improve the business environment to facilitate growth, particularly for SMEs, and ease the transition from informal to formal labour. In particular, potential strategies will consider how the region can mobilise university resources for improved economic and workforce development outcomes.

The region's dual assets: A centre for higher education and a manufacturing hub

The most universities per capita in Mexico

Critical to the success of the regional economy is Puebla-Tlaxcala's position as a centre for higher education within Mexico. With the highest number of universities per capita in Mexico, the region is an important centre for education. Of the 182 higher education institutes (HEIs) in the region, approximately 90% are located in the municipality of Puebla. While many of the region's HEIs are small and of variable quality,[2] a handful of the largest universities are responsible for the lion's share of accredited degree programmes (Table 2.1).[3] Several are part of multi-campus, national systems, such as the Technological University of Puebla, the Monterrey Institute of Technology and Higher Studies (*Instituto Tecnológico y de Estudios Superiores de Monterrey*, ITESM), the Institute of University Studies (*Instituto de Estudios*

Universitarios, IEU) and the Iberoamericana University – Puebla campus (*Universidad Iberoamericana – Puebla*, UIA). Recently, seven of the largest universities formed a consortium: the Popular Autonomous University of the State of Puebla (*Universidad Popular Autónoma del Estado de Puebla*, UPAEP), the University of the Americas – Puebla campus (*Universidad de las Américas Puebla*, UDLAP), the University of Madero (*Universidad Madero*, UMAD), ITESM, UIA, *Universidad Anahuac* and IEU. According to information received from IMPLAN, the main objectives of the consortium are to ensure the continuity of Puebla's economic development programmes regardless of changes in the municipal administration, to act as a magnet to attract investment and develop links with businesses to generate greater economic growth. Many of the region's large institutions are looking to build their international presence as well (Box 2.1).

Table 2.1. **State-accredited degree programmes in Puebla-Tlaxcala**

BUAP (*Benemérita Universidad Autónoma de Puebla*)	26
Instituto de Ciencas Juridicas de Puebla	1
ITESM (*Instituto Tecnológico y de Estudios Superiores de Monterrey*)	8
UDLAP (*Universidad de las Américas Puebla*)	5
UIA (*Universidad Iberoamericana*)	11
UPAEP (*Universidad Popular Autónoma del Estado de Puebla*)	23
Instituto Tecnológico de Puebla	4
Total	78

Source: Secretaria de Educación del Gobierno del Estado de Puebla (2012), "de los Sistemas Estatales de Innovación 2012", Foro Consultivo Científico y Tecnológico, Mexico City, available at: *http://foroconsultivo.org.mx/libros_editados/estadisticas_2012_v2.pdf* (accessed March 2013).

Box 2.1. **An eye to the global market: Higher education institutes in Puebla-Tlaxcala**

The largest of Puebla-Tlaxcala's universities operate with an eye to the international market, through partnerships with universities outside Mexico to facilitate exchanges as well as expand global market opportunities. Many regional institutions have established exchange programmes with foreign universities. Canada is becoming a country of choice for many students. The region's higher education institutions (HEIs) also report an increased interest in Europe and East Asia, coinciding with Mexico's growing position in international trade. English language learning has a significant place in higher and technical education in Puebla, recognising a demand by business for workers who have a functional knowledge of English (a notable exception is Volkswagen, which places a high value on German language proficiency). This also demonstrates recognition by HEIs that English has become the *lingua franca* of business. International trade has become a special focus of UMAD, which incorporates international exchanges and practices as part of a tri-lingual degree programme. Some institutions, such as UVM, offer a US diploma through its corporate relationship with a school in the Chicago area. Others, such as ITESM, offer academic programmes that are accredited in the United States. These exchange programmes and joint accreditations improve the global mobility of educated Mexican workers by giving prospective employers an easy means for assessing the value of a credential given by a foreign institution.

Nevertheless, HEIs choosing to compete in the global market are in a very crowded field. The United States continues to be a top destination for students seeking an education abroad. HEIs in Australia and New Zealand are becoming cornerstone export industries. In addition, the People's Republic of China, India and emerging economies are rapidly expanding their higher education sectors. Although global demand will continue to outstrip supply for university educated workers for the foreseeable future, Mexican institutions will need to differentiate themselves from others in order to provide their graduates with special advantages.

Many of the region's largest universities are assuming a stronger role as important regional players in economic and workforce development through partnerships with public authorities and regional employers, as well as with each other, although these initiatives tend to be pursued in isolation. For instance, BUAP was commissioned by the state of Puebla to draft an (unpublished) economic development strategy for the region. The UPAEP has established Sintonía, based on a cluster strategy for economic development, experiencing some success in building collaborative partnerships (Box 2.2). The UPAEP, BUAP, ITESM and others have each established separate business incubators and business landing sites as extensions of their missions to educate and give support to their students and graduates. Some large businesses, such as Volkswagen, have working relationships with multiple universities. ITESM is host to the region's higher education-affiliated technology park (*Agrupamientos empresariales en Mexico)*.

Box 2.2. **Sintonía**

Sintonía, an institute for collaboration housed at the UPAEP university, uses an industry cluster strategy in view of improving the region's economic competitiveness and social equity. Serving as a neutral broker, Sintonía convenes businesses and stakeholders within a dozen primary industries. One of its objectives is to offer the space for analysis, debate and action to develop common, or regional, interest, including with partners in Tlaxcala. Sintonía has established working groups for nine clusters: automotive, agribusiness and processed food, education, energy, financial services, healthcare, furniture, IT and tourism. Each working group has identified a series of projects designed to address gaps in the supply chain, talent development or other barriers to industry competitiveness.

A few examples of effective project detonators in progress are the tourism cluster's success in co-creating a *marco destino*, or brand for the region (an uncharacteristically inclusive achievement); and the health cluster's efforts to organise and unify the public and private hospitals in an agreement with the Secretary of Health to participate in the Zero Tolerance for Maternal Mortality Programme. Through the leadership of the health cluster, a competitiveness agreement (*acuerdo de competitividad*) has been signed, making a formal commitment to reduce Puebla's negative competitiveness indicator.

Source: Communication from L. Burke Murphy, Executive Advisor to Sintonía, 20 May 2013; Sintonía website (n.d.), *www.sintonia.mx* (accessed 21 May 2013).

A recent initiative of the municipality of Puebla may help co-ordinate these efforts. The municipal government of Puebla formed a strategic alliance with 12 of the region's major public and private universities[4] under the designation, Puebla University Capital of Mexico (*Puebla Capital Universitaria de Mexico*, PCUM). The objectives of the institutional collaboration are to: *i)* position the city of Puebla, through the PCUM designation, as a centre for talent and quality educational opportunities; and *ii)* strengthen governance mechanisms for talent attraction and retention through strategic partnerships between HEIs, government and national and international actors (CIDEU, n.d.).

Further, a number of the region's universities are highly involved in the delivery of workforce training. For example, UMAD targets civil servants for continuous education as part of an ongoing programme with the state of Puebla. UVM is focused on developing work competencies, placing a heavy emphasis on internships and social service. These are laudatory accomplishments, although it is not clear whether specific, measurable accomplishments have been achieved to date. These initiatives remain largely independent of each other and, with a few other exceptions, of municipal and state governments. As a result, despite the wealth of economic development initiatives, there is very little basis for establishing a common vision for the region.

Home to the largest automobile plant in Mexico

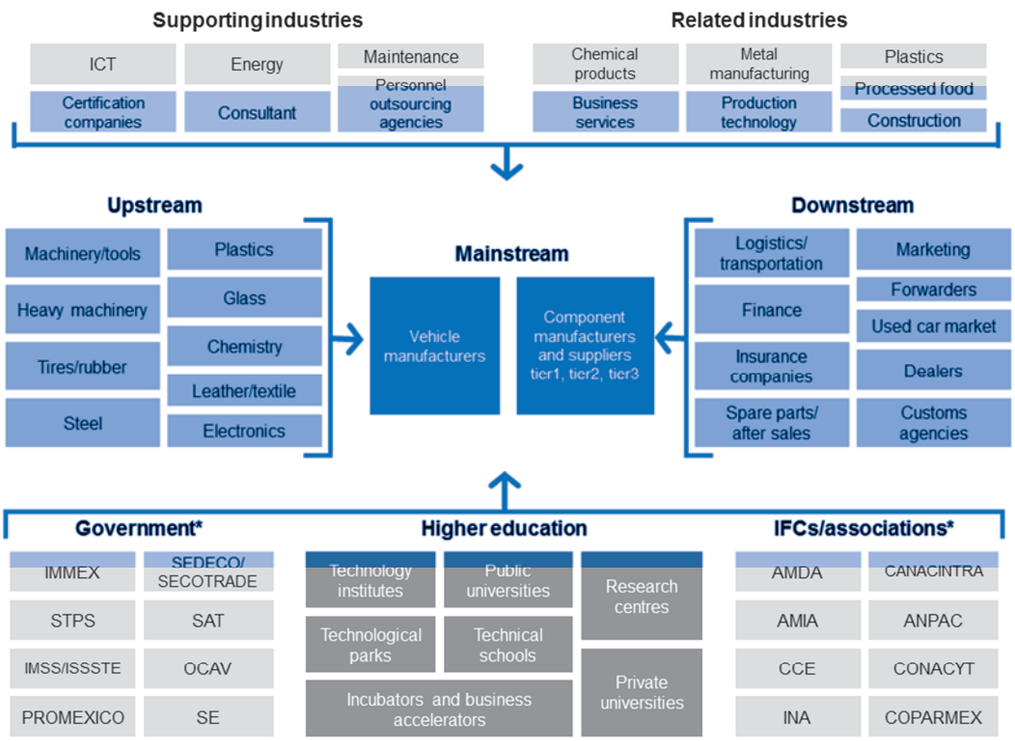
Manufacturing forms the core of the regional economy, bolstered by a resilient, vertically linked automotive sector and facilitated by Mexico's overall competitive advantage in world trade. Puebla-Tlaxcala is home to the largest automobile plant in Mexico (Volkswagen), which employs approximately 16 000 workers and in 2012 produced the most vehicles in North America (Volkswagen de México, n.d.; Saliba, 2013). Volkswagen recently announced plans to expand operations in early 2014. Audi will open a smaller plant just outside the metropolitan zone in 2014, employing 3 800 workers.

The automotive sector is highly vertically integrated in the region and more generally within the two states, creating considerable operational efficiencies, as well as being globally linked in terms of both inputs and destination markets. Southeastern Puebla is home to approximately 100 parts facilities (Hernández Escoba and Vera Zenteno, 2012). Automotive parts production in Tlaxcala is found in the central and southern regions of the state, with the Panzacola Industrial Corridor being proximate to the Volkswagen campus. The core elements of the automotive cluster, comprised of vehicle manufacturers and suppliers, are evidently integrated into a much larger ecosystem (Figure 2.1). Upstream in the manufacturing process are machinery and tool manufacturers, plastics and glass fabricators, electronics manufacturers, among others. Downstream of final output are logistics and transport firms, dealers, forwarders and marketing businesses. Government, higher education, associations and specialty groups also affect ongoing operations. Government creates the regulatory and legal environment. It also affects critical inputs, especially the workforce. Universities, technical schools and others within higher education support talent development as well as research, product and process innovation and design.

As reported in Chapter 1, the region's high degree of specialisation in car production also points to a potential vulnerability to external shocks, since the overall performance of the cluster is highly dependent on Volkswagen and other original equipment manufacturers (OEMs) remaining successful in a competitive global industry. The recent collapse of the three domestic automobile manufacturers and their suppliers in the United States (in contrast to the relative resiliency of foreign transplant manufacturers and their supply chain) is a testament to the need for greater diversification, as can be seen in the resilience of suppliers to foreign manufacturers, who were seemingly better able to cope with the sudden drop in automobile sales because they had maintained the capacity to produce goods for other industries (Box 2.3).

Further, despite the vertical integration of the automobile supply chain within the states of Puebla and Tlaxcala, the auto industry must also rely on critical imported capital items from other parts of Mexico to meet demand. Three states in central Mexico, comprising Puebla, Mexico and Morelos, contribute the largest single share (43.5%) of the automotive segment of national GDP. Automotive parts production is concentrated, 57.6% of total value, in the northern states of Coahuila, Chihuahua, Nuevo Léon, Sonora, Tamaulipas and Baja California. Puebla ranks 14th in parts production, at 5.4% of total value (Cordero et al., 2012). Economic development officials, regional universities and automotive cluster businesses in Puebla-Tlaxcala should further examine this possible vulnerability and develop resources to respond to possible challenges.

Figure 2.1. **The automotive cluster in Puebla-Tlaxcala**



Note: Please see the endnote for the list of acronyms.[5]

Source: Adapted from Cordero et al. (2012), "Puebla automotive cluster", Universidad Popular Autónoma del Estado de Puebla (UPAEP), Puebla.

Box 2.3. **US automobile industry crisis: Implications for regional suppliers**

The recent automobile industry crisis in the United States, and its implications for regional suppliers, centered principally on the three domestic manufacturers – General Motors, Ford and Chrysler – that made a series of ultimately poor decisions regarding the market and products. Suppliers to these OEMs had become highly specialised and dependent on their customers. In contrast, the so-called transplant automotive manufacturers and their suppliers fared better because of their product mix and the efforts of some OEMs, such as Toyota, to retain design and engineering capabilities in their primary suppliers. These suppliers were better able to cope with changes in demand for their products because they retained the ability to diversify their products and markets.

Source: Institute for Work and the Economy (2010a), "Midwest Innovation Initiative", Institute for Work and the Economy, Chicago, IL, available at: *www.workandeconomy.org/pastprojects/mwinnovationinitiative.html* (accessed 27 May 2013).

Well-established links between the automobile industry and universities constitute a regional strength, with the potential to enhance the competitiveness of area suppliers and help them diversify their markets. Regional universities have been especially active in creating shared value with participating businesses, especially in technology development. An inter-regional consortium recently formed to establish the Center for Automotive Industry Development in Mexico. The centre will support the certification of

businesses in the automotive sector, training, process and production improvements, and component design. The consortium is co-ordinated by ITESM – Puebla Campus, and involves the BUAP, the UPAEP, the National Institute of Optics and Electronics (*Instituto Nacional de Astrofísica, Óptica y Electrónica*, INAOE), the *Universidad Iberoamericana – Puebla*, the Technological University of Puebla, *Tecnológico de Monterrey* – Hildago campus, as well as science and technology specialists from Hidalgo, Puebla and Tlaxcala. In addition, three universities are engaged in separate automotive-related initiatives. In 2011, the UDLAP and Volkswagen Mexico launched an electronics engineering initiative and agreed to joint research and instruction in automotive engineering. The UPAEP is also working with Volkswagen through graduate programmes in automotive design, industrial engineering, manufacturing engineering and mechatronic engineering. In addition, the UPAEP is undertaking collaborative projects with German universities. ITESM operates the Center for Automotive Mechatronics Research (*Centro de Investigación en Mecatrónica Automotriz*, CIMA) and the Center for Development of the Automotive Industry of Mexico (*Centro de Desarrollo de la Industria Automotriz en México*, CeDIAM) (Hernández Escoba and Vera Zenteno, 2012).

Competing in the global marketplace

The continuing success of Volkswagen's operations in Puebla-Tlaxcala and recent "big wins", like the construction of the Audi plant, are a testament to the region's strength as a major manufacturing centre in Mexico and a sign that major companies view the region as a good place for business. Yet such wins also reflect a largely deal-driven approach to economic development policy in which the numerous actors fail to think or act regionally. They may also contribute to a sense of complacency that the regional economy is performing relatively well, when a number of underlying factors require further attention. The future success of Puebla-Tlaxcala will likely hinge on its ability to compete globally – and not simply against other metropolitan areas in Mexico. The region will increasingly need to rely on the ability of firms to innovate and bring new ideas and products to the market, which, as in other high-growth regions around the world, will be driven by the educational attainments and training of the workforce. It will also be critical to continue efforts to improve the business environment within the region. Progress has been made, yet at a slower rate than elsewhere in Mexico.

Thinking, and acting, regionally

Deal-driven, jurisdiction-bound economic development

In Puebla-Tlaxcala, economic development policies and activities are largely jurisdiction-bound and deal-driven, a sizeable barrier to economic growth in a cross-border region. The state economies of Puebla and Tlaxcala are inextricably linked to the Puebla-Tlaxcala metropolitan territory, anchored by the municipality of Puebla, by far the largest city in the region and responsible for a lion's share of the metropolitan zone's GDP. While some government and university leaders recognise the value of regional partnerships and growth, most state and municipal leaders in Puebla-Tlaxcala fail to think or act like it is one region. To the extent that there are local and state efforts in economic development, there is very little, if any, co-ordination or co-operation among communities within the region on matters of common interest.[6] Instead, as is the case in cross-border regions across the globe, public authorities from the two states tend to see each other as competitors, rather than partners, in development – even when there is agreement that both the benefits and costs of major investment decisions will be deeply felt by the populations and economies of both states. According to officials in

Puebla-Tlaxcala interviewed for this report, deals drive policies more than policies drive deals. In field interviews, state and municipal authorities described investment decisions as being based on the immediate situation, without regard to a long-term strategic vision.[7] This is evident in land-use and water resources management, as will be discussed in Chapter 3, as well as economic development.

The recent bid for the Audi plant, which pitted the state of Puebla, the ultimate victor, against Tlaxcala and other states, is a telling example. State economic development officials in Puebla interviewed for this report stated that the details of Audi's development plans would not be shared with their counterparts in Tlaxcala.[8] Further, there is little evidence that communities and educational institutions have been fully engaged in supporting the long-term success of the investment. For example, while many private universities have ongoing working partnerships within the automobile cluster, the state government has thus far only established a formal partnership with BUAP with respect to Audi.

While competition for economic development opportunities is common among neighbouring jurisdictions, the fully leveraged value of such an investment may best be realised at the regional scale, once the investment decision is formalised, through joint, systemic efforts to optimise collective resources and effectively plan for necessary infrastructure. For example, the natural movement of goods of services within an industry cluster is independent of municipal and state jurisdictions. But such movements can be impeded by jurisdictional parochialism, leading to adverse consequences to local businesses and to local economies. Without such co-ordination, the region may miss opportunities, or fail to optimise the opportunities they do seize, which over the long term can impede economic growth. Moreover, as we will see in subsequent chapters, this lack of policy co-ordination between states and municipalities extends to other policy domains, such as urban planning and development, housing and public services.

A key challenge to the pursuit of co-ordinated regional economic development in Puebla-Tlaxcala is that the regional scale lacks policy relevance. Competing federal and state definitions for the Puebla-Tlaxcala region are one indication of the difficulty in defining a jurisdiction that is both functionally meaningful and policy relevant. The definition of metropolitan zones is relatively recent in Mexico and – in the case of Puebla more so than Tlaxcala – has not yet been fully harmonised with other regional definitions or, by extension, integrated into the various policy documents or political programmes of sub-national authorities as a policy making unit.[9] Prior to the introduction of the federally defined metropolitan zones in 2005, the state of Puebla, in its 2001 Economic Development Law (*Ley de Fomento Económico Para el Estado Libre y Soberano de Puebla*), grouped its 217 municipalities into 7 economic regions based on "homogeneous geographic conditions" (Article 108). The city of Puebla and surrounding municipalities are part of the Angélopolis region, composed of 33 municipalities exclusively within the state of Puebla.[10] The Angelópolis region is not aligned with the federal government's definition of the Puebla-Tlaxcala metropolitan zone – lacking, for obvious reasons, the cross-border characteristic of Puebla-Tlaxcala – nor does it correspond to any policy-making unit. The Regional Development Programme for Angelópolis 2011-2017 (State of Puebla, n.d.), prepared by the government at the outset of the current gubernatorial administration, makes no reference to the Puebla-Tlaxcala metropolitan zone. While the stated ambition of both federal and state designations is to facilitate policy making at a more functional scale,[11] they have had, to date, very little policy-making significance.

A regional economic development strategy for Puebla-Tlaxcala has thus far proven elusive. Although Mexican states are constitutionally equipped to play an independent policy role to foster economic development, little progress has been made in Puebla-Tlaxcala. The state of Puebla's regional development programme for the Angelópolis region is diagnostic, rather than strategic. Seven "strategies and priorities for regional development" are identified: the city of Puebla's position as an internationally competitive metropolis; territorial planning and development; urban-rural linkages; industrial development and knowledge; poverty and social exclusion; environmental sustainability and ecosystems; and global tourism potential. The programme is an assessment of trends rather than a strategic document designed to guide state policy. There is little indication of how the seven priorities could be interlinked, and no policy directions are put forward. This shortcoming has been cited in an independent evaluation of the State Development Plan (Centro de Estudios Espinosa Yglesias, 2011). The evaluation points to other shortcomings: lack of policy prioritisation and compliance schedule; absence of allocation of roles and responsibilities for actions; and sectoral programmes that are simply a sum of institutional programmes. The state of Puebla's corresponding, and more operationally oriented, State Development Plan 2011-2017 lacks a regional dimension.

The state of Tlaxcala, however, has clearly integrated the metropolitan zone – and metropolitan perspectives – into its State Development Plan 2011-2016 (*Plan Estatal de Desarrollo de Tlaxcala 2011-2016*). Tlaxcala's plan articulates clear objectives, strategies and areas for action, organised around five strategic orientations: *i)* participative democracy and rights; *ii)* development and sustainable growth; *iii)* inclusive social development; *iv)* integrated environmental protection and biodiversity; and *v)* balanced regional development. The plan makes explicit proposals for fostering the competitiveness and improving inter-state and inter-municipal co-ordination within the Puebla-Tlaxcala metropolitan zone. Strategies for the Puebla-Tlaxcala metropolitan zone are focused on increased co-operation as regards infrastructure, land use and urban development and public service delivery. In particular:

- Article 3.1.2: "Integration projects for the Puebla-Tlaxcala metropolitan zone" proposes to "promote metropolitan integration projects in view of consolidating the region as a centre of industrial and commercial development of the Central Valley and a gateway to southern and southeastern Mexico". The plan proposes to achieve this objective through interstate agreements to jointly develop infrastructure that would improve the connectivity of the region, with six specific proposed areas of action including the development of a feasibility study to develop a suburban train linking municipalities throughout the two states.
- Article 5.1.2: "Territorial and regional development for metropolitan zones" proposes to foster balanced and sustainable development of metropolitan zones through the creation of integrated metropolitan plans, the development of an efficient metropolitan public transport system for both freight and passengers, and agreements between the states of Puebla and Tlaxcala to investigate the potential for inter-state concessions for transport.

Regional competitiveness may also be hampered by the absence of a long-term strategic vision, compounded by policy discontinuities at municipal level due to three-year mayoral term limits. Term limits of six years for governors and three years for mayors, neither of which are renewable for the immediately subsequent term, put elected executives and their staff on short clocks, resulting in a series of short-term projects that

constrain what can be accomplished and measured. The resulting upheavals in professional staff contribute to programme and policy discontinuities. It is reasonable to expect an added sense of intra-regional competition since there is little time to build effective collaborations to design and implement complex, far-reaching initiatives with neighbouring areas for sustainable economic and workforce development investment.

Building a regional economic development strategy

Metropolitan areas that are hamstrung by jurisdictional problems and that cannot go the route of establishing a central authority must sometimes turn to less formal methods to bring about a more strategic vision. Formal economic development policy in the two-state Puebla-Tlaxcala region has thus far proven elusive. Less formal methods are designed to work within local constraints rather than challenge them immediately. To be successful, it will be critical to involve a range of stakeholders: as OECD (2013a) points out, the time frame in which economic development outcomes appear are more akin to business cycles (12-15 years) than to the electoral cycles (3-4 years), making a strong case for partnerships between public, private and institutional sectors in the formation of economic development policy.

In the case of Puebla-Tlaxcala, a few universities have already begun to take a more expansive view of the regional economy and, under the leadership of the municipality of Puebla, there are promising, albeit nascent, initiatives like the PCUM, which merit further consideration. This suggests that, if encouraged and sufficiently funded through independent sources, universities may be able to take a more visible role in supporting regional policy making by establishing a sustainable working collaboration among business, academia and labour and that can serve as a bridge across successive state and municipal administrations.

The establishment of a regional think tank could be one means of fostering a regional vision that would not be hamstrung by jurisdictional restrictions or electoral cycles. The primary purpose would be to establish a process for collaboration among business, government, educational, labour and regional stakeholders that results in a collective regional vision. The vision could then be followed by proposals for a coherent regional economic development strategy and planning for land use and transport, with concrete policies and programmes to address the economic, social and environmental challenges faced by the Puebla-Tlaxcala region. The think tank could employ its own researchers and staff or it could draw on the resources of area HEIs. In the latter case, resources linked to HEIs may be officially appointed to the centre by the employing HEI or could serve as fellows invited by the think tank who work with full-time staff employed by the centre whose contracts are not tied to the three- or six-year political terms.

Such an enterprise could be established as a co-operative venture by area HEIs, similar to the Research Triangle Institute, established as a scientific enterprise by the University of North Carolina, Duke University, North Carolina State University and Central North Carolina State University in 1958 (Box 2.4). Alternately, the centre could be established jointly by the states of Puebla and Tlaxcala and area municipalities, potentially with the support of area businesses and foundations and in co-operation with area universities. A publicly led regional think tank could provide an institutional framework for a sustained and systematic process for leveraging federal resources for regional economic development. Such an approach would have few, if any, historical antecedents in Mexico.

Box 2.4. **University-led regional economic development co-operative: The Research Triangle Institute in North Carolina (United States)**

In 1958, the Research Triangle Park (RTP) was created with the guidance and support of government, education and business in North Carolina. Located in the Piedmont region of North Carolina, the RTP is defined by four universities in the Triangle's three cities: North Carolina State University in Raleigh, the University of North Carolina at Chapel Hill, and Duke University and North Carolina Central University in Durham.

Part of this effort involved the creation of the Research Triangle Institute (RTI), an international research institution. RTI has grown from a handful of scientists in 1959 to a staff of more than 3 700 in over 75 countries. RTI is now one of the world's leading independent, non-profit research and development organisations.

RTI's activities mirror and support national priorities and policies as well as diverse commercial, industrial and academic endeavours. Key research areas include health and pharmaceuticals, education and training, surveys and statistics, advanced technology, international development, economic and social policy, energy and the environment, and laboratory and chemistry services.

RTI is not focused exclusively on the immediate region, although it devotes resources to issues facing the region and North Carolina. Its broader value is that it is the centrepiece of the region's education and knowledge creation cluster which is regarded as one of the United States' centres of research excellence.

Source: RTI International (n.d.), "RTI history", *www.rti.org/page.cfm/History*.

A less formal approach would be for an entity with substantial resources, such as the state or municipal government or a collection of businesses, to organise a group of universities and invite each to take the lead, with the support of the others, on one of several issues pertaining to economic development. This was accomplished in Pittsburgh when the Allegheny Conference on Community Development convened three universities to work together on a series of pressing issues affecting the economic vitality of the region (Box 2.5). The PCUM could evolve in this direction, by building on the strategic alliance between the municipality of Puebla and 12 public and private universities.

In either case, it is essential that the effort involves a range of public and private stakeholders, and that funding is equally diversified with resources from the two states, municipalities such as Puebla, area businesses and foundations. These funders could, in effect, serve as convening authorities and develop a framework for the work to be done. The participation – and, in some cases, leadership – of non-governmental actors will be important to the success of the initiative, given the policy discontinuities that result from the institutional turnover at each change of administration. Other states in Mexico have been successful in developing a more sustainable economic development strategy, due in large part to the leadership of industry representatives. Monterrey, for instance, has initiated a cluster-based economic development strategy, with funding from the state government, which has sustained several administrations. Each industry cluster is led by an industry expert, and industry members pay dues (Box 2.6).

Regardless of its form, a regional economic development body for Puebla-Tlaxcala could prioritise: *i)* bolstering regional data for evidence-based policy making; *ii)* exploring strategies for greater economic diversification; and *iii)* linking economic and urban development.

Box 2.5. **Regional economic development in Pittsburgh**

A collapse of the steel industry and other global economic changes created difficult challenges for the Pittsburgh region. In 1993, the Allegheny Conference on Community Development commissioned an analysis of the competitiveness of the Greater Pittsburgh region. This analysis was conducted by a committee of community leaders chaired by the President of Carnegie Mellon University. The resulting paper highlighted the region's economic resilience on the one hand, as well as its failure to compete successfully for economic growth with other regions, on the other hand. Specifically, it was found that "members of the community did not have a shared vision of what the region's economy could be. A crucial ingredient, consensus, was missing." The report proposed a nine-month, three-phase process to move from a disparate approach to a cohesive effort.

The result of that proposed process was a plan, prepared by the President of Carnegie Mellon University, entitled, *The Greater Pittsburgh Region: Working Together to Compete Globally*. More than 5 000 people and dozens of organisations and institutions in the region were involved in preparing the plan. The result was a blueprint that identified Pittsburgh's strengths and sectors in which it competed successfully, the challenges it faced and a recommendation to establish an ongoing working group, the Working Together Consortium. The resulting consortium, supported by the Allegheny Conference, became a collaborative effort of Carnegie Mellon University, Duquesne University and the University of Pittsburgh, and involved stakeholders from government, business, organised labour and other civic and community constituents. This consortium, launched in 1994, was initially tasked with reviewing progress, benchmarking the region with other regions and organising an annual conference on competitiveness.

The consortium monitored the progress of the community towards meeting the goals established in the 1994 report. It also fostered the creation of several working groups that collectively were charged with moving the broader agenda. The consortium operated until 2000, when the Pittsburgh region revisited its strategic vision and reorganised to advance a fresh agenda. That agenda was built on the accomplishments of the prior six years, but identified new challenges requiring a different institutional alignment.

Source: Working Together Consortium (1994), "The Pittsburgh Region: Working together to compete globally", available at: *http://old.geog.psu.edu/courses/geog420/Reading/accd_1994_mehrabian_report.pdf* (accessed 25 May 2013); Allegheny Conference on Community Development (2000), *Annual Report 2000*, Pittsburgh, PA, available at: *www.alleghenyconference.org/PDFs/AnnualReports/AnnualReport00.pdf* (accessed 25 May 2013); Austin, J. (2000), "Principles for partnership", *Leader to Leader*, No. 18, Fall.

Bolstering regional data for evidence-based policy making

While firms and institutions on their own may look to identify and exploit various niche markets, regions require collective action from representatives of government, business and labour, which is based on a clear understanding of the inner-workings of the regional economy. For example, national data sources provide a general understanding of the economic structure of the Puebla-Tlaxcala region. Yet regional data is not available to measure intra-regional trading activities between suppliers and OEMs, the extent to which regional suppliers conduct design and product engineering on their own, or the extent to which area manufacturers sell to customers in other parts of Mexico or overseas. These data are critical to understanding the vulnerabilities and opportunities for area suppliers.

Box 2.6. **Monterrey International City of Knowledge and the PIIT**

Since 2004, the state government in Nuevo León set as one of its main pillars for economic development the strategic project Monterrey International City of Knowledge, which is based on an alliance between government, HEIs and industry to promote growth through innovation. Some of the first initiatives undertaken were bringing the Universal Forum of Cultures to Monterrey and the creation of the Institute for Innovation and Technological Transfer (I2T2). In the beginning, the project followed some basic strategies, which included revising educational contents and methods, the incorporation of technology specialists for industry, increasing the number of researchers and public research centres, promoting business incubators and strengthening the city's infrastructure. To make the alliance stronger, several clusters were initiated in sectors including automobile, IT, medical services, life sciences, agro, nanotech and biotech, accompanied by centres for innovation and intellectual capital by sector. For the creation of new enterprises, the government launched the programme INVITE in 2005 to help researchers and local entrepreneurs license and register their knowledge while promoting the creation of new knowledge-based firms. Additionally, the I2T2 started two funds with seed money and resources from private investors to help firm start-ups as well as high-growth SMEs.

In order to further enhance the RIS (predominantly centred around its main city Monterrey), the state invested in the Research and Innovation Technology Park (*Parque de Investigación e Innovación Tecnológica*, PIIT). The objective of the park is to strengthen innovation endeavours and technological developments while facilitating technology transfers to the private sector. The park hosts HEIs and specialised business incubators as well as public and private research centres. For this purpose, the state government invested USD 90 million, providing land and other needed infrastructure, reserving the majority of the space for firms and knowledge generators.

Source: OECD (2009), *OECD Reviews of Regional Innovation: 15 Mexican States*, OECD Publishing, *http://dx.doi.org/10.1787/9789264060135-en*.

Regional authorities would also do well to bolster existing data collection efforts in order to understand the vulnerabilities and opportunities for area suppliers. Comprehensive and timely labour market information for the Puebla-Tlaxcala region will serve both jobseekers and employers. An effective labour market information system helps workers to identify new opportunities, while high-quality schools, a strong higher education system and training resources that are aligned with international industry competency standards provide the means for workers to take advantage of these opportunities. An effective labor market information system will also help employers to communicate their needs more effectively and identify weak links in the region. They can then make informed decisions about their own training initiatives and about the sources of workers in the future. State and municipal authorities should determine whether the labour market data collected by the federal government are adequate for their needs, and if they are not, determine how they might complement the offer. This may result in state and municipal governments taking a more active role in collecting and distributing their own data. As discussed above, this task could be assigned to a regional think tank.

It will also be critical for regional leaders to better track the students of area universities to understand where they come from as well as where they go upon completion of their studies. Given the relatively low educational performance at primary and secondary levels within the state of Puebla, from where are regional universities drawing their students? What comes of them once they complete their studies? While each institution tracks the information, there is no collective understanding of these basic trends as a region. Metropolitan regions across the OECD are beginning to appreciate the value of universities as exporters by supporting the development of student housing,

student-oriented retail and other services to further enhance the attractiveness of the area. By the same token, an influx of students to an area can stimulate new growth if the region is able to retain that talent after graduation. Several universities in the Puebla-Tlaxcala region have recognised the entrepreneurial value of its graduates by creating business incubators to facilitate new business growth. These incubators can be enhanced further through the development of common platforms, such as advanced computing centers and wet labs that require the combined support of universities and possibly the government. Yet in all of these cases, the decision makers and opinion leaders lack the data and data systems to allow them to understand the fundamental workings of the education and knowledge creation cluster. As will be developed in subsequent chapters, improving data collection and analysis is a priority for land use and environmental trends as well. There may be scope to expand the role of the *Colegio de Puebla*, which currently manages an urban observatory, perhaps in partnership with IMPLAN, to extend the geographic and thematic scope of the existing data.

To begin to assemble existing data from various sources (government, universities, firms and foundations), Puebla-Tlaxcala might look to the recent experience of Cape Town (South Africa). As part of its emerging regional development activities, Cape Town has established the Economic Data Network, an initiative assembling all stakeholders involved in the production, analysis and application of economic data in the region. The network was established to overcome the current state of overlapping data and intelligence processes, fragmented among different levels and branches of government, large multinational companies, universities and non-governmental organisations (NGOs). The aim of the network is to share information and, where possible, integrate and align data processes as a means to improve economic policy, planning and implementation (OECD, 2013a).

Exploring strategies for greater economic diversification

An effective economic development strategy for the region could build on existing strengths with the introduction of complementary industries to foster growth and ensure the region's resiliency in the face of adverse economic conditions. Thus, it may be useful as part of the development of a long-term strategic vision for the region to explore opportunities for greater economic diversification. Puebla-Tlaxcala's specialisation in the automotive industry has conferred great economic and quality of life benefits, but, as has been discussed, can also introduce economic vulnerabilities.

For instance, efforts to attract foreign direct investment (FDI) as well as to attract and grow Mexican-based businesses in the region could seek to broaden the mix of industries in the region to others that also rely on many of the same types of suppliers as those for the automobile industry. The automotive OEMs employ thousands of workers – Volkswagen alone employs approximately 16 000 – rendering the region somewhat dependent on the success of a handful of firms. While Volkswagen and other carmakers have proven to be resilient as innovative leaders in the industry, they will need to continue to innovate to remain competitive. The health of these firms affects both their own workers as well as those of hundreds of regional suppliers linked solely to the automotive industry and thus the most vulnerable to adverse changes in the industry. Auto supply firms that have retained the technical capacity to develop new products and sell to different industry markets are much less dependent on the auto industry and can take advantage of changing circumstances.

Linking economic and urban development

More and more cities, like Manchester, are combining economic development and urban redevelopment initiatives (see OECD, 2013a). Lyon (France) has also considered the links between economic competitiveness and land use and spatial management, with a clear intention to overcome large accessibility discrepancies at the metropolitan level. In Puebla-Tlaxcala, economic and urban development initiatives continue to occur in isolation of each other, and there is a need to conceive the two as strategic counterparts, linking economic and urban development planning. As a first step to bridging economic and urban development strategies in Puebla-Tlaxcala, it will be important for federal and state authorities to agree on a single definition of the region. This would be a clear first step toward building a shared vision for the region as well as the potential for effective regional policy making. The experience of the cross-border Amsterdam Metropolitan Area (AMA), which has been successful in fostering co-operation on economic and urban development among multiple municipal and provincial authorities, may be pertinent for Puebla-Tlaxcala (Box 2.7). Barcelona's 22@ Plan, which links urban and economic redevelopment through the creation of high- and medium-intensity knowledge centres, could also be of interest (Box 2.8).

Box 2.7. **Cross-border, integrated urban and economic development: The Amsterdam Metropolitan Area (AMA)**

Amsterdam created the Amsterdam Metropolitan Area (AMA), a voluntary regional partnership which now acts as a vehicle for the collaboration of 27 local authorities and 2 provinces – and the promotion of the whole regional economy. The AMA is gradually combining the challenge of economic integration with cross-border urban management. AMA governance is informally organised, based upon a mutual understanding of the necessity of increased co-operation between the regional authorities involved. Its main tasks include: the development of a common vision on spatial and economic development; co-ordination of public decision making on land-use planning and infrastructure development; and the creation of a consensus voice to speak to national government over investment issues.

The initiative to co-operate on economic matters was boosted by the creation, in 2011, of the Amsterdam Economic Board (AEB), which provides representation for local and regional governments, universities and businesses. As a private sector-led group of leaders, the role of AEB is to provide holistic strategies for Amsterdam's future economic development. The board seeks to overcome the lack of shared vision and co-operation between stakeholders, and the dearth of strategic leadership.

Source: OECD (2013), *Delivering Local Development: New Growth and Investment Strategies*, OECD Publishing, *www.oecd.org/cfe/leed/NGIS_final2.pdf*.

Economic incentives, special economic zones: Proceed with caution

As in many emerging and developed economies across the globe, the state of Puebla has also made the legal provisions for the creation of designated economic development areas, coupled with incentives to attract new firms to the state. Approved by the State Congress in 2001, the State's Economic Development Law (*Ley de Fomento Económico Para el Estado Libre y Soberano de Puebla*) affords state authorities the power to designate economic development areas in view of attracting investment and stimulating economic development (Article 8). The law identifies a host of incentives that could be offered to attract new firms to the state, including tax benefits, greater flexibility in tax collection, priority for state training, procurement and support programmes, reduced costs for the acquisition of public land, technical assistance and potential links to investors

(Article 11). While there are currently no plans to create a special economic zone within Puebla-Tlaxcala, OECD experience nevertheless suggests that the opportunity presented by the State's Economic Development Law should be handled with great caution (Box 2.9).

Box 2.8. **Barcelona's 22@ Plan**

One recent highly successful urban policy in Europe is Barcelona's 22@ Plan, which proposes a new urban zone formed around knowledge economy bases. A modification of the General Metropolitan Plan was defined using economic concepts. The new zone was coded with the new name, "22@", that has been used to transform the previous industrial land of Poble Nou in the east of Barcelona. New economic activities play a central role in the new urban strategy. The main characteristics of the new system are:

- concentration of high and medium-high knowledge-intensive activities, with high levels of employment density, and high intensity of use of information and communication technologies (ICT);
- limitation of industrial activities (i.e. heavily polluting, dangerous or other nuisance-inducing industries, or those which are incompatible with housing);
- permission for housing development under specific circumstances;
- creation of a new system of infrastructure and facilities in order to promote synergies between the spheres of production, research and training;
- promotion of cluster development.

Source: Ajuntament de Barcelona (2011), *22@Barcelona. 10 Years of Urban Renewal/10 anys de renovació urbana*, Ajuntament de Barcelona; Trullén, J. (2011), "El proyecto Barcelona, Ciudad del Conocimiento y el 22@Barcelona", *Revista Económia*, Madrid.

Raising the level of low-skilled workers

Poor educational outcomes, high rates of informality

As reported in Chapter 1, low-skilled workers make up a disproportionate share of Puebla-Tlaxcala's workforce relative to other Mexican metropolitan zones and may represent a bottleneck to future growth. Among Mexico's largest metropolitan zones, Puebla-Tlaxcala has the fourth lowest performance in terms of the share of population with low skills, with 38% of its population without having completed lower secondary education, compared to an average of 33% among metropolitan zones. Puebla-Tlaxcala ranks 6th from the bottom as regards average years of schooling, with a level of 8.4 years compared to the average of 9 for all large Mexican metropolitan zones. Moreover, despite improvements in recent years, Puebla's gains fall considerably short of the increase for Mexico as a whole. The legacy of poor educational performance can act as a drag on overall workforce quality. Indeed, skill levels matter. A good deal of cross-country evidence suggests that a large share of unskilled or low-skilled workers can act as a drag on the economy and that, overall, reducing the proportion of workers in a region with very low skills may matter more for regional growth than increasing the share with very high skill levels. Recent reforms will result in compulsory upper secondary education, to be fully implemented by 2021-22.

Box 2.9. **Special economic zones: Proceed with caution**

Special economic zones (SEZ) are increasingly common in emerging markets as well as in developed countries. They may take various forms,[1] but are generally understood as territorially bounded areas within a jurisdiction in which the regulatory, tax and other institutional conditions are more favourable than in the wider economy. In practice, SEZs often simply reflect the authorities' judgment that the market is not delivering the outcomes they desire.

Despite their popularity, these types of SEZs have had mixed success. One of the most significant challenges has been that while some zones have managed to generate investment and job creation, they have nevertheless remained enclaves with few linkages to the larger economy. Among the lessons from cross-country experience:

- Improving the overall investment climate can help to promote growth. While creating zones can be an intermediate step in this process, they tend to have limited success when pursued as an alternative to needed fiscal, regulatory and institutional reforms. Moreover, by creating a safe-haven for investors, zones can reduce the pressure for economy-wide reforms to improve the contracting environment.
- SEZs have, by definition, a limited impact spatially and, in most cases, sectorally. They are but one instrument among many for promoting export development and growth.
- Zones work best in countries, and regions, with good infrastructure and financial markets, where downward linkages can be developed to domestic economic activity. Investment, employment and exports in SEZs tend to be strongly and positively correlated with a country's overall score on the World Economic Forum's Global Competitiveness Index.
- SEZs can distort domestic competition and foster segmentation in domestic labour markets, thereby undermining the competitiveness of domestic firms near to, but outside, the zone. Finally, successful zones could aggravate inter-regional disparities. Where incentives and privileges used to attract firms to locate in places where their activities would otherwise make little commercial sense, the result is likely to be an endless flow of support to keep them from exiting (Farole, 2011a).

Successful SEZ initiatives tend to share several common features:

- An extension of the country's/region's comparative advantages, rather than an attempt to force new sectors to emerge.
- A high degree of policy consistency, across both time and policy domains, with respect to the framework of rules for zones and the implementation of zone programmes.
- Implemented as part of a wider economic and workforce development strategy, with complementary, economy-wide policies in areas like skills development, knowledge-sharing and cluster policy, to ensure that zones develop positive linkages to the domestic economy. The strategy should also contribute to the co-ordination of infrastructure development inside and outside the zone, as well as investments in skills development and other complementary policies that may transcend the zone and yet be critical to zone success.
- Quality infrastructure and a good business environment. Successful zones do not always require highly geared fiscal incentives.
- Involvement of the private sector in zone creation and operation.

Box 2.9. **Special economic zones: Proceed with caution** (*cont.*)

The impact of zone activities on the rest of the economy is crucial. If zones are to contribute over the long term to strengthening the national/regional economy as a whole, then they must be designed so as to engage deeply with the non-zone economy around them rather than developing as enclaves cut off from the rest of the country. In addition, it is important that infrastructure development in zones be closely co-ordinated with regional and national infrastructure development. Overall, conditions governing zones should favour their integration with the domestic economy, including the transfer of technology and know-how, investment by domestic firms into the zones, forward and backward linkages and free movement of labour and entrepreneurs between the zone and the surrounding economy (Farole, 2011b).

Particular attention should be paid to the incentives offered to zone residents. OECD (2009b) suggests a number of general conditions that should be borne in mind when designing incentive packages for special zones. First, all tax and non-tax incentive policies to promote investment should be co-ordinated with one another and with other policies aimed at improving the investment climate, including macroeconomic and trade policies, and governance reforms. Multi-level co-ordination is also important, to avoid the "stacking" of incentives offered by different levels of government. SEZ incentives should thus be set in an overall strategy developed by the ministry or ministries responsible, ideally under an overall expenditure ceiling that accounts for both direct expenditure and tax expenditures. Incentive policies should be transparent with respect to goals and objectives, procedures, criteria and estimated costs. They should, to the extent possible, be rules-based, with minimal scope for bureaucratic discretion. Some capacity building may be required to ensure that they can be adequately administered by programme administrators. Finally, when designing incentive structures, policy makers should always look outside the zone. Understanding the potential unintended consequences of zones for non-resident firms and workers is critical. Excessive spatial distortions can otherwise impose large costs on the domestic economy, as non-residents find it difficult to compete with zone-based firms for finance, labour, material inputs and customers.

Note: 1. Free trade zones (FTZs), or commercial free zones, are fenced-in, duty-free areas, offering warehousing, storage and distribution facilities for trade, trans-shipment, and re-export operations. Export processing zones (EPZs) are industrial estates aimed primarily at attracting export-oriented investments. They usually cover a wide array of manufacturing industries. Private zones/single factory processing zones provide incentives to individual enterprises regardless of location. Special economic zones (SEZs) are larger estates and could be considered cities on their own. They usually cover all industrial and service sectors and target both foreign and domestic markets. They provide an array of incentives ranging from tax incentives to regulatory incentives. In addition, they permit on-site residence. Specialised zones (SZs) target specific sectors or economic activities (i.e. science/technology parks, petrochemical zones, logistics parks or airport-based zones).

Source: Adapted from OECD (forthcoming), *OECD Territorial Reviews: Ukraine 2013*, OECD Publishing.

There may be a link between low educational attainment rates and the large share of low-skilled employment opportunities within the region. The availability of low-skilled employment opportunities, in addition to the prevalence of informal work, does little to encourage students to remain in school, just as numerous low-skilled jobs exist because education attainment rates are low. This creates a vicious circle that can be difficult to break. Moreover, evidence suggests that the region's workers may be at a relative disadvantage for high-skilled jobs to workers in and from other metropolitan areas. Given the region's aspirations as a global manufacturing centre, this disadvantage grows larger when one considers that educational attainment levels in Mexico are relatively low compared to other OECD countries. This may mean that some high-skilled opportunities in Puebla-Tlaxcala may go to people who migrate to the region from other parts of Mexico, a hypothesis that requires further investigation. Credentialing workers based on assessments of what they know and can do may alleviate some of the economic "drag."

This is especially important in qualifying workers for formal employment who gained their knowledge and experience in the informal economy. Even so, these assessments cannot correct for basic educational deficits. Indeed, some university leaders interviewed for this review reported that deficiencies among first-year university students are a problem, and that considerable resources are invested to bridge these gaps. These include remedial coursework in mathematics, Spanish and critical thinking skills.

There are mixed reports of the impact of the high share of low-skilled workers on regional firms. Although some of the region's large manufacturing firms report that there are not enough high-skilled prospects graduating from private HEIs and are expanding their reach among public institutions, they also indicate that the prevalence of low skills is not necessarily viewed as a major constraint on business operations. One explanation could be that businesses in Puebla-Tlaxcala seem to have adapted to the low levels of skills in the regional workforce and may be related to the high rate of training in manufacturing firms in Puebla (76%), compared to the national average (63%) – which is well above the rate of training offered by firms overall in Puebla (26%) and nationally (51%) (World Bank, 2010). Volkswagen, for instance, requires all new hires to participate in on-the-job training at the outset and throughout their career.

Another possible explanation is that smaller firms are more affected by skill deficiencies – and less equipped to address them. Audi's entry into the auto manufacturing landscape in Puebla is expected to generate significant spillovers and increase overall regional employment within the supply chain. The region will face opportunities and potential challenges as local firms prepare to compete for Audi's business. Given the higher wages, job security, employee benefits, training opportunities and overall superior working conditions within large multinationals, it is likely that major employers will have the resources to continue to attract a workforce that meets their expectations. It is not clear, however, whether local suppliers will also be able to attract sufficient numbers of qualified workers. Businesses such as Volkswagen, Audi and Mexican Petroleum Company (*Petróleos Mexicanos*, PEMEX) in San Martin Texmelucan draw much of the attention, yet employment in the metropolitan region is disproportionately in smaller firms. While the presence of multinationals and competitive domestic firms has prompted local private universities to offer training services, data on higher secondary educational attainments in the region and chronically low educational attainment in the region raise concerns that the overall pool of qualified workers may become stretched. The strengths and limitations of the regional workforce system will be most evident as existing local suppliers and new suppliers relocating to the region work to adapt to this demand. Thus, one challenge for the region will be to leverage the opportunity presented by Audi to fully develop an integrated local supply chain that has the capacity to supply other customers in the automobile and related sectors.

In addition, informality may constrain labour productivity and pose significant challenges to economic growth (Brandt, 2011). Estimates of the percentage of active workers or level of production in the informal sector in Puebla vary from 30-70%, depending on the methodology and assumptions regarding informal employment. Regardless of how informality is measured, informality rates in the state of Puebla appear to be among the top five in the country. The high incidence of informality in Puebla relative to other states is not surprising, given the large share of micro-enterprises, share of the population with low skills and the high cost of starting a business, relative to other states. Recent research on the determinants of informality in Mexican states has found that the share of high school graduates, the share of micro-enterprises and the cost of starting a business[12] are all significant factors associated with informality levels

(Dougherty and Escobar, 2013). The consequences include forgone revenues to government for essential services and limitations on economic growth linked to business scale.

Despite clear frameworks, workforce policy could be improved

A combination of HEIs and independent vocational trainers supply a diverse offer of workforce training to the regional workforce. While the vast majority of HEIs are private, highly competitive and either governed or managed locally, the public workforce development system is largely centralised, governed by federal law and delivered by federal and state entities. Both public and private institutions compete directly in the regional market. Below the programme level, HEIs work closely with businesses to provide incumbent worker training – efforts that are both a fulfillment of their educational missions as well as a response to perceived market opportunities.

The Mexican workforce benefits from a well-articulated legal framework for workforce development and training. Article 123 of Mexico's Constitution provides that "companies, whatever their activities may be, are obliged to provide their employees with training and skills development for work." Articles 153A and B of the Federal Labour Law (*Ley Federal del Trabajo*), last updated in 2006, grant every worker the right to workforce training, either on-the-job or through a third-party institution approved by the Ministry of Labour and Social Welfare (*Secretaría del Trabajo y Previsión Social*, STPS). At state level, Puebla's Economic Development Law reinforces workers' "right and obligation" to workforce training and skills development "to allow workers to raise their productivity and quality of life" (Article 24). The state law also includes provisions for training, including on-the-job training, to be offered to workers in both formal and informal employment (Article 25).

Recent decades have seen significant reforms to Mexico's training and vocational system at national and state levels. The Technical Education and Training Modernisation Project (*Programa de Modernización de la Educación Técnica y la Capacitación*, PMETYC), implemented in partnership between the STPS, the Secretariat of Public Education (*Secretaría de Educación Pública*, SEP) and the World Bank, led to the establishment of a labour competence standardisation and certification system. The National Council for Standardisation and Certification of Labour Competence (*Consejo Nacional de Normalización y Certificación de Competencias Laborales*, CONOCER) was established in 1994 as the authority to set and certify occupational competencies and standards (Box 2.10). Efforts to modernise training programmes were co-ordinated by the SEP through the Council of the National Technological System (*Consejo Nacional del Sistema Nacional de Educación Técnica*, COSNET), the National College of Professional Technical Education (*Colegio de Educación Profesional Técnica del Estado de Puebla*, CONALEP) and two technological directorates (de Anda, 2009). In the past decade, additional reforms have been undertaken in view of better aligning occupational standards and credentials with public and private employers' expectations. In addition, efforts have been initiated to better streamline and co-ordinate an array of federal and state operated technical vocational and education systems (OECD/CERI, 2009). No assessment of the impact of these most recent reforms has been conducted thus far.

Education and training through the upper secondary level (ISCED 3) is generally structured top-down from the national government to the states. Mexico's technical and vocational education system (TVET) is guided by national policy. Some programmes are delivered directly by the national government, while others are delivered by the states within a national framework (Box 2.11). Municipal governments do not have a direct role

in labour market exchanges, training, or worker assessment and credentials. These activities are either conducted directly by the national or state government and are governed by Mexican law. The SEP issues formal federal education certificates at the end of each level of education, from primary school through higher education. Diplomas, or *constancias*, may also be awarded for certain coursework and other non-formal education. These may be recognised by the SEP as equivalent to qualifications established by the national education system (de Anda, 2009).

Box 2.10. **CONOCER**

CONOCER is responsible for designing, organising and operating a standardised system of labour competencies. It generates technical standards of labor competence (NTCL) and co-ordinates a labour competency certification system. This system confers formal recognition of the competencies that individuals acquire through their work or through training. The registry now includes 298 competency standards that have been developed through 130 sector committees of business, government, labour and education (*www.conocer.gob.mx*). In addition, four institutions in the Puebla FUA are designated by CONOCER as assessment and certification centres known as occupancy competency standardisation and certification councils. These councils certify labour competencies and accredit assessment centres and independent assessors. Assessments are conducted of individuals in order to determine whether that individual is qualified to carry out a particular labour function. This is especially interesting in light of the very large number of workers employed informally and who do not have either formal work histories or industry credentials to qualify them for work in the formal economy.

Source: CONOCER website (n.d.), *www.conocer.gob.mx* (accessed 22 April 2013).

Box 2.11. **The technical and vocational education system in Mexico**

The technical and vocational education system (TVET) operates within the ISCED 2 level and the ISCED 3 level. Workforce training (*formación para el trabajo*) courses are at the ISCED 2 level. Students may enter the labour market after completing the programme.

Those completing lower secondary education may choose between two TVET options at the ISCED 3 level, both of which offer a vocational degree as well as a baccalaureate, the latter being required for entry into tertiary education.

The title "technical-professional baccalaureate" (*professional técnico-bachiller*) is offered by various systems, although CONALEP, a decentralised unit of the federal government, accounts for two-thirds of all students in this category nationally. The state-operated CECyTE (State Centers for Scientific and Technological Studies, *Colegio de Estudios Científicos y Tecnológicos del Estado de México*) also offers the technical-professional baccalaureate degree. The CECyTE is organised within the federal Directorate General for Industrial Technological Education (*Dirección General de Educación Tecnológica Industrial*, DGETI). Thirty-five percent of the programme coursework is in general subjects, with the balance in vocational subjects. Students are required to complete 360 hours of training.

Technological baccalaureates (*bachillerato tecnológico*) and the designation professional technician (*técnico professional*) are offered through various systems. The industrial sector programmes are operated directly by the federal government (CETIS, CBTIS), by the state with federal participation (CECyTE) and by the Center for Technical Industrial Education (*Centro de Enseñanza Técnica Industrial*, CETI) (Kis and Hoeckel, 2009).

Source: Kis, V. and K. Hoeckel (2009), *OECD Reviews of Vocational Education and Training: A Learning for Jobs Review of Mexico 2009*, OECD Reviews of Vocational Education and Training, OECD Publishing, *http://dx.doi/org/10.1787/9789264168688-en*.

Labour market exchanges are co-ordinated through the National Employment Service (*Sistema Nacional de Empleo* SNE), the Temporary Employment Programme (*Programa*

de Empleo Temporal, PET) and the Employment Support Programme (*Programa de Asistencia a Empleados*, PAE). The PET provides temporary support to people and businesses affected adversely by economic conditions or natural disasters. The SNE, by linking services for employment, actively works to place job seekers with employers. The PAE provides training scholarships, some formal employment, assistance in international mobility and support for self-employment (Sloan Center on Aging and Work, 2011). Two nationally sponsored websites support labour market exchanges: the Job Portal[13] links job seekers to employers in the private sector and in government; the Mexican Labour Observatory (*Observatorio Laboral Mexicano*, OLA) is a free job information and vocational guidance service[14] (Sloan Center on Aging and Work, 2011).

While Mexico's top-down system of vocational education and labour market support systems have helped align education and training and labour market exchanges with a common set of occupational standards, the extent to which this system meets local labour force needs is unclear. While this system may make it easier for workers and employers to value a particular degree or certificate, it is difficult to see how the specific needs of employers within a given labour market can be reconciled with the general offer supplied by the TVET system. Local conditions, including labour market resources, are critically important to the success of a business venture. However, local authorities, especially at municipal level, have no formal authority regarding the design, delivery or quality resources linked to the workforce. Many successful workforce systems, such as those in Canada, Denmark, Germany, the United Kingdom and the United States, involve elements of local control and participation by area businesses, educational and training institutions, government and labour representation. Further, businesses could also contribute more by providing equipment or quality apprenticeships.

Further, contract-training programmes do not constitute a comprehensive workforce policy. While workforce training is both a "right and an obligation" per federal and state laws, employers are free to decide the nature of the training, and compliance with the law appears to vary considerably depending on the size of the firm and the firm's view of the role of training in its operations. State and local governments give little, if any, formal, systemic regional attention to closing the skills and educational gaps of working adults, especially those with several years of experience and who are not being trained through employer-sponsored programmes. There is little evidence that the states and the communities within the region have a direct hand in either guiding resources or policies towards this critical human resources challenge. It is possible that federal policy may have a crowding-out effect since the key programmes in workforce development and innovation, for example, draw from federal resources. At the same time, the composition of the regional labour force and the needs of the regional economy should be critical inputs to workforce policy.

Certification for skills acquired on the job

Consideration for education and training opportunities for workers in both the formal and informal sectors will be an important element of upskilling the regional workforce. This is especially true for Puebla-Tlaxcala in light of the region's large share of low-skilled workers, informal labour and inequality, as OECD (2008) has found that those with a low level of education, women or those outside prime working age have a greater likelihood of informal employment. While tackling informality will require a comprehensive approach to reducing the costs and increasing the benefits of formal work, as well as improving enforcement as regards tax administration and labour inspection, one important area of intervention will be improving education and skills for all segments

of the population, especially lower-income groups. Although improving education and skills attainment for lower-income groups provides no guarantee that those people will move from informal to formal employment and achieve greater economic success, such improvements collectively constitute a necessary condition for greater success. Recent studies have shown that while improving education and training may not reduce informality, it can reduce the negative impacts of informality (Dougherty and Escobar, 2013).

Puebla-Tlaxcala could also build on CONOCER's skills certification for workers who have learned on the job by tailoring additional training support to target regional needs. Mexico has made great strides in the development of an interlocking system of occupational skills standards and training and, through the use of assessments based on CONOCER skills standards, has also developed the means by which individual skills obtained through non-formal means can be recognised. In light of the large number of adults who are able to work but lack the formal educational and occupational credentials to obtain good jobs in the formal economy, CONOCER's skills certifications are an important bridge to greater individual economic success. Some schools and technical institutes in the region, such as Puebla's public technical and professional college CONALEP, the *Universidad Tecnológica de Puebla* and the Centre for Workforce Training (*Centro de Formación para el Trabajo*), are accredited by CONOCER to certify skills and competencies. The state of Tlaxcala, for instance, has implemented job training programmes through the Institute for Workforce Training for the State of Tlaxcala (*Instituto de Capacitación para el Trabajo del Estado de Tlaxcala*, ICATLAX). ICATLAX operates nine centres, one of which is located in San Pablo del Monte. Since the workforce training system operated by the national government in co-operation with the state governments is aligned with these skills standards, there may be opportunities to develop programmes for workers to fill in knowledge and skills gaps. This will be especially critical for the Puebla-Tlaxcala region, given the low levels of educational attainments relative to rest of the country, where performance is already relatively low by OECD standards. Attention could be focused on those who are already in the extant labour force through remedial educational programmes and job-related training, since the opportunity costs created by formal classroom programmes can be too high for many workers (see OECD, 2013b). Indeed, one of the obstacles to the skills certification process cited by officials interviewed for this review is that the process may viewed as too great a burden for some workers.

Workforce training support, as well as common marketing and branding initiatives, could be broadened to workers and businesses in the informal economy. Kenya's experience with the Jua Kali (informal) sector may be of interest (see Singh, 2000; Barasa and Kaabwe, 2001). Core to the Jua Kali approach has been to identify and build a formalised apprenticeship training around common skills groupings. In this way, workers who are learning-by-doing in the workplace can advance their knowledge along a more systematic progression that may include skills that they might not otherwise learn. In addition, remedial education programmes could be organised and delivered within a setting that combines several nearby workplaces. Workers and employers could receive immediate returns from improved worker productivity. At the same time, businesses that are able to diversify their customer base by improving the range and quality of services are better positioned to meet the challenges of changing economic conditions and may be better positioned to formalise in the future. In addition to organising training programmes, firms could be supported through common marketing and branding (such as artisans galleries and certificates of authenticity) and through technical assistance aimed

at improving performance. For example, observational and analytical methods used in design can be employed to develop creative strategies for improving even basic human-machine interfaces or for helping micro-businesses develop new markets for their services. Puebla's recent efforts to position itself as a "design capital" can be used as a resource for growing other businesses.

While remedial education and training programmes will need to be tailored to the Puebla-Tlaxcala region, the Mexican government's initiatives for citizens living abroad may be of interest. For instance, the Mexican consulates in Chicago and elsewhere in the United States have been instrumental in establishing *plazas comunitarias* as neighbourhood learning centres for Mexican citizens to improve reading and mathematics skills. Further, it will also be important to maintain a comprehensive system of occupational skills standards that keeps pace with changes in technology and business practices. There may be scope for regional universities and vocational training providers to assess the needs of regional firms and develop training assessments and programmes beyond those offered through CONOCER. There is already some work to this end in the region. It was reported during interviews conducted for this review that CONALEP, independently of firms, conducts a review of the occupational competencies in the region every two years to detect deficiencies and adapt training and certification at technical schools; there has been no independent validation of this practice to date. These strategies, coupled with other measures aimed to address the structural and economic barriers to entry and sustainability in the formal economy, may help to accelerate the shift of the regional and national economy towards greater formalisation.

Anchoring federal workforce training programmes to regional needs

To complement federal training programmes, state and municipal leaders in Puebla-Tlaxcala could build on existing regional strengths in workforce training to work toward establishing a comprehensive workforce development policy. In Mexico, many of the previously cited workforce development functions are either operated or funded and regulated by the federal government. However, gaps in the system are felt directly at the level where labour markets actually function. Municipal and state leadership, area employers, educational and training institutions, and working-age adults are most affected by conditions on the ground. State and municipal leaders could work to ensure the efficient and effective flow of information, resources and human talent within the area. Box 2.12 summarises a proposal for some of the core elements to be considered. This checklist applies to both the private and public sector workforces.[15] OECD (2013b) has recommended strategies for anticipating and addressing skill shortages in vocational education and training (VET) progammes in particular (Box 2.13).

Box 2.12. **Workforce development policy checklist**

- Current, reliable and relevant labour market information system, which should provide information as regards:
  - Current and expected job vacancies, including a description of the jobs available in the region, estimates of the number of vacancies by type of job and type of business, descriptions of the tasks to be performed and skills required, reliable projections of job openings over a two-year time span, and whether the number will be growing, shrinking or staying the same.
  - Composition of the regional workforce, such as age and gender of workers in the region, education level, skills level, employment experience by type of job and type of business.
  - Existence and performance of sources of labour market information, including whether information on the labour market is provided by a government ministry or agency, NGO, public advertisements, word of mouth or other sources, and the extent to which this information is reliable, relevant and accessible to employers and jobseekers.
- Effective labour market exchanges to facilitate the process of matching people with jobs, which should provide information as regards:
  - Existence and performance of informal labour market exchanges, which can occur through word-of-mouth, advisements, signs or public announcements.
  - Existence and performance of formal labour market exchanges, which can be operated by government agencies, NGOs, unions or privately operated job placement agencies, and may include job fairs, hiring halls and other facilities where employers and prospective workers may meet.
  - Existence and performance of labour market exchanges that perform skills assessments and provide training on how to find and qualify for a job.
- Current, reliable and relevant information pertaining to the quality of the educational system, including information as regards:
  - Overall educational abilities of youth and adults in the regional workforce.
  - Effectiveness of the education system (public and private), including how well the basic education system prepares youth for jobs offered in the region and how well adult and remedial education programmes prepare adults for jobs offered in the region.
- Current, reliable and relevant information pertaining to vocational and technical education training, including information as regards:
  - Existence and performance of VET programmes, which teach the skills needed to perform job-related tasks and the extent to which regional employers are satisfied with these programmes.
- Current, reliable and relevant information pertaining to support services to workers, including information as regards:
  - Existence and performance of support services to workers, which may include transport subsidies or other assistance to ensure that workers can access their job, housing or rental assistance, support in securing child care, or access to health care.
- Effective workforce policies, including the laws defining the rights and responsibilities of employers and workers, which may include:

Box 2.12. **Workforce development policy checklist** (*cont.*)

  - Rules governing workers' compensation, working conditions and working hours; gender equity and child labour; worker safety and compensation to workers injured on the job; rights of workers to organise and participate in unions.
  - Programmes with respect to vocational and technical education, labour market information and labour market exchanges.
  - Provision of incentives to hire, train, rehire or retrain workers.
- An effective workforce system, comprised of public and private entities that operate in the labour market information system, labour market exchanges, and vocational and technical education service, which should be evaluated on the basis of its effectiveness in:
  - Meeting the existing demand for workers.
  - Meeting the needs of workers and job seekers.

Source: Adapted from Institute for Work and the Economy (2010), unpublished.

Box. 2.13. **Anticipating and addressing skills shortages in VET programmes**

To assess the labour market demand for skills, Puebla may want to engage in formal consultations with local stakeholders (i.e. employers and unions) and conduct forecasts of long-term skills needs. Many OECD countries (e.g. Australia, Canada, Finland and Ireland) forecast employment trends by occupation within a five- to ten-year perspective (Neugart and Schömann, 2002) and use them to inform policy making, student choices and the public. Building the capacity to anticipate skills needs both regionally and by occupational sector is important to bridge the time lag between the creation of the programme, the first students enrolling and their entry into the labour market. Moreover, anticipating skills can also help the state to increase the coherency of VET programmes across institutions by identifying overlaps as well as shortages.

A further possibility could be to conduct a graduate destination survey to VET graduates at a fixed moment after graduation. This could enable the state to adjust provision and support the most successful programmes and institutions. Some OECD countries conduct graduate destination surveys (e.g. Flanders [Belgium], Ireland, the Netherlands and Scotland [United Kingdom]). Other countries with an individual register for many purposes (i.e. education, labour market, tax records, social benefits) use this dataset to track individuals along their educational and future careers. Other sources of information about graduates that could be considered to address skills mismatches include surveys, such as labour force or census (OECD, 2010).

In Portugal, in 2002, the Institute for Innovation in Training (Inofor) undertook a study with a two-fold approach based on consultations with social partners and forecasting research techniques to anticipate skills and training needs and to identify trends in the tourism sector (Beleza and Gaspar, 2005). Consultations facilitated the creation of networks of knowledge that connected stakeholders (i.e. enterprises, industrial associations, trade unions, occupational associations, education and training establishments, technology centres, sector specialists), resources and activities. Labour-market forecasts provided a diagnosis of the sector and identified the future needs, broadened and enriched occupational profiles, facilitated professional mobility and explored inter-sector capacities. The consultations and forecasting resulted in a protocol for strategic workforce development planning for the tourism sector, a strategic plan with the objective of structuring training with a three-year and a ten-year strategic vision, and led to seven priority action plans.

Source: OECD (2013), *Improving Education in Mexico: A State-level Perspective from Puebla*, OECD, Paris; Neugart, M. and K. Schömann (2002), *Employment Outlooks: Why Forecast the Labour Market and for Whom?*, Discussion Paper FS I 02-205, Wissenschaftszentrum Berlin für Sozialforschung; OECD (2010), *Learning for Jobs*, OECD Reviews of Vocational Education and Training, OECD Publishing, *http://dx.doi.org/10.1787/9789264087460-en*; Beleza, V. and T. Gaspar (2005), "Skills forecasting and development in Portugal's tourism sector", in Strietska-Ilina, O. and M. Tessaring, *Trends and Skill Needs in Tourism*, Cedefop Panorama Series, No. 115, Office of the Official Publication of the European Communities, Luxembourg.

In the medium to long term, the proposed think tank mentioned previously could take on the responsibility of identifying gaps and proposing strategies for improvement. An intermediate step could be for municipalities like Puebla, together with the states of Puebla and Tlaxcala, to undertake a systematic assessment of each component of the proposed checklist at the local level and determine how each could be leveraged to meet local needs or even expanded through local, state or private resources. For instance, municipalities could help organise demand for training, assessments and other services offered by the state or federal government. Currently, jobseekers and employers appear to come in contact with these services by chance, word of mouth and local advertising. Local efforts, such as the municipality of Puebla's initiative in support of artists and artisans, could be extended to include training and other institutional resources. In some cases, it may be enough to simply advertise the availability of existing resources. Or it may be necessary to establish a public-private partnership to fill a gap in training. Greater municipal involvement in the process could help to ensure that local needs are being met and could help to assert greater local involvement in the economic destiny of the region.

Improving educational outcomes will require considerable reform – and time

Improving educational outcomes will require considerable reform, and results will not be immediate. Drawing on an assessment of the state of Puebla's educational system, *Improving Education in Mexico: A State-level Perspective from Puebla* (OECD, 2013b), improved outcomes will require reform in the short and medium term within a clear long-term strategy. The OECD recommends that the state of Puebla consider four main policy priorities: *i)* strengthening schools and student support; *ii)* empowering teachers and school leaders to improve learning; *iii)* increasing completion and quality in upper secondary education; and *iv)* improving school infrastructure (Box 2.14). Moreover, a profound transformation of the education system will also require revising the governance structures: this includes building a more policy-oriented structure in Puebla as well as changes in the way in which education is governed at the federal level. The report's recommendations are summarised Box 2.14. With regard to the existing systems at the national level, it will be critical to further develop and use the information system to better understand what is going wrong and where to increase the effectiveness of policy making. The recent federal reform, part of the *Pacto por Mexico* agreement between Mexico's three main political parties, targets improvement in key areas, such as the recruitment and promotion of teachers and school leaders (Government of Mexico, 2012).

Improving the business environment, particularly for small firms

The outdated regulatory framework is also seen as an important obstacle to competitiveness in the region. Mexico as a whole has made considerable improvements in the past decade. As reported in Chapter 1, Mexico improved the overall ease of doing business between 2005-2013, advancing from 62nd in 2005 to 48th in 2013 in the World Bank Doing Business Survey.

The state of Puebla and, to a lesser degree Tlaxcala, have also made progress in improving the business environment in recent years, though progress has been uneven and the pace of reform has been slower than in other Mexican states. As a result, despite achievements in reducing the number of procedures to start a business and the time and cost required to register property, Puebla's relative position in the World Bank Doing Business Survey dropped for a number of indicators between 2007 and 2012. Puebla's

drop in the rankings may also reflect policy discontinuities in past years. From 2002-06, the state of Puebla undertook a series of reforms to ease the state's regulatory environment (see García Villarreal, 2010) and was considered by the OECD as a "pioneer" in institutional design and operation for regulatory reform. Puebla was, for instance, one of the first states to establish a decentralised state commission for regulatory reform (CEMER) and a Law for Regulatory Reform (García Villarreal, 2010). However, some of these measures, notably the CEMER commission, were scrapped by the following administration. Consequently, the state of Puebla dropped from 2nd in the World Bank rankings in 2009 to 15th in 2012 (out of 32 Mexican states) in the overall ease of starting a business, and from 19th to 25th in terms of its overall doing business indicator. Since 2011, the current administration has picked up on some of the initial reforms.

As a result, in their daily operations, firms in Puebla and Tlaxcala may face a more challenging institutional framework relative to firms in other states, affecting how they plan their investments, their expenses in working capital, the contracts they make with other firms as well as their hiring process. Some of these challenges may be more difficult for smaller firms to overcome. In Mexican states where enforcing a contract is harder, productivity levels for smaller firms were lower, but larger firms were not affected (World Bank, 2012). Large firms usually have more resources and can wait the time necessary for litigations to be solved. Smaller firms do not have that freedom: a long and costly trial with a supplier or a client often leads to their bankruptcy, thus forcing them to limit engaging in business only with people whom they trust. There are many unregistered small businesses in Puebla-Tlaxcala, which can not only lead to corruption but also limits tax revenues (World Bank, 2012).

Box 2.14. **Improving basic and upper secondary education in Puebla: Key findings from 2013 OECD report**

Improving Puebla's education system requires successful reforms in the short and medium term in four main policy priorities: *i)* strengthening support for schools and students, *ii)* raising the quality of teachers and school leaders, *iii)* increasing completion and quality in upper secondary education, and *iv)* improving the planning, funding and use of school infrastructure. These should be embedded in a long-term strategy that also reforms governing structures.

Recommendations for strengthening schools' and students' support

- Provide high-quality and supportive learning experiences for all, particularly focusing on the early years and multi-grade schools.
- Further develop and exploit the potential of early warning systems and the use of assessment for learning.
- Foster a more efficient distribution and use of resources, particularly in schools located in remote areas.
- Restructure school supervision, support and evaluation systems.

Box 2.14. **Improving basic and upper secondary education in Puebla: Key findings from 2013 OECD report** (*cont.*)

Recommendations for raising the quality of teachers and school leaders

- Use standards to clarify the roles of teachers and education leaders and ensure high expectations.
- Adjust the provision and transform the *Escuelas Normales* into high-quality initial teacher education institutions.
- Develop and consolidate a professional development system more responsive to teachers' and schools' needs.
- Better select and prepare current and future school leaders and supervisors.

Recommendations for enhancing the access and raising the quality of upper secondary education

- Improve governance mechanisms to ensure that a coherent and high-quality upper secondary education is accessible to all.
- Raise the quality of upper secondary education, focusing on teachers and *Bachilleratos Generales*, and increase the relevance of vocational programmes.
- Promote access to and ensure completion of upper secondary education, particularly among disadvantaged students.

Recommendations for improving infrastructure planning and ensuring the quality of facilities

- Entrust a single body with the overall responsibility for school infrastructure and develop a long-term school infrastructure plan.
- Secure adequate and equitable funding for school infrastructure.
- Ensure that the design and use of the existing or new school infrastructure fosters student learning.

A long-term vision of the system and a holistic approach is necessary for effective reforms. These four main policy priorities for improvement should be embedded in a long-term vision of the Puebla education model. A long-term plan can establish clear goals to guide and align the efforts of all of the actors of the education system towards educational improvement. It can set out the necessary reforms and build consensus around them, while ensuring that these are coherent with policies and practices across all aspects of the system, sustained over time and consistently implemented. In addition, the success of the Puebla education model will also depend on a well-functioning governance structure. Finally, significant improvements in Puebla will also require changes in the Mexican education system. While the new federal administration has already set in motion improvement in critical areas, a new federal governance system is necessary.

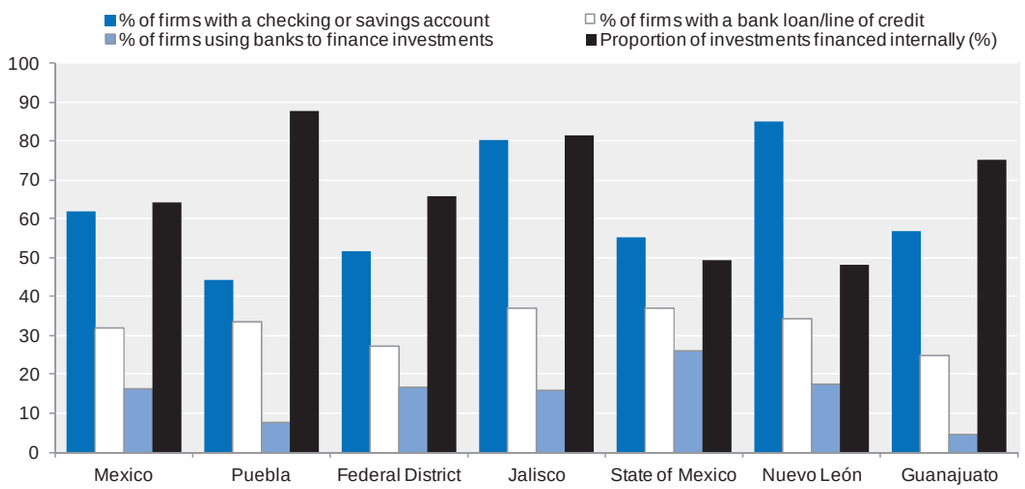
Source: OECD (2013), *Improving Education in Mexico: A State-level Perspective from Puebla*, OECD, Paris.

It is harder for firms in the state of Puebla to have access to banking services and external finance, relative to other states in Mexico (Figure 2.2). Just 44% of firms are likely to have a checking account, compared to 61% for Mexico overall. Only 7.8% of firms in Puebla use banks to finance their investments, when in Mexico 16% of firms

have access to bank funding. As a consequence, firms are more likely to finance investment internally, with their own funds. Banks only finance 5.4% of firms' total investment in Puebla, compared to almost 9% nationwide. The collateral demanded by banks in Puebla is also higher, at 205% of the loan amount. In other states, such as Jalisco, the State of Mexico and the Federal District, banks require firm to provide less collateral, approximately 150% of the loan amount. Litigations are solved faster and cheaper in other states, reducing the uncertainty of giving a loan to a small or medium-sized firm. Investments are not the only activity affected: the daily working capital of firms is also less likely to be financed by banks (8% in Puebla compared to 11% for Mexico). As a consequence, Puebla's firms rely more on supplier credit to finance working capital, thus straining the supply-chain relationships with providers.

Access to finance will not only directly affect firms' productivity. It also affects competition and the rate of entry/exit of firms, thus potentially harming productivity growth and consumers through higher prices. Given that external finance (whether by banks or the issuance of equity or stock sales) is a major route for expansion plans, when smaller but promising firms do not have access to capital, larger firms face less competition, have less incentives to increase productivity and reduce prices, thus harming the growth prospects of the entire region. As suggested by Cabral and Mata (2003), if small firms face financing constraints, it will over time change the number of large firms, and the distribution of employment by firm size will reflect the missing medium- and large-sized firms.

Figure 2.2. **Access to finance is more difficult for firms to obtain in Puebla than in other states**



Source: World Bank (2012), Doing Business Indicators, *www.doingbusiness.org/Rankings/mexico/* (accessed 18 July 2013).

Improving the regulatory and business environment

There is scope for easing the regulatory and business environment in Puebla-Tlaxcala to improve conditions that would allow start-ups and SMEs to grow, on the one hand, and to foster the formalisation of informal companies, as has been achieved in the municipality of Puebla, on the other. The OECD has demonstrated that simplifying business procedures can reduce the cost of doing business, increase the incentives for

operating in the formal sector and eliminate incentives for corruption, thus strengthening the capacity of the economy to create new jobs (OECD, 2012b). In work jointly undertaken with the IMCO, the OECD (2012b) has identified a number of high-impact strategies by which Mexican states and municipalities can improve the conditions for start-ups and SMEs to flourish through the implementation of simplification initiatives to ease business procedures and the development of information systems.

Engaging businesses and citizens in regulatory reform policies to facilitate their continuity beyond political cycles and strengthen the institutional set-up for regulatory reform as a means to illustrate political commitment to this policy will be key. In addition, given the challenges faced by Puebla-Tlaxcala, state and municipal authorities could consider the following high-impact priorities:

- Initiate the steps with the federal government to align the national portal for opening a business, *tuempresa.gob.mx*, with state and municipal procedures to enable "one-stop shopping" for entrepreneurs. This would enable prospective entrepreneurs to access information on the federal, state and municipal procedures for opening a business in one single location, ultimately saving time and money. Several Mexican states, including Colima, Chiapas and Sinaloa, have already begun to pursue the establishment of these interconnections.

- Expand the successful System for Quick Business Start-Up programme (*Sistema de Apertura Rápida de Empresas*, SARE) programme to other municipalities in the metropolitan region. Mexico's SARE programme, created in 2002, has streamlined procedures at the municipal level to reduce the time required to open a business. SARE is a risk-based approach, applied to low-risk businesses, that simplifies the procedures for business start-ups at all three levels of government by ensuring that the entrepreneur receives the license to begin operations within 72 hours of the request. Physical one-stop shops are also popular and widespread simplification tools in Mexico.

  Currently, 191 municipalities in Mexico have implemented a SARE programme. Within the Puebla-Tlaxcala metropolitan zone, six have done so, including Puebla, which was the first city in Mexico to establish a SARE programme (Box 2.15). There is evidence that this has induced more firms to register (OECD, 2011). A 2011 evaluation of five municipalities that had implemented the SARE programme (Chiapas, Colima, Hidalgo, Morels and Puebla) found that one trimester after implementing SARE, the share of entrepreneurs in the sectors affiliated with the programme had increased in all five cases. The largest jump occurred in Puebla, with an increase of nearly 30% of registered entrepreneurs (OECD, 2012b).

- Initiate updates of municipal land-use plans, with the ultimate objective of making plans available online for consultation. While this topic will be discussed in greater detail in Chapter 3, OECD (2012b) also recommends updating land-use plans and including geo-referenced maps to facilitate the site selection process for individuals interested in opening a business. While this may be an ambitious objective for a number of the municipalities in the metropolitan zone, it could be more feasible, and ultimately useful, if it is undertaken at the metropolitan scale.

Box 2.15. **Success of Mexico's regulatory simplification programme, SARE, in Puebla**

The state of Puebla signed a co-operation covenant with COFEMER in 2001, which established that the state government will promote that its municipalities adhere to the covenant and participate in the regulatory improvement efforts. The municipality of Puebla was the first to adopt SARE in 2002. As a consequence, the state government and 13 of its municipalities signed the Co-ordination Agreement for Business Deregulation. Once municipalities sign this agreement, the provisions of the State Law for Regulatory Improvement apply for them. However, because agreements must be ratified every three years with changes of municipal administrations, the political will of the mayor is an important element for the continuity of the regulatory reform agenda at the local level.

Source: García Villarreal, J.P. (2010), "Successful practices and policies to promote regulatory reform and entrepreneurship at the sub-national level", *OECD Working Papers on Public Governance*, No. 18, OECD Publishing, *http://dx.doi.org/10.1787/5kmh2r7qpstj-en*.

- Establish a regional database with up-to-date land-use, zoning and property information, which could be built in parallel with the update of municipal land-use plans or the development of a metropolitan-scale land-use plan. Aguascalientes is a pioneer in Mexico for having established, in 2005, the System for Planned Developments and Condominiums in Aguascalientes (*Sistema de Fraccionamientos y Condominios de Aguascalientes*, SIFRAGS). SIFRAGS is designed to ensure transparency and order in the integration of dossiers for new developments, for approval and the supervision of development works, in order to establish an optimal control of urban development through a statewide digital system. This system has graphic and documentary information available online for the agencies involved in the process, as well as for actors such as developers, or potential property buyers. It also serves as a tool for decision making, because it provides certainty in the provision of adequate infrastructure, urban equipment and services, rendering more transparent the decisions taken in this regard (OECD, 2012b).

The recent measures undertaken by the municipality of Puebla to reduce bureaucratic processes signal important progress and point to the potential effects on informal firms. Whereas opening a business used to take three to four months, it now takes just one day. In the past, 230 new start-ups were processed per year; the city now processes 40 per week on average. According to officials from the city's Economic Development Department, the jump reflects primarily the formalisation of informal firms, rather than the creation of new start-ups. In short, while less bureaucracy does not necessarily lead to more business creation, it can, along with greater enforcement, help formalise the informal sector. Tlaxcala, for its part, has not engaged in any regulatory reforms incentivising informal businesses to properly register, but is hoping to do so by the end of 2013. Accordingly, numerous informal businesses remain within the state. Efforts are also underway to digitise public records of property and business owners.

Summary of conclusions and recommendations

- The Puebla-Tlaxcala metropolitan zone is by some measures a region of contrasts, home to Mexico's largest automobile plant (VW) and a resilient, vertically integrated manufacturing sector, whilst reputed as one of the country's centres of higher education with no fewer than 182 higher education institutions.
- Despite the region's historic success in attracting major national and international firms, most of these efforts occurred in absence of a regional economic development strategy or co-operation between Puebla-Tlaxcala's 2 states and 39 municipalities. In short, public and private stakeholders to a great extent fail to think, or act, regionally. This approach has implied considerable costs on land use, housing and, to a large extent, service provision within the region.
- Several potential obstacles to Puebla-Tlaxcala's future growth and development, and proposed strategies to overcome them, include:
  - Transitioning from a deal-driven, jurisdiction-bound approach to economic development to a regional economic development strategy to guide policy making and investment decisions:
    - Establish a regional think tank to foster a regional vision unencumbered by jurisdictional restrictions or electoral cycles.
    - Bolster regional data for evidence-based policy making, including comprehensive and timely labour market information to serve jobseekers and employers, as well as data on the student and graduate flows into and out of the region's universities.
    - Explore strategies for greater economic diversification, potentially by seeking to attract non-auto industries that could benefit from the region's existing manufacturing supply chain.
    - Link economic and urban development initiatives to ensure that the impacts of economic decisions on land use, infrastructure and urban services are anticipated.
  - Raising the level of low-skilled workers, who represent a disproportionate share of the regional workforce relative to other Mexican metropolitan zones and a potential bottleneck to growth:
    - Expand the certification of skills acquired on-the-job as a means of upskilling workers in the formal and informal sectors.
    - Anchor federal workforce training programmes to the needs of the regional economy.
    - Continue to work toward improving educational outcomes overall through education reforms.
  - Improving the business environment, particularly for small firms:
    - Work with the federal government to align the national portal for opening a business, *tuempresa.gob.mx*, with state and municipal procedures.
    - Expand the successful System for Quick Business Start-Up (*Sistema de Apertura Rápida de Empresas*, SARE) programme to other municipalities in the metropolitan region.
    - Initiate updates of municipal land-use plans, with the ultimate objective of making plans available online for consultation.
- Establish a regional database with up-to-date land-use, zoning and property information.

Notes

1. As reported in Chapter 1, two units of analysis are used in this report to refer to the metropolitan scale: the Puebla-Tlaxcala metropolitan zone corresponds to a functional definition jointly developed by three federal institutions in Mexico (SEDESOL, INEGI and CONAPO); the area straddles 2 states and is comprised of 39 municipalities, 19 in Puebla and 20 in Tlaxcala. The Puebla FUA corresponds to a functional definition developed by the OECD that has been applied consistently across OECD metropolitan areas to facilitate international comparison; the Puebla FUA is comprised of 11 municipalities: 8 in the state of Puebla and 3 in the state of Tlaxcala. The terms metropolitan area and region are used throughout this report to refer to Puebla-Tlaxcala generally, when the precise unit of analysis is not relevant.

2. To address this issue, the state of Puebla recently passed legislation to regulate the minimum number of students required to form a university.

3. There are no higher education institutions within the Tlaxcala portion of the metropolitan zone that offer a degree programme that is certified by the Council of Accreditation of Higher Education. The main technical universities in the state of Tlaxcala (the Technological Institute of Tlaxcala, the Autonomous University of Tlaxcala, the Centres for Science and Technology Studies and Training Centre for Industrial Work and the National Association of Career Technical Education) are located outside the Puebla-Tlaxcala metropolitan zone.

4. Public universities include UAP, ITP, TUP and INAEO; private universities include ITESM, Ibero, Anahuac, UMAD, UIS, UVM, UDLAP and PUASP.

5. IMMEX (Manufacturing, Maquila and Export Services Industry, *Industria Manufacturera, Maquiladora y de Servicios de Exportación*); STPS (Secretariat for Labour and Social Welfare, *Secretaría del Trabajo y Previsión Social*); IMSS (Mexican Social Security Institute, *Instituto Mexicano del Seguro Social*); ISSSTE (State Employees' Social Security and Social Services Institute, *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado*); SEDECO (Ministry of Economic Development, *Secretaría del Desarrollo Económico*); SECOTRADE (Secretariat for Competitiveness, Labour and Economic Development for the state of Puebla, *Secretaría de Competitividad, Trabajo y Desarrollo Económico del Estado de Puebla*); SAT (Tax Administration Service, *Servicio de Administración Tributaria*); SE (Ministry of Economy, *Secretaría de Economía*); AMDA (Mexican Association of Automotive Distributors, *Asociación Mexicana de Distribudores de Automotores*); AMIA (Mexican Association of the Automotive Industry, *Asociación Mexicana de la Industriá Automotríz*); CCE (Business Co-ordinating Council, *Consejo Coordinador Empresarial*); INA (National Auto Parts Industry, *Industria Nacional de Autopartes*); CANACINTRA (National Chamber of Industry Transformation, *Cámara Nacional de la Industria de Transformación*); CONACYT (State Council for Science and Technology, *Consejo Nacional de Ciencia y Tecnología*); COPARMEX (Employers Confederation of the Mexican Republic, *Confederación Patronal de la República Mexicana*).

6. An emerging "metropolitan toolbox", including a Metropolitan Council and corresponding Metropolitan Fund, is developing, largely at the initiative of the federal government. However, their management in Puebla-Tlaxcala has done little to foster cross-border regional economic development. For instance, as will be discussed in Chapter 3, the federal funds allocated to metropolitan zones to facilitate regional economic development (*fondo metropolitano*) are split between the two states and allocated independently.

7. Interviews were conducted by the OECD with a range of state and municipal authorities, as well as representatives from the private sector, during two missions to the Puebla-Tlaxcala region (in October 2012 and January 2013).

8. Based on interviews with State Economic Development officials conducted by the OECD from 28 January 28 to 1 February 2013.

9. It should be recalled that a regional or metropolitan level of government is not permitted in the Mexican Constitution. This topic will be explored in greater detail in Chapter 3.

10. The state of Puebla's 2001 Economic Development Law further divides the Angelópolis region into three subregions: Puebla, San Martín Texmelucan and Tepeaca-Tecali de Herrera. The Puebla subdivision extends over 122 000 ha and includes 11 municipalities: Amozoc, Coronongo, Cuatinchán, Cuatlancingo, Juan C. Bonilla, Ocoyucan, Puebla, San Andrés Cholula, San Miguel Xoxtla, San Pedro Cholula and Tlaltenango. Ten of the cities in the Puebla sub-region are part of the federally defined Puebla-Tlaxcala metropolitan zone; six are part of the OECD-defined Puebla FUA.

11. See SEDESOL/CONAPO/INEGI (2012) and State of Puebla (2001).

12. According to the authors, improving the ease of doing business may have negative or positive effects on informality. On the one hand, a higher cost to start a business limits entrepreneurship and thus the creation of self-employment, which is usually informal. It also limits the creation of less productive firms, which may employ informal workers. On the other hand, reducing the cost to start a business reduces the cost of formal employment. If the reduction of the cost to start a business leads to the creation of small/medium-sized or large enterprises rather than creation of micro-enterprises, the positive effect dominates and informality decreases.

13. *www.empleo.gob.mx.*

14. *www.observatoriolbaoral.gob.mx.*

15. Chapter 4 will explore strategies for building capacity in the public workforce.

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Chapter 3

Policies to guide urban growth more effectively in Puebla-Tlaxcala

This chapter begins by assessing the evidence of urban sprawl in Puebla-Tlaxcala, followed by an analysis of its causes and consequences and concludes with a series of potential strategies for better managing urban growth. Factors in Puebla-Tlaxcala contributing to the development of urban sprawl include, inter alia*, rising incomes, lower transport costs, federal housing policies and limited municipal capacity for land-use planning. Meanwhile, its consequences are evident in terms of increased traffic congestion, higher costs for infrastructure provision, inadequate service delivery, increasing environmental pressures and significant intra-metropolitan territorial inequalities. Strategies for guiding urban growth more effectively include:* i) *linking opportunities for land use and transport;* ii) *tackling the vacancy problem;* iii) *developing tools to balance the costs and benefits of development;* iv) *building municipal capacity for planning and land-use management; and* v) *applying a metropolitan lens to urban planning challenges and solutions.*

The speed and scale of Mexico's urbanisation, coupled with the country's rapidly expanding urban footprint and an increasing recognition of the economic, environmental and social consequences of uncontrolled urban development, have pushed urban sprawl high on the agenda of the federal ministries responsible for housing and urban development in recent years (SEDESOL, 2012; Eibenschultz and Benlliure, 2009). The urbanisation of the Puebla-Tlaxcala metropolitan zone has been inextricably linked to its economic development, as the region's success in attracting major firms – from Volkswagen to Audi – has, over the decades, spurred demographic growth and urban expansion. Yet, the growth of Puebla-Tlaxcala has not always been effectively managed. The urbanised area of the metropolitan zone grew at nearly eight times the rate of its population between 1980 and 2010 (SEDESOL, 2012), resulting in critical policy challenges related to land use, transport, service delivery, pressures on natural resources and territorial inequalities. Population growth has occurred faster in municipalities in the periphery than within the urban core, depopulating Puebla's historic city centre (which was labelled a UNESCO cultural heritage site in 1987) where vacancy rates reach over 40% (INEGI, 2010).

Much of the urbanised territory in existence today in the metropolitan zone did not exist three decades ago. Puebla-Tlaxcala now includes sizable commercial centres, industrial plants, and technological and logistical parks in the urban periphery, as well as gated neighbourhoods, known as *fraccionamientos*, which offer housing and recreation for primarily upper-income residents. Although housing production within the region and throughout Mexico is high and fueled by increasingly efficient housing finance mechanisms (Herbert et al., 2012), most new construction has been built in low-density subdivisions on former agricultural land located at a significant distance from the consolidated urban area and the location of important urban services. Moreover, many firms in search of abundant, low-cost land with access to regional infrastructure have constructed industrial plants in fringe municipalities, further contributing to urban sprawl. The most recent example of this trend is the decision of the car manufacturer Audi to build a plant on unpopulated farmland in the municipality of San José Chiapa, located outside the Puebla-Tlaxcala metropolitan zone, nearly 60 kilometres from Puebla's city centre. While this strategy may respond to consumer preferences and minimise the incidence of the price of land in final housing costs, it also has considerable consequences on public resources, environmental quality, access to jobs, services and recreation, and quality of life.

The causes of urban sprawl are many, and are due to policies and policy interactions at multiple levels of government. One important contributing factor is that the region's demographic, economic and spatial growth has not been accompanied by adequate development of the infrastructure and urban services. The systematic inability of different levels of government to guide urban development has contributed to increasing levels of urban sprawl and the accumulation of severe service deficits that reduce the overall quality of life and may impair the metropolitan region's future development. While these challenges are generally well understood by policy makers in Mexico, it has nevertheless proven difficult to address them due to weak urban planning (Herbert et al., 2012). Municipalities regularly authorise land subdivisions without updated master plans and without a metropolitan framework to gauge the long-term costs of the urban sprawl. Moreover, they are often operating with outdated land-use plans – some approved more than 25 years ago, when the region was a fraction of its current size – which do little to guide more sustainable development patterns. The limited human, technical and fiscal capacity of municipalities has signified that, despite significant authority over land use

and urban development, municipal administrations are not always equipped to carry out these functions. Efforts to address these challenges are compounded by policy discontinuities that result from a change in the majority of the municipal administration every three years.

The consequences of urban sprawl for Puebla-Tlaxcala are considerable. The region's transport network is characterised by congested highways and poorly maintained urban roads. As to water and wastewater management, in spite of the high coverage of water and sanitation in the Puebla-Tlaxcala metropolitan zone (reported at 87% and 96%, respectively [SEDESOL, 2012]), the frequency of water provision and quality of infrastructure remain inadequate. Few of the region's wastewater treatment plants function on a regular basis. As a result, the region's water sources are reportedly highly contaminated and worsening (Iracheta Cenecorta, 2012). Water quality issues are compounded by challenges of water quantity, as the urbanisation and deforestation of watershed recharge areas has led to diminishing yields of many wells.[1]

This chapter will begin with an assessment of the evidence of urban sprawl in Puebla-Tlaxcala, followed by an analysis of its causes and consequences, and conclude with a series of potential strategies for better managing urban growth.

Making the case for urban sprawl in Puebla-Tlaxcala: What is the evidence?

Sprawling development has been a general trend in Mexico over the past several decades (SEDESOL, 2012). The Puebla-Tlaxcala metropolitan zone is no exception to this trend, and there is also evidence to suggest that urban sprawl may be a more prominent phenomenon in Puebla-Tlaxcala than in other metropolitan zones in Mexico. Indications of urban sprawl in Puebla-Tlaxcala include: *i)* the lowest overall density relative to the ten largest Mexican metropolitan zones; *ii)* a rapidly expanding urban footprint; *iii)* faster growth in the metropolitan periphery than in the urban core; and *iv)* population loss and high vacancy rates in the centre of the metropolitan zone.

The lowest average density among Mexico's ten largest metropolitan zones

The Puebla-Tlaxcala metropolitan zone is the least dense Mexican metropolitan zone with a population of over 1 million, at 3 600 inhabitants/km² in 2010, slightly below the Juárez metropolitan zone (3 762 inhabitants/km²) (Table 3.1) (SEDESOL, 2012). Moreover, the density of the metropolitan zone decreased by approximately 80% between 1980 and 2010, though the average density has increased very slightly in the past decade (SEDESOL, 2012). Decreasing density levels within Puebla-Tlaxcala are consistent with the decline in the average population density across Latin American cities, and in both the developed and developing world. For instance, one study found that 75% of Latin American cities for which data was available had lower densities in 2000 than in 1990 (Angel et al., 2011 in Bouillon, 2012). In light of these general trends, Puebla-Tlaxcala's position as the second-least metropolitan zone among the ten largest ones in Mexico is a particular cause for concern.

Table 3.1. **Population density among Mexican metropolitan zones with population over 1 million (2010)**

Population ranking (from largest to smallest)	Metropolitan zone	Inhabitants/km²
1	Valle de México	8 490
2	Guadalajara	7 025
7	León	6 637
10	Querétaro	5 290
11	San Luis Potosí-Soledad de Graciano Sánchez	5 274
3	Monterrey	5 203
6	Tijuana	5 053
9	Laguna	4 000
5	Toluca	3 813
8	Juárez	3 762
4	**Puebla-Tlaxcala**	**3 600**

Notes: 1. Density levels in this table are provided by SEDESOL and are based on calculations of the urbanised surface area only (including streets and open spaces, but excluding areas characterised as rural). These estimates differ from density levels reported by SEDESOL/CONAPO/INEGI (2012), which are based on total surface area, urban and rural areas combined. 2. This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: SEDESOL (2012), *Expansion de las ciudades*, SEDESOL, Mexico, DF.

A rapidly expanding urban footprint

The urbanised area of the Puebla-Tlaxcala metropolitan zone grew at nearly eight times the rate of its population between 1980 and 2010, pushing urbanisation further into the periphery, often onto farmland (Figure 3.1). Most of this growth occurred between 1980 and 2000. Puebla-Tlaxcala's rapid urban expansion is consistent with general trends in Mexico, as most new housing developments are located on the urban periphery (Monkkonen, 2011), often on communally-owned ejidal land.[2] Indeed, between 1982 and 1990, half of the city of Puebla's urban growth occurred on ejidal land in the urban fringe (Municipality of Puebla, 2007). Yet, Puebla-Tlaxcala's urban expansion has been more dramatic than the national trend, where the urbanised area increased five times faster than its population between 1980 and 2010 (SEDESOL, 2012). These trends are consistent with overall expansion patterns in Latin America, which are expected to continue in the next several decades (Bouillon, 2012). One study projects that urban land cover in Latin America could increase by 74% by 2050 if current densities remain constant – or by up to 187% if densities were to decrease by just 1% (Angel et al., 2011, in Bouillon, 2012).

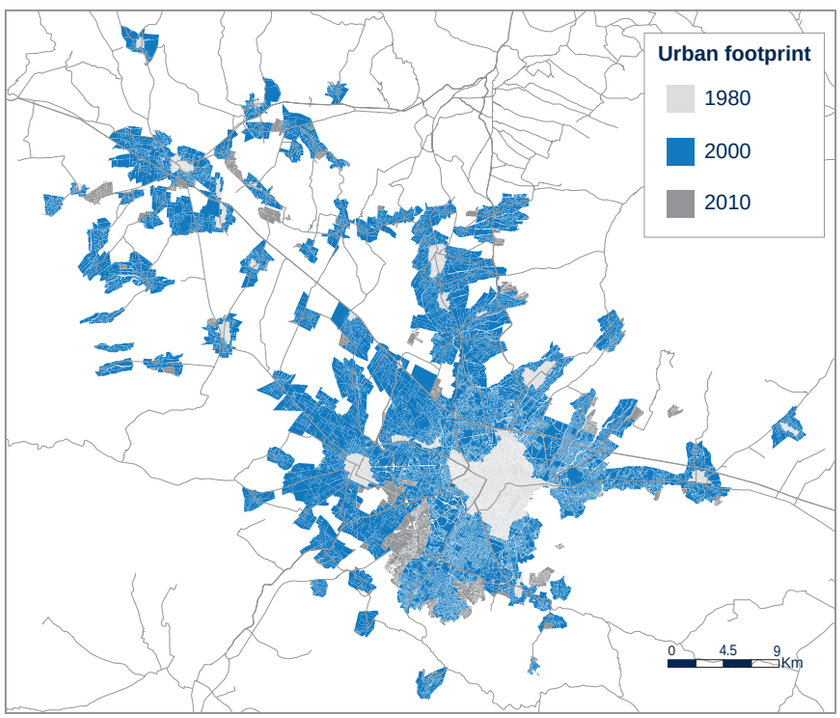
Faster growth in municipalities neighbouring Puebla

While the metropolitan zone as a whole grew at an average annual rate of 1.8% between 2000 and 2010, within the metropolitan zone, development was uneven. In recent decades, population growth has been fastest in the municipalities surrounding the core municipality of Puebla, even if in absolute terms the city of Puebla has still accounted for a large share of Puebla-Tlaxcala's growth. Between 1980 and 2010, the highest growth rates within the metropolitan region are reported for Amozoc (5.0%), Cuautlancingo (4.9%) and San Andrés Cholula (4.6%), more than double the growth rate

for the city of Puebla (2.1%) and higher than the average growth of the metropolitan zone (2.5%) (INEGI, 1980, 1990, 2000, 2010; SEDESOL/INEGI/CONAPO, 2012). Nevertheless, almost three-quarters (73.1%) of the metropolitan zone's population growth between 1980 and 2010 has been concentrated in just six municipalities, all in the state of Puebla: Puebla, San Martín Texmelucan, San Pedro Cholula, Amozoc, San Andrés Cholula and Cuautlancingo. Of these, San Martín Texmelucan is the only municipality that does not border the city of Puebla. The city of Puebla has, for its part, accounted for over half of the metropolitan zone's population since 1980 and has in absolute terms accounted for approximately half of the metropolitan zone's growth during this period – yet, as will be discussed below, population growth rates **within** the city of Puebla have been extremely varied (INEGI, 1980, 1990, 2000, 2010; SEDESOL/INEGI/CONAPO, 2012).

Figure 3.1. **Urban expansion in Puebla-Tlaxcala**

Puebla-Tlaxcala metropolitan zone (1980-2010)



Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

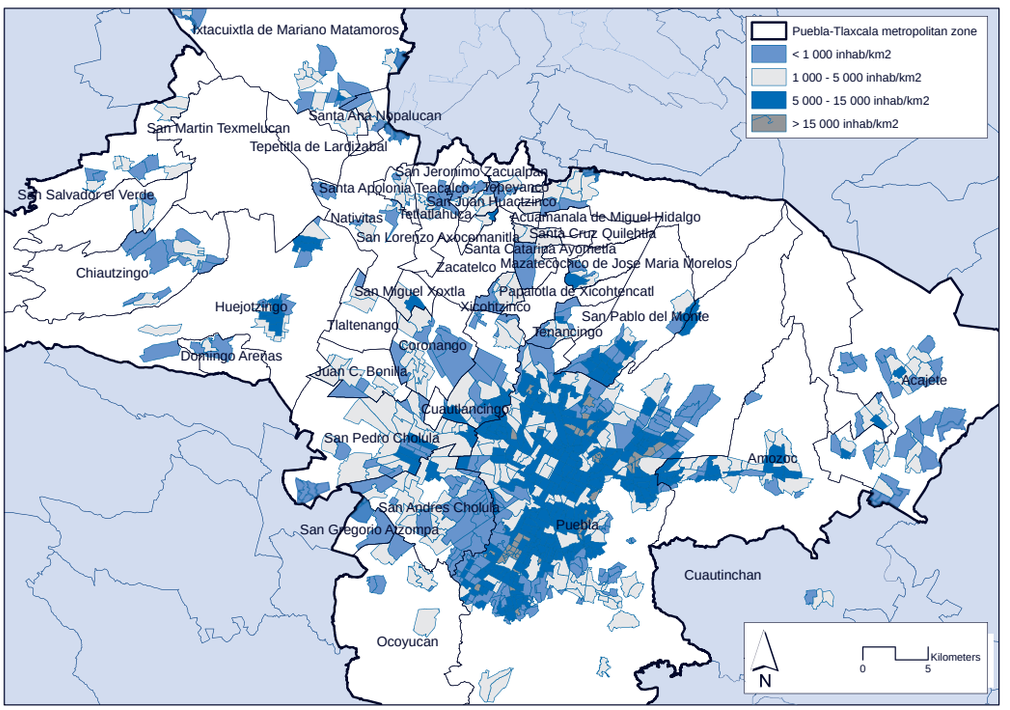
Source: Adapted from SEDESOL (2012), *La Expansion de las ciudades*, SEDESOL, Mexico City, Mexico.

Comparing the density levels and the change in population between 2000-2010 at the census-tract (AGEB) level illustrates that, while the centre of the metropolitan area still shows higher density levels than some of the peripheral areas, many of the central census tracts in the city of Puebla actually lost population between 2000 and 2010 (Figures 3.2 and 3.3). This population loss in the centre has occurred even as the municipality's population as a whole grew over this period. Even if the density of these census-tracts

remained higher in the centre than some of those in the periphery, they nevertheless suffered population losses in the past decade. These seemingly paradoxical trends are also a testament to the large size of the city of Puebla, in which considerable heterogeneity exists. According to IMPLAN, the city of Puebla's planning institute, the average density of the urbanised area of the municipality of Puebla in 2010 was one-quarter of the city's average density in 1970 (IMPLAN, 2013).

Figure 3.2. **Population density**[1] **in Puebla-Tlaxcala (2010)**

Census-tract (AGEB) level



Notes: 1. The density levels displayed in this map are based on INEGI data (2010 Population Census) and the estimated total surface area (urban and rural areas combined). They differ from the density levels presented in Table 3.1, which are provided by SEDESOL and are based on calculations of the urbanised surface area only (including streets and open spaces, but excluding areas characterised as rural). 2. This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: Based on data from INEGI (2010), *Population Census.*

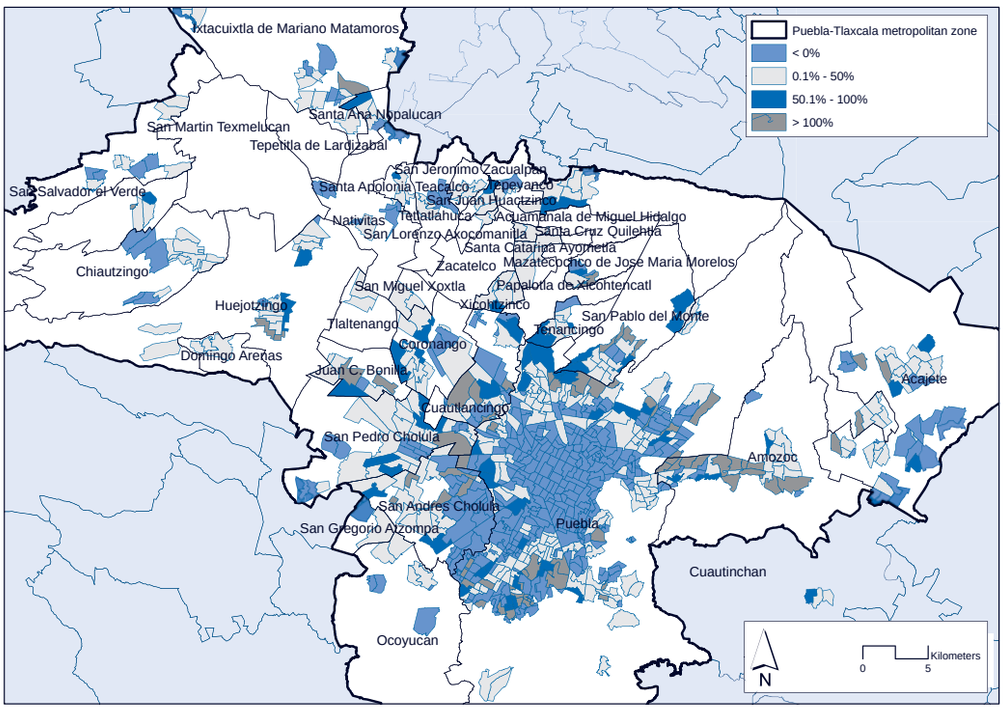
Population loss, high vacancy rates in the historic core

Development in municipalities surrounding the city of Puebla has occurred at the expense of the once-dense historic city centre of Puebla, leading to high vacancy rates in the core of the metropolitan zone. At municipal level, 7 of the 39 municipalities in Puebla-Tlaxcala have vacancy rates above the national average (14%), ranging from 15% in Amozoc, Coronango and Santa Cruz Quilehtla to 25% in Cuautlancingo. While the city of Puebla's average vacancy rate is equivalent to the national average (14%), analysis at the census-tract (AGEB) level reveals much more heterogeneous patterns (INEGI, 2010). In the centre city of Puebla, vacancy rates can reach as high as 41.83% (Figure 3.4). High

vacancies (including vacant land and vacant properties) are indeed a common problem throughout Latin American (De Araujo Larangeira, 2004).

Figure 3.3. **Population change in Puebla-Tlaxcala (2000-2010)**

Census-tract (AGEB) level



Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

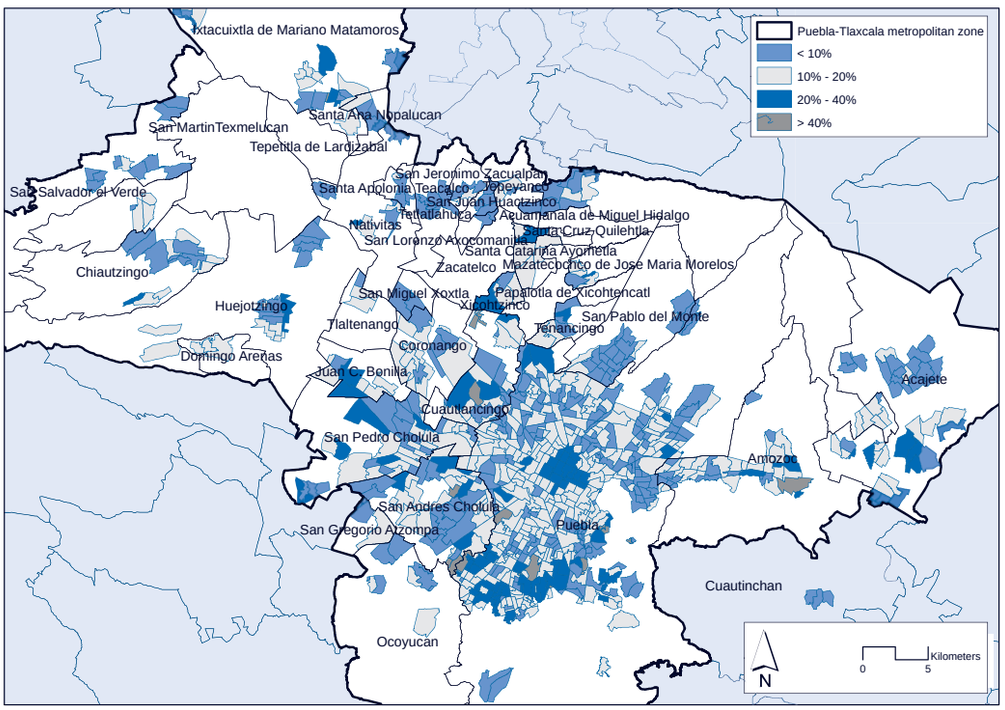
Source: Based on data from INEGI (2010), *Population Census*.

Moreover, over 70% of the developable land within the perimeter of the metropolitan zone and inside the core municipality is currently undeveloped. Within the municipality of Puebla, the built area accounts for just 32% of the available developable area, while in the adjacent municipalities of San Pedro Cholula, San Andrés Cholula and Cuautlancingo, the built area accounts for less than 25% of the available developable land (CONAPO, 2012). The high level of undeveloped land is a sign of inefficient development patterns and implies that there may be scope to guide development into areas in proximity to urban services, thus lowering the cost of service provision and limiting further expansion of Puebla-Tlaxcala's urban footprint.

In sum, these trends, coupled with Puebla-Tlaxcala's rapid urban expansion between 1980 and 2010, point to highly inefficient urban development patterns. Over time, urban development in Puebla-Tlaxcala has consumed more and more land, particularly in the metropolitan periphery where population growth has been less rapid. The high vacancy rates in the metropolitan core are another sign of inefficient development patterns.

Figure 3.4. **Share of vacant properties in the Puebla-Tlaxcala metropolitan zone (2010)**

Census-tract (AGEB) level



Notes: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: Based on data from INEGI (2010), *Population Census*.

What are the causes of urban sprawl in Puebla-Tlaxcala?

Urban sprawl is not unique to Puebla-Tlaxcala and its causes are manifold, rooted in a complex combination of policies and policy interactions at multiple levels of government, as well as changing demographics and evolving consumer preferences. Among its likely causes in Puebla-Tlaxcala are: *i)* rising household incomes, coupled with lower transport costs; *ii)* federal housing policies that have incentivised the construction of large-scale housing developments in the urban periphery and restricted loans for formal housing to a portion of the formal workforce; *iii)* a regulatory framework favouring homeownership; *iv)* the prevalence of irregular, informal settlements that undermines efforts to provide services and manage growth; *v)* difficulty in linking land-use planning to infrastructure provision; and *vi)* limited municipal capacity, coupled with outdated planning tools.

Although the causes of Puebla-Tlaxcala's faster urban expansion relative to other large Mexican metropolitan zones require further analysis, one possible explanation could be its high level of administrative fragmentation, where 39 municipalities and 2 states have thus far faced difficulties in co-ordinating policy design and implementation to guide urban growth.

Rising incomes, lower transport costs

Urban sprawl has been linked to rising incomes (Margo, 1992; Brueckner, 2000, 2001) as well as the advent of the automobile and lower transport costs (Glaeser and Kahn, 2003). As incomes rise, consumption patterns change, often resulting in a preference for more space. As reported in Chapter 1, Mexico's car fleet has tripled in the last 15 years, from 7 million vehicles in 1995 to 21 million in 2010 (INEGI, 2013). The motorisation rate doubled in the last 10 years, from 10 vehicles per every 100 people in 2000 to 20 vehicles per every 100 people in 2011. These trends may be linked to the rise of GDP per capita in Mexico: at the current level of income, IMF (2005) and Fouquet (2012) predict that Mexicans will demand more cars. Further, Mexico's fuel subsidies have kept the price of fuel among the lowest in the world: fuel prices in Mexico were around three times cheaper than in EU counties and more than 30% cheaper than in the United States in 2012. Moreover, the relative price of cars has decreased significantly, and it is relatively easy to obtain a loan to purchase a car. Fourth, the expansion of the road network has made peripheral development more accessible, improved connectivity to some areas and contributed to the rise in demand for cars. Finally, people may depend more on private motorised vehicles when public mass transit systems are absent or poorly designed, as is the case for many parts of Puebla-Tlaxcala.

Policies – and policy interactions

Land tenure reforms

Land tenure arrangements and the process by which agricultural land is converted to urbanised land also affect urban development patterns in Puebla-Tlaxcala, and throughout Mexico. Much of urban development in the past three decades throughout Mexico has occurred on ejidal land, a form of land tenure established following the Mexican Revolution, which granted peasants perpetual rights to land for agricultural purposes without the possibility of selling, renting or mortgaging the land. A 1992 legislative reform modified Article 27 of the Mexican Constitution, altering the land tenure status of ejidal land. The reform authorised *ejidatarios* (community landowners) to sell, rent or mortgage the land, including to non-ejidal members, and to establish joint-venture contracts with private companies, essentially allowing for the privatisation of ejidal land (Eibenschultz and Benlliure, 2009). One of the ambitions of the reform was to give greater legal certainty to *ejidatarios* and to establish a legal framework that could result in increased land supply available for housing. Yet, as Jones and Ward (1998) point out, the reform seems to have been drafted "largely in ignorance of its potential urban impacts," given that ejidal land had, for decades, been the major source of illegal land supply for low-income housing and that most land in Mexico available for urbanisation was, and continues to be, comprised of ejidal land on the urban periphery.

Half of the city of Puebla's urban growth between 1982 and 1990 occurred on ejidal land (Municipality of Puebla, 2007). One recent study estimates that ejidal land accounts for approximately 35% (approximately 59 000 ha) of the Puebla conurbation divided among nearly 19 500 *ejidatarios*, or community landowners (Hernández-Flores et al., 2009). Moreover, another study has found that the reforms have led to a significant increase in land speculation (Gonzalez and Vargas, 2000). To complicate matters, as will be developed in greater detail later in this section, *ejido* land is often converted to urban uses in the absence of updated urban development plans.

Federal housing finance

The need to respond to the high share of informal settlements and provide large volumes of affordable housing to low-income households spurred considerable reforms to federal housing policy in recent decades (Herbert et al., 2012). These policies have contributed significantly to the changing urban form of Mexican cities, as reforms to Mexico's housing finance system incentivised the construction of mass-produced developments of tract housing, often in the urban periphery, where land is less expensive (Monkonnen, 2011; Herbert et al., 2012). As a result, the housing finance system offers loans only to those with salaried employment (approximately 60% of the working population nationwide) and restrictions on the type of housing that can be purchased with federal loans tend to direct recipients of federal aid into large-scale, privately developed housing tracts in the urban periphery (Monkkonen, 2011).

Mexico has experienced substantial increases in overall housing loan volumes over the last decade, as housing finance reforms were successful in expanding the lending opportunities to meet increasing financing demand (Herbert et al., 2012). Between 2007 and 2012, the state of Puebla concentrated the eighth highest share of federal housing subsidies and credits among Mexican states, while the state of Tlaxcala had one of the lowest shares, with some variation over this period (CIDOC and SHF, 2012) (Table 3.2). The resulting housing development process that has occurred throughout Mexico in recent years – in which a majority of houses are built by private companies on speculation and purchased with mortgages – is a sharp departure from the traditional, incremental process of housing production (Monkkonen, 2011).

Table 3.2. **Share of federal housing subsidies and credits in Mexico**

By state (2007-2011)

	2007		2008		2009		2010		2011	
	Total subsidies/ credits	Share of national	Total subsidies/ credits	Share of national	Total subsidies/ credits	Share of national	Total subsidies/ credits	Share of national	Total subsidies/ credits	Share of national
Puebla	30 576	2.4%	68 890	3.4%	73 987	4.4%	96 281	5.5%	50 016	3.2%
Tlaxcala	6 242	0.5%	6 242	0.3%	11 174	0.7%	11 174	0.6%	8 075	0.5%
National	1 268 600		2 009 531		1 663 029		1 738 755		1 581 183	

Source: CIDOC and SHF (2012), *Estado actual de la vivienda en México 2013*, CIDOC and SHF, Mexico, DF, available at *www.shf.gob.mx/estadisticas/costoanualtotal/CAT2010/Documents/Entrega%202012.pdf* (accessed 3 May 2013).

Policy bias and regulatory framework favouring homeownership

The ongoing need for affordable housing for low-income households is one factor that has accelerated urban sprawl in Mexico; the formal housing market has not been able to meet demand, especially for the lowest-income populations who may not qualify to receive federal housing subsidies (Herbert et al., 2012; Monkkonen, 2011). Even for a region with a large student population, the rental market remains limited in Puebla-Tlaxcala (18%), higher than the national average (14%), yet lower than many other large cities in Mexico and Latin America (22% in Ciuadad Juárez, 34% in Guadalajara and 41% in Bogota). The limited rental market restricts the mobility of the labour force and may constrain overall density levels.

A limited rental market is a general problem across Latin America, due in part to a policy bias toward homeownership, through reductions in upfront investment costs for housing construction, favourable tax treatment relative to rental housing and lower financing costs (Bouillon, 2012). Moreover, an overly protective regulatory framework strongly favours the rights of tenants over those of landlords, making it both difficult and costly to evict tenants According to Bouillon (2012), "this situation increases investment risk and deters owners and investors from investing in the private rental market." Additional constraints to the development of the formal rental market in Latin America include a limited availability of urban land with services (a challenge for housing development of all types, however) and under-developed credit markets, which limit access to long-term financing for landlords (Bouillon, 2012). Moreover, the development of financing for rental housing has seen no progress in Mexico in the past decades (Herbert et al., 2012).

Prevalence of irregular settlements

The large volume of irregular settlements across Puebla-Tlaxcala has also made it difficult for municipalities to guide growth effectively. Although federal housing finance has resulted in mass-produced formal housing developments, these are far from the only type of housing constructed in the region. As mentioned previously, eligibility for federal housing subsidies is restricted to those with full-time formal employment; recall from Chapter 1 that both the states of Puebla and Tlaxcala have some of the highest shares of informal employment in Mexico. As Herbert et al. (2012) point out, the many very low-wage workers who cannot afford formal new homes have been underserved by Mexico's federal housing loans and credits. In 2010, the state of Puebla concentrated approximately 1.7% of housing subsidies relative to its population, compared to 1.0% for Tlaxcala and a national average of 1.5% (based on data from CIDOC and SHF, 2012). As a result, while federal housing subsidies have had a critical impact on urban development throughout Mexico due to their scale and the speed with which they are developed, informal settlements,[3] self-constructed dwellings and other houses built outside the formal market represent a large share of the overall housing stock in the region. In 2010, just under 20% of the urbanised area of the city of Puebla contained informal settlements (IMPLAN, 2013). This is reflective of a general phenomenon in Mexico: in 2010, more than 60% of housing was produced outside the formal sector[4] (Herbert et al., 2012).

Informal settlements may offer clear benefits to low-income households, yet they also carry considerable disadvantages, for both households and the larger metropolitan zone. SEDESOL has found that the upfront costs of informal housing can be five to eight times lower than formal housing. Moreover, informal housing can offer low-income households larger lots at lower costs, and potentially in more central locations than they would otherwise be able to afford (SEDESOL, 2010). Yet there are also clear disadvantages for both the residents of informal settlements and for the larger metropolitan area. Informal settlements may be associated with limited or no access to urban services (water and sanitation, as well as health, schools and employment opportunities) or secure land tenure, thus putting the households at higher risk of social marginalisation. Informal settlements may also be built in environmentally sensitive or at-risk areas. In Puebla-Tlaxcala, housing development in proximity to the region's volcanoes is a critical challenge. The consequences of informal housing on the larger metropolitan area can be considerable. First and foremost, the presence and scale of irregular developments undermines efforts to manage growth and ensure the provision of services and can put additional pressures on the environment (particularly in cases where urban development

has occurred in aquifer recharge zones or other naturally sensitive areas). It can also generate additional costs for the public sector to expand infrastructure networks to areas that are not programmed for development.

Difficulty in linking land-use planning to infrastructure provision

In Mexico generally, integrated land and infrastructure planning and financing has proven difficult, creating uncertainties and complications in the development process, working against long-range planning to accommodate new growth and making it difficult for government to regulate the creation of informal settlements and to improve those already in existence (Herbert et al., 2012). The introduction of the bus rapid transit system (BRT), RUTA, in Puebla-Tlaxcala (Box 3.1) represents a positive step toward more efficient public transport in the metropolitan zone, while nonetheless illustrating some of the difficulties in linking transport investments to planning for land-use and urban development.

Box 3.1. **Puebla-Tlaxcala's bus rapid transit (BRT) system: RUTA**

There has been a first promising attempt to promote mass transit in Puebla-Tlaxcala through the introduction of bus rapid transit (BRT). After León's Optibús, Mexico City's Metrobús, Guadalajara's Macrobus, and Monterrey's Transmetro, Puebla recently launched a BRT system called the Articulated Urban Transport Network (*Red Urbana de Transporte Articulado*, RUTA) following successful negotiations between the state government and the 202 private concessionaries operating existing bus routes. The RUTA negotiations also resulted in the inauguration of an integrated single-fare system.

The RUTA network will comprise six lines, each operated by a different concession. The first line of 18.5 kilometres between Chachapa and Tlaxcalancingo was opened in January 2013. It will operate 40 high-capacity buses along 38 stations to serve an estimated 107 000 users maximum per day. RUTA is an ambitious project that will require an overall investment of MXN 1.32 billion. The state of Puebla invested MXN 635 million; the national development bank Banobras will provide MXN 394 million, and the remainder will come from transport concession holders.

The introduction of the BRT system was a major achievement in terms of transport governance. However, as will be discussed in greater detail in Chapter 4, some gaps in information and communication with actors of urban mobility remain to be bridged.

Source: Based on information provided by COESPO and field interviews conducted by the OECD during two missions to Puebla-Tlaxcala in October 2012 and January 2013.

The institutional fragmentation within the transport sector (Box 3.2) and the administrative fragmentation that characterises the public and private actors involved in both transport and urban development within Puebla-Tlaxcala have thus far been an obstacle to leveraging the development potential of the RUTA investment. The difficulty is due in part to misalignments in the decision-making process. For instance, the location of RUTA's routes and stops was decided by the State Secretariat of Transport, after conducting a mobility study (*Estudio de Movilidad de la Zona Metropolitana de Puebla*) and limited negotiations with the three municipalities concerned (Puebla, San Andres Cholula and Amozoc). In a study released in April 2012, the Secretariat of Public Security of the Municipality of Puebla noted that it had been given only partial information on the project. There are also concerns about the objectivity of data and criteria underlying the choice of stops. For example, it was suggested that one of the adopted routes (crossing the Defensores de la República diagonal and the Atlixco

boulevard) was chosen not necessarily because rider demand was there, but because it offered the easiest and fastest deliverable.[5] Hasty construction may also account for the fact that some RUTA stops lack separation between the BRT lane and the lane of regular traffic. In addition to co-ordination challenges across levels of government, other factors impeding better integration between transport and urban development include limited technical capacity at municipal level as well as a shortage of and the high cost of land and infrastructure finance (Herbert et al., 2012).

Box 3.2. **Institutional fragmentation in the transport sector**

The transport sector is characterised by significant institutional fragmentation. Responsibilities for public transport and highways are shared, in varying capacities, across federal, state and municipal actors, as well as private operators (see table below). For instance, the introduction of the bus rapid transit system, RUTA, in Puebla-Tlaxcala was largely enabled by the institutional and financial impetus from the federal government. Under the 2007-2012 National Development Plan, the federal government implemented two programmes for improving the efficiency of public transport and reducing greenhouse gas (GHG) emissions: the Federal Support for Mass Transit Programme (*Programa Federal de Apoyo al Transporte Masivo*, PROTRAM) and the Urban Transport Transformation Programme (*Programa para la Transformación del Transporte Urbano*, PTTU).

Allocation of responsibilities and resources for urban transport across levels of government in Mexico

	Responsibilities	Resources
Federal government	– Large-scale infrastructure – Regulation and guidelines – Technical assessment, capacity building for state and municipal governments	– Financial support to state and municipal governments through PROTRAM and PTTU programmes
State government	– Mobility and transport policy – Plans and programmes – Regulation and control – Transport infrastructure – Operation of public transport	– General taxes – Federalised expenditure – Private investment in public transport concessions
Municipal government	– Planning and management of urban development – Traffic control on urban roads – Non-motorised mobility – Public security, safety and emergency response – Approval of local streets design – Approval of terminals and workshops design	– General taxes – Federalised expenditure

Source: IMCO (2012), *Índice de Competitividad Urbana 2012: El municipio: una institución disenada para el fracas*, IMCO, Mexico, DF, available at: *http://imco.org.mx/images/pdf/indice_de_competitividad_urbana_2012.pdf* (accessed 21 May 2013); Islas Rivera, V. et al. (2011), "Implementing sustainable urban travel policies in Mexico", *International Transport Forum Discussion Papers*, No. 2011/14, OECD Publishing, *http://dx.doi.org/ 10.1787/5kg9mq436m42-en*.

Meanwhile, the state government is the main level in charge of planning and implementing transport policy, although its role has primarily consisted of overseeing a system of private concessions with little coherent strategic planning. As reported in Chapter 1, approximately 6 000 public transport vehicles circulate in the metropolitan zone, with multiple operators covering some of the same routes (284 routes in total), especially in the city centre. The volume of low-capacity vehicles results in part from an uncontrolled proliferation of concessions to individual operators. In Tlaxcala, the state government has frozen new concessions for more than a decade and even suspended some existing concessions, based on technical studies. In Puebla as well, the state government is currently taking steps to reduce the supply. Nevertheless, exceptions to the rules are common.

Box 3.2. **Institutional fragmentation in the transport sector** (*cont.*)

As a result, state authorities are currently struggling to take *ex post* remedial action to compensate the lack of *ex ante* planning in transport policy. The organisational, technical and infrastructural deficiencies of scattered informal transport operators make it difficult to exploit economies of scale or improve the quality of services. It is also almost impossible to convince transport operators about the advantages of modernisation if they believe that the real motivation is to displace them from the market (Islas Rivera et al., 2011). Initial efforts to regulate the transport system in 1995, with the input of experts from Curitiba, Brazil, were violently countered by the union of concession holders. In Tlaxcala, the state government has frozen new concessions for more than a decade and even suspended some existing concessions. In Puebla as well, the state government is currently working to rationalise the supply side. The deficiencies of the current public transport system are reflected in the coexistence of a private transport system, as some major companies operate their own private transport system (e.g. Volkswagen runs shuttles for a share of its 15 000 employees).

Municipalities, for their part, have little input in the transport system – and particularly the public transport network – even though they are left to manage its outcomes. The current governance framework allows limited municipal influence in transport investments, but severely affects municipalities on the economic, social and environmental fronts:

- On the economic front, the inefficiency of the current transport system often forces workers to ride two or three different buses to get to work. It is estimated that an average family in the metropolitan region of Puebla-Tlaxcala spends about 33-35% of its income, sometimes up to half of it, on transport. This potentially represents a considerable loss for the competitiveness and productivity of the entire metropolitan zone since this share of income is not spent on production and non-transport consumption.
- The current transport system also contributes to enhancing social segregation and exacerbating safety challenges. Many workers – especially the lower-income categories – live in far-flung communities in the periphery and spend more than two or three hours in commuting every day. The dominance of "informal" public transit raises serious safety concerns.

The negative impact on the environment is significant as transport reportedly accounts for 82% of GHG emissions in Puebla (data from SEMARNAT).

Limited municipal capacity, outdated planning documents

The failure to apply existing development regulations, particularly at municipal level, is another factor that has contributed to uncontrolled urban sprawl in the periphery of the metropolitan zone, and more generally in Mexican cities. As will be discussed in greater detail in Chapter 4, many Mexican municipalities are hampered by a significant capacity problem. The Mexican Constitution grants municipalities the responsibility for urban development and planning – responsibilities which are detailed in subsequent state laws on human settlements and sustainable urban development (Box 3.3) – yet many municipalities are ill-equipped to adequately guide the local urban development process. One exception is the city of Puebla, which in 2011 established a municipal planning institute. The implementation failure, combined with technical deficiencies within municipal administrations, also makes it difficult to reverse the course of the region's sprawling development.

Box 3.3. **Legal framework governing municipal planning in Mexico**

The legal framework governing municipal urban development in Mexico is outlined in the Constitution of United Mexican States, the General Law of Human Settlements, state constitutions, state laws on human settlements and municipal organic laws and municipal codes.

Federal Constitution

Article 115 of the Mexican Constitution grants municipalities the authority to "formulate, adopt and administer zoning and municipal urban development plans, participate in the creation and management of their land banks, control and regulate land use in their territorial jurisdictions; intervene in the regularization of urban land tenure, grant licenses and permits for construction and participate in the creation and management of ecological reserves" (Article 115, Section V). Furthermore, the Constitution, in Article 115 Section VI, also makes provisions for joint urban development planning for urban areas that straddle two states, as the case of the Puebla-Tlaxcala metropolitan area. In such cases, the federal government, along with the relevant state governments and municipalities, should jointly plan and regulate their development. In turn, the federal government is responsible "for articulating the necessary steps to guide human settlements and establishing adequate provisions, uses, reserves and locations of land, water and forests in order to execute public works, and to plan and regulate the establishment, maintenance, improvement and growth of urban population" (Article 27).

General Law of Human Settlements

The General Law of Human Settlements is designed as a co-ordinating document to ensure coherency between municipalities, states and the federal government in the management and regulation of human settlements by providing norms for planning the establishment, maintenance, improvement and growth of urban areas. The law articulates the hierarchy of instruments for guiding planning and regulation of territorial development in Mexico: the National Urban Development Programme; state urban development programmes; territorial development programmes for conurbations; municipal urban development plans and/or programmes; area master plans; other urban development programmes that may be established in parallel with the aforementioned instruments (Article 12). Municipalities are thus responsible for managing urban areas via plans or municipal development programmes; for enacting regulations necessary to execute these plans or programmes; and for executing public works and services needed to support urban development. Municipalities have the authority to approve plans and municipal urban development programmes, and to grant building permits. The City Council, along with formulating and approving plans and municipal urban development programmes administers urban zoning and approves provisions for land use. In the case of two or more municipalities that form a geographical continuity, authorities from both municipalities should take part in urban development planning for the area.

State constitutions

State constitutions include general provisions that outline the following roles for municipalities to regulate urban development processes (including delivering building permits; planning; painting, widening and naming streets, etc.) and to provide public services (such as drinking water, street lighting, sanitation, public safety, street paving, maintenance, transit, parks, markets and supply centres).

Box 3.3. **Legal framework governing municipal planning in Mexico** (*cont.*)

State laws on human settlements

The overarching ambition of state laws on human settlements is to ensure balanced territorial development and an equitable relationship between urban and rural areas. The law establishes the active participation of the state, municipalities and the federal government in promoting urban development and establishing the ground rules for urban development. It also provides additional details on the principles according to which the state manages land, water and forests.

Municipal organic laws and municipal codes

Municipal laws articulate the powers of the municipal level of government in urban development, including the responsibility for plans and programmes to govern the function, growth, development and restructuring of urban areas. Some municipal organic laws determine the context of the plans, including: the division of the city into economic zones; an inventory of the municipality's natural resources; the delimitation of the urban area; the conditions and operation of public services; the rules regulating urban development in the city. Municipalities should work with relevant state partners to carry out its urban development plans and programmes.

Source: SEGOB website, (n.d.), *www.e-local.gob.mx/wb/ELOCAL/ELOC_La_administracion_y_reglamentacion_del_desar2* (accessed 22 April 2013).

Further, municipalities lack policies and instruments for continuity as the administrations are redesigned every three years with the arrival of a new government. The three-year term limit imposed on mayors,[6] which by extension triggers a high rate of turnover of municipal civil servants in charge of planning and development, makes it difficult to engage in medium- to long-term planning. In most cases, the previous administration has not left any records behind (see Smith, 2012), thereby eliminating institutional memory and any networks or systems that had been established for working together. As Jones and Ward (1998) point out, the cyclical upheaval of municipal administrations has "undermined the development of a professional cadre of planners, land registry officials, cadastral assessors and managers, and other land-use officers". This problem has been clearly identified in the 2012 Urban Competitiveness Index for Mexico (IMCO, 2012), which warned that municipalities are an institution "destined to fail". This is all the more problematic, given the level of responsibility over land use and urban development that has been granted to municipal authorities by federal and state legislation. Moreover, the brief term limits have also impeded action related to complex, longer term strategic issues that could benefit from inter-municipal or metropolitan co-operation, such as water management or metropolitan development. The limited capacity of municipal planners has been recognised by the federal government, notably in its 1995-2000 National Urban Development Plan, which included, *inter alia*, strategies for establishing civil service positions in planning and registry offices (SEDESOL, 1996 in Jones and Ward, 1998).

As a result, urban planning is not a policy priority for most municipalities. The limited capacity of generally weak municipal administrations is no match for many of the developers, who tend to be large, powerful counterparts. Planning expertise varies considerably and technical shortcomings are reported. Even in cases where the regulations are clear about the level of service provision required of developers

(e.g. provision of parks, roads and other infrastructure), oftentimes city planning authorities are not familiar with the requirements and allow developers to proceed while awaiting the necessary permits. Corruption is not uncommon. Further, as will be discussed below, many municipalities often approve subdivision (*fraccionamientos)* permits based on plans that may be 15-30 years old.

Moreover, outdated urban development plans undermine efforts to address urban sprawl and to anticipate the demand for urban services. Mexican municipalities have several planning instruments at their disposal with which to regulate and promote urban development (Box 3.4). The prevalence of outdated urban development plans is especially troubling in light of the population growth and urban expansion the metropolitan area has experienced over the past 30 years. As a result, most plans no longer reflect the demographic or spatial realities of cities in the metropolitan area. With the exception of the city of Puebla, which has just updated its urban plan, most municipal plans in the state of Puebla are 15 to 30 years old. For instance, the most recent municipal urban development plan in Coronango, a small municipality situated to the northwest of Puebla, dates from 1976, with a planning horizon of 1982 and an expected population of 17 543. In 2010, its population was well over 35 000. San Andrés Cholula's municipal urban development plan dates from 1995. In Tlaxcala, 4 of the state's 60 municipalities have updated or are conducting an update of their municipal plans; just 1 of the 4, San Pablo del Monte, is located in the Puebla-Tlaxcala metropolitan zone. Further, even recent planning documents may be based on outdated or only partial data. For instance, the city of Puebla's 2007 Municipal Sustainable Urban Development Programme includes transport data from 1994. Outdated planning instruments will continue to be a problem as the metropolitan area continues to grow.

The difficulty in developing and updating plans also points to a more general problem of co-ordination between the states and municipalities. Municipalities are required to develop urban development programmes and plans, yet in practice are generally only able to update plans with the help of federal and state resources. According to state planning officials interviewed for this review, no more than 15 of the 218 municipalities in Puebla have the resources to generate their own urban plans. In Tlaxcala, San Pablo del Monte is updating its plan with federal funds. As discussed previously, technical capacity is also a problem, in light of the staff and information lost every three years at the change of administration. At each change of municipal administration, state planning officials provide training to new municipal staff on the process for obtaining funds to develop plans. Even so, municipal staff have just three years in which to apply for federal funding and carry out the update process. Finally, even when municipal plans are updated, a lack of capacity at municipal level generates an implementation problem.

Why might sprawl be so prominent in Puebla-Tlaxcala?

Even though urban sprawl is a general trend throughout Mexico and Latin America, evidence suggests that Puebla-Tlaxcala's urban footprint has expanded at an even faster rate than in other Mexican metropolitan zones. Further analysis would be needed to understand the causes of this phenomenon. One possible explanation may be related to the high level of administrative fragmentation in Puebla-Tlaxcala, a topic that will be discussed in greater detail in Chapter 4. The Puebla-Tlaxcala metropolitan zone is composed of 39 municipalities from 2 states. After the Valley of Mexico's 76 municipalities, Puebla-Tlaxcala has by far the highest share of municipal authorities responsible for guiding land use and urban development within a metropolitan area. A lack of co-operative arrangements between the 39 municipal administrations within the

Puebla-Tlaxcala region, which tend to address shared problems in isolation, does little to co-ordinate urban development across municipal boundaries, let alone at the metropolitan scale. Moreover, these co-operation and co-ordination failures among municipalities reflect the difficulty of working together to address the challenges of effectively managing urban growth and development in a rapidly growing region.

Box 3.4. **Municipal tools for urban development in Mexico**

Municipal urban development plan (*Plan Municipal de Desarrollo Urbano*)

The municipal urban development plan is prepared by the local government to establish the objectives and policies to organise and regulate the city's urban development. It should provide guidance on land use within the municipality, identifying areas suitable for housing, industrial activities, commercial activities, schools, markets, green spaces, public services, communication systems and transport. It should contain an analysis of the geographic, economic and social population centres within the municipality and an inventory of public infrastructure, and the conditions of service and development. It should also contain a diagnosis that identifies priority areas needed in terms of infrastructure or maintenance. The plan should set goals and targets, with a schedule and allocation of responsibilities. These plans should be in accordance with the legal framework for urban development and national and state plans for urban development. Puebla is currently updating its municipal sustainable urban development programme to accommodate for the changes proposed by the city's DUIS-sponsored Urban Regeneration Plan for the Historic District (see Box 3.5).

Area master plan (*Plan Director de los Centros de Población*)

The area master plan is developed for each population centre within a municipality in view of managing, regulating, conserving and enhancing its growth and development. The plan provides precise details on the urban infrastructure needs; identifies areas for future expansion; promotes urban redevelopment activities; manages the maintenance of public buildings, infrastructure and cultural heritage; and seeks to ensure ecological balance. Its structure is similar to the municipal urban development plan, with regard to the geographical, economic and social diagnosis of the area and the identification of priorities. It is developed by the city in co-ordination with state authorities and local communities and approved by the City Council. It must be in accordance with the municipal urban development plan and all other urban development plans and regulations mentioned previously.

Municipal regulations (*Reglamentos municipales relacionados con el desarrollo urbano*)

Municipal regulations related to urban development articulate the rules and norms for public works, building and construction, and, in particular, *fraccionamientos*, which are planned residential communities that are built with all of the necessary urban infrastructure. Regulations pertaining to public works regulate public spending and all activities related to the planning, programming, budgeting, implementation and maintenance of municipal public works. Building regulations govern all construction (private and public) and provide norms for hygiene, safety and comfort. These regulations also articulate the process of municipal control over land use and construction via the issuance of building permits and licenses and the requirements for those wishing to build within the city. Regulations for planned residential development communities articulate the requirements pertaining to the urban infrastructure (water, electricity, street plan, telephones, etc.) that are necessary to gain approval. All municipal regulations related to urban development must also be in accordance with the municipal urban development plan as well as with all plans and regulations developed at higher levels of government. Puebla is also proposing modifications to its municipal urban development law and subdivision law to accommodate for the changes proposed by the city's DUIS-sponsored Urban Regeneration Plan for the Historic District.

What are the consequences of sprawl for Puebla-Tlaxcala?

Among the many costs of urban sprawl, four are particularly evident in Puebla-Tlaxcala: *i)* traffic congestion and long travel times between jobs and housing; *ii)* increased costs of infrastructure provision and inadequate public service provision; *iii)* increasing environmental pressures; and *iv)* territorial inequalities.

Traffic congestion and long travel times between jobs and housing

Traffic congestion is an increasing challenge in Puebla-Tlaxcala, particularly in the city centre. Transport, both private and public, is mostly motorised in Puebla-Tlaxcala, as in the rest of Mexico. As reported in Chapter 1, between 2000 and 2010, Mexico's motorisation rate nearly doubled. Moreover, the public transport fleet consists of approximately 6 000, primarily low-capacity, vehicles such as microbuses, minibuses and taxis, further contributing to congestion and impeding the development of an efficient transport network (Secretaria de Transportes del Estado de Puebla, 2011). Multiple operators cover the same routes (284 in total), especially in the city centre.

The inefficiency of the transport system, as well as its cost, represents a particular challenge for lower-income populations, as well as those living in communities located far from the urban core. Households in Puebla-Tlaxcala are accustomed to considerable distances and travel times between housing and jobs. A reflection of a potential accessibility problem, many workers living in the periphery spend two to three hours a day commuting. Moreover, it is estimated that an average family in the metropolitan zone spends about 33-35% of its income on transport. This potentially has a huge impact on the competitiveness and productivity of the metropolitan zone since this share of income and time is not spent on production and consumption. Authorities interviewed for this review said that in Mexico's economic development model and culture, people go as far as necessary to get a job, and it is considered normal to spend a lot of time commuting. The dominance of informal public transit raises serious safety concerns. For this reason, the recent development of a bus rapid transit system (BRT), RUTA (Box 3.1 above), is encouraging.

Increased costs of infrastructure provision, inadequate public service provision

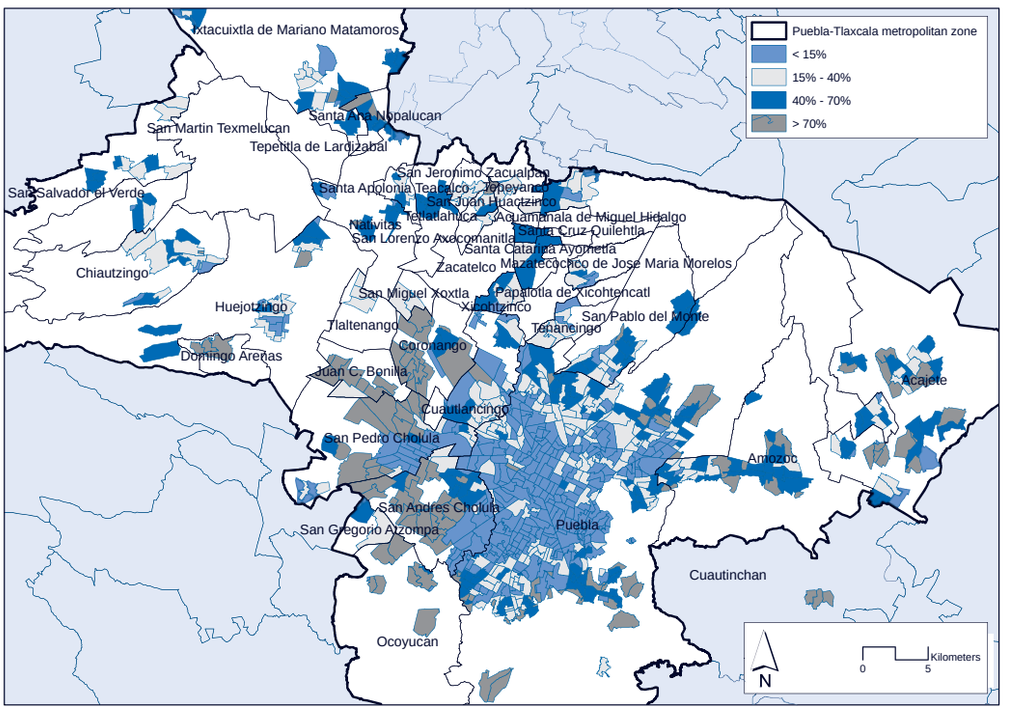
Sprawling development, coupled with the installation of irregular settlements, in the urban periphery has resulted in rising costs of service provision and service delivery problems throughout the metropolitan zone, especially as regards water, sanitation and transport. The demographic, economic and spatial expansion of Puebla-Tlaxcala has not been accompanied by adequate development of urban infrastructure. Nechyba and Walsh (2004) cite the unequal provision of public goods and services as one of the primary costs of urban sprawl. Sprawling development increases the cost of developing transport infrastructure, water and electricity distribution systems, and wastewater treatment plants (Herbert et al. 2012).

Inadequate water supply is one of the region's most pressing challenges. While the overall coverage of water and sanitation services is relatively high in Puebla-Tlaxcala, there are important intra-regional disparities in the provision of water infrastructure. For instance, while 92% of housing units within the municipality of Puebla have access to piped water and 98% to drainage, this proportion is significantly smaller for neighbouring municipalities, such as Amozoc (70% and 92%, respectively), Coronango (14% and 83%), Cuautinchán (63% and 76%), Cuautlancingo (84% and 98%), San Andrés Cholula

(50% and 95%) and San Pedro Cholula (70% and 93%) (State of Puebla, n.d.). Analysis at the census-tract (AGEB) level illustrates the significant disparities in access between the central and peripheral areas of the metropolitan zone (Figure 3.5). Those without access to piped water rely on artisanal wells, which may suffer from inadequate resource management. In some cases, the absence of drainage systems has led to contamination problems (State of Puebla, n.d.).

Figure 3.5. **Population without access to water network in Puebla-Tlaxcala (2010)**

Census-tract (AGEB) level



Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: Based on data from CONAPO (2010), *Indice de Marginacion Urbana 2010* (Index of Urban Marginalisation), CONAPO.

Moreover, the frequency of water provision and quality of infrastructure remains inadequate. The majority of houses have only intermittent provision of water, ranging from once a week to two or three days per week.[7] Few of the region's wastewater treatment plants function on a regular basis. As reported by representatives of the Tlaxcala Water Commission, just 30 of the state's 127 treatment plans were in operation, since municipalities lack resources for their proper operation and maintenance.[8] In the city of Puebla, approximately 40% of the water supply is lost due to obsolete or malfunctioning infrastructure.[9] As a result, the region's water is reportedly highly contaminated and worsening (Iracheta Cenecorta, 2012).

Increasing environmental pressures

The already fragile water supply in Puebla is further threatened by urban sprawl and population growth, which impact unfavourably on water resources and can generate

pollution in river basins (Municipality of Puebla, 2006). As reported in Chapter 1, water quality issues are compounded by challenges of water quantity, as the urbanisation and deforestation of watershed recharge areas has led to diminishing yields of many wells[10] and recent floods (2010) have had major impacts on the water table. Further, demand for water supply in Puebla-Tlaxcala has increased in recent decades due to the growth of population and economic activity. However, the area's water provision comes predominately from the extraction of groundwater resources, which are conducted with little incentives for rational use (e.g. energy subsidies allocated to farmers and working against water policy objectives) resulting in overexploitation of the region's aquifers, in turn increasing pumping costs, lowering water quality, destroying wetlands and lowering the quality of soil (State of Puebla, 2011).

Moreover, there is a link between increasing motorisation rates and air pollution in Puebla-Tlaxcala. According to ProAire, motor vehicles are responsible for 85% of emissions (Municipality of Puebla, 2013). Not only have motorisation rates increased, but the region's entire public transit fleet is also motorised. Moreover, the proliferation of low-capacity vehicles covering the same routes adds to both traffic congestion and may also contribute to higher levels of air emissions. Finally, anecdotal evidence that some workers spend two to three hours in their daily commute suggests that congestion and accessibility challenges could be exacerbating emission levels from vehicle transport.

Territorial inequalities

Urban development processes can affect social marginalisation by contributing to improve social outcomes or, alternately, by exacerbating inequalities. A recent study led by SEDESOL reports that the urbanisation process in Mexico is strongly conditioned by the availability of land for different segments of the population, and particularly land for low-income populations (Eibenschultz and Benlliure, 2009). The relationship between urban development and social marginalisation is indeed complex, and the location of development is but one factor in determining accessibility between home and employment opportunities and services, such as schools, health centres and infrastructure networks. In Puebla-Tlaxcala, as is the case elsewhere in Mexico and across the OECD, many new developments are built in the urban periphery where the cost of land is cheaper, which can contribute to important intra-regional disparities in the provision of infrastructure among municipalities.

Not only does Puebla-Tlaxcala exhibit some of the highest levels of social marginalisation among Mexican metropolitan zones, at municipal level, the highest levels of social marginalisation appear to be concentrated in the metropolitan periphery. Moreover, considerable differences are present within municipalities in the metropolitan zone. Neighbourhoods with very low levels of marginalisation border neighbourhoods with very high levels of marginalisation, indicating that the metropolitan zone is home to pockets of poverty and affluence. This can be explained in part by the advent of recent master-planned communities, such as Angelópolis, which has in some cases led to social exclusion, and the difficulty for public actors to control the development process and its outcomes. In 1992, the federal government expropriated a large territory (1 071 ha) of *ejido* land straddling the northwestern border of the city of Puebla and three other municipalities (Congreso del Estado de Puebla, 2008). The territory was then transferred to the state of Puebla as land reserves for the development of Angelópolis, a major economic and urban pole. Angelópolis is now home to a number of universities, state government agencies, shopping malls and largely upscale residential development. The territory was, in part, intended as a response to the uncontrolled and unregulated

expansion that had characterised much of the region's prior urban development. Angelópolis has become a successful economic pole for the metro region, with a mix of residential, commercial, research and institutional uses. Further, contrary to the irregularity that characterises other areas of the region, Angelópolis was master planned and does not, on average, experience the same level of service delivery challenges as other areas.[11]

However, despite the initial intention to attract residents of all income levels to Angelópolis, just 5% of the initial target for social housing development had been reached by 2008 due to the acceleration of land prices after the *ejido* land was converted to urban uses (Congreso del Estado de Puebla, 2008). Further, several large gated communities (*fraccionamientos*) have been constructed, in which home values are up to six times higher than the metro average.[12] Lomas is one such gated community within Angelópolis, privately owned and expected at build-out to house 80 000 residents. Trash collection and some public safety services are provided by municipalities, access roads have been built and managed by the state government, and most other services are provided by the private sector. To accommodate the desired entry point of Lomas' next development phase, efforts are underway to displace the state-operated toll-booth on the access road so that future residents can avoid paying the toll. Alternately, there is a proposal to construct a private, toll-free frontage road that would run parallel to the toll-road. Despite the role of the public sector in facilitating the acquisition and purchase of the land, few of the initial public objectives of the project, such as a target level of social housing, have been achieved. Moreover, current efforts to circumvent the publicly managed toll access road could hamper the capacity of the public sector to provide services efficiently.

What strategies could guide urban growth more effectively?

To a large extent, policy makers at all levels of government are aware of these challenges and are undertaking several major initiatives to address urban sprawl, congestion and service delivery challenges. At the federal level, the new Ministry of Aagrarian, Territorial and Urban Development (*Secretaria de Desarrollo Agrario, Territorial y Urbano*, SEDATU) has proposed several policy directions of considerable interest, namely a proposal to begin limiting federal subsidies to development projects that are located only within the urban core.[13] Moreover, recent initiatives in Puebla-Tlaxcala involving federal support, such as the development of the RUTA bus rapid transit network and the DUIS redevelopment project in Puebla's historic centre (Box 3.5), as well as the successful negotiations to build an Audi plant just outside of Puebla-Tlaxcala, represent major opportunities for the metropolitan zone. The RUTA system is an important opportunity to improve the efficiency of the transport network. The pilot DUIS project, for its part, could help demonstrate the potential and build capacity among public and private actors for a more compact and integrated form of urban development in Puebla-Tlaxcala. If successful, the DUIS initiative could also help build confidence among investors that dense redevelopment efforts can be worthy investments. Nevertheless, critical and significant investments such as RUTA and DUIS risk limited impact without being operationalised at the metropolitan scale.

Box 3.5. **Efforts to curb urban sprawl and repopulate the historic core: Puebla's DUIS initiative**

To reduce the trends toward urban sprawl and repopulate the city's historic centre, a 1 250 ha area comprising the city of Puebla's *zona de monumentos* and surrounding neighbourhoods recently received the federal government's Sustainable Integrated Urban Development, or DUIS (*Desarrollos Urbanos Integrales Sustentables*) certification. DUIS is a joint initiative of a range of federal ministries and public agencies with mandates related to urban and economic development, housing (including housing finance, construction, regularisation and titling), environmental sustainability, infrastructure and investment. The DUIS programme offers incentives to developers to build dense, mixed-use, sustainable communities. As Herbert et al. (2012) report, "in exchange for fulfilling DUIS criteria, developers can receive considerable benefits, including technical land-use and environmental planning assistance from SEDESOL and SEMARNAT; preferred housing subsidies from CONAVI; infrastructure financing and loan guarantees from Banobras; housing mortgage credits from Infonavit, FOVISSSTE, and the SHF; and Fonadin investments in land banks and infrastructure."

Puebla's DUIS initiative, the first DUIS-certified project in Mexico to be sited in a city centre, seeks to redensify and repopulate the historic centre of the city. To do so, the plan calls for increasing density allowances of infill locations; improving aging urban infrastructure; and prioritising public transport and non-motorised modes of travel, such as walking and cycling. Local policy makers view DUIS as a tool to offer federal incentives to private developers to encourage sustainable development projects. The Puebla State Land Bank is responsible for co-ordinating Puebla's DUIS initiative in partnership with the municipality of Puebla.

Source: Herbert, C. et al. (2012), *The State of Mexico's Housing – Recent Progress and Continued Challenges*, Joint Center for Housing Studies, Harvard University, December; Municipality of Puebla (2012), "Plan de Regeneración y/o Redensificación Urbana de la Zona de Monumentos y su entorno", Presentation by the municipality of Puebla dated September 2011.

These initiatives have, however, largely been pursued in isolation of each other and in the absence of a larger framework for integrated policy making. There are a number of strategies that can be pursued in Puebla-Tlaxcala to leverage these opportunities and ultimately achieve more efficient urban development outcomes, including: *i)* linking opportunities for land use and transport planning; *ii)* tackling the vacancy problem; *iii)* developing tools to balance the costs and benefits of development; *iv)* building capacity for planning and urban development; and *v)* applying a metropolitan lens to planning challenges and solutions.[14] For these strategies to be both possible and effective, however, it will be critical for Puebla-Tlaxcala to establish more effective co-operative arrangements between and across levels of government. The administrative complexities of co-ordinating development in a 2-state, 39-city metropolitan zone, combined with limited municipal capacity and informational deficiencies across the region (such as systems for data collection and management and updated planning tools), are current obstacles to sustainable, equitable urban development in the region. Strategies to facilitate co-operation among municipalities and across levels of government will be discussed in detail in Chapter 4.

Link opportunities for land use and transport

The introduction of the RUTA bus rapid transit network in Puebla-Tlaxcala is an important opportunity for the metropolitan zone. However, the development potential associated with the BRT network has thus far been largely ignored. There is little evidence that the design of the RUTA network has been linked to planning for economic

and urban development. Part of the problem stems from the difficulties in Mexico, as in many other countries, associated with linking urban development to infrastructure. While municipalities in Puebla-Tlaxcala and in Mexico generally may have considerable control over land-use planning and urban development, they have much less control over public transport, in which federal and state authorities are involved, as well as private actors such as concessionaries. It is thus not surprising that the design of the RUTA system was not more closely considered in relation to its potential to impact – and be impacted by – urban form and development. As mentioned earlier in this chapter, in the initial phases of RUTA, for instance, co-ordination failures have resulted in information gaps between transport actors at different levels of government, suboptimal locations for some routes and stations, as well as hasty design decisions. These difficulties suggest that the investment has thus far not been able to capture the potential gains and synergies that could result from a transit-oriented development approach. The consequences of this "missed opportunity" are many, as better links between transport and urban development can have important economic, social and environmental benefits, as will be discussed below.

Transit-oriented corridors: The future of the RUTA network?

Recent evidence suggests that many of the benefits of transit-oriented development (TOD) widely touted by land-use and transport planners (Box 3.6) can in practice best be achieved when TODs are linked in transit-oriented corridors (TOCs) (Braughton et al., 2011). TOCs are travel corridors in which multiple TODs, designed as mixed-used, transit-oriented nodes, are linked to each other (Braughton et al., 2011). Curitiba (Brazil) and Virginia (United States) have been successful with this approach. One study estimating the economic and environmental benefits of the Ballston-Rosslyn TOC in Virginia found that the project had increased ridership, generated new jobs, increased property values by USD 1 billion within a year of opening the metro station, tripled commercial and office space, and increased housing values near the metro stations. There has been only a modest increase in traffic pollution and the area's carbon footprint, and, due to the fiscal benefits of higher densities, less than 10% of the county generates one-third of the county's revenues, resulting in the lowest property tax rates in the region (Andrews and Choi, 2012).

What, specifically, can public authorities do to foster the development potential of a TOC? An important step for the medium to long term in Puebla-Tlaxcala would be to design a transport system at the metropolitan scale that is linked to existing and strategically planned urban development. Copenhagen's "five-finger plan" is one well-known example of a plan integrating transport and land use. To be successful, it will be important to conceive of the accessibility of the metropolitan transport system at multiple scales: at both the regional scale (as a network linking areas of interest), as well as at the smaller, route and station-level.

To co-ordinate transport and land-use planning at metropolitan scale, it would be necessary to involve a broader range of actors at all levels of government in the planning of subsequent phases of RUTA's implementation. Because land-use decisions are in the hands of municipalities, state and federal transport authorities would do well to involve municipal land-use planning authorities, representatives from the city of Puebla's municipal planning institute, IMPLAN, as well as representatives from the recently created Puebla State Land Bank (*Banco Estatal de Tierra*) (described in further detail below). Additionally, it will be important to involve non-governmental actors, including the private sector and citizens. In the United States, metropolitan areas such as Baltimore,

Philadelphia, San Francisco-Oakland and Denver have formed inter-agency working groups and committees to co-ordinate decision making over transport-oriented development (Transportation Research Board, 2004).

Box 3.6. **Potential benefits of transport-oriented development**

Well-designed transport-oriented development (TOD) can have important economic, social and environmental benefits. TODs can have a number of benefits to the public and private sector (see table below), helping alleviate traffic congestion, contributing to the expansion of affordable housing and reversing trends of centre city decline and disinvestment (Transportation Research Board, 2004).

Potential benefits of transit-oriented development for the public and private sectors

Public sector	Private sector
Primary benefits	
– Increase transit ridership and transit revenues (if transit system is publicly operated)	– Increase transit ridership and transit revenues (if transit system is privately operated)
– Revitalise neighbourhoods	– Increase land values, rents and real-estate performance
– Provide joint (public-private) development opportunities	– Increase affordable housing opportunities
– Attract new investment and businesses to neighbourhoods	
Secondary benefits	
– Less traffic congestion and related costs of congestion (pollution, fuel consumption)	– Increase retail sales
– Increase property and sales tax revenues	– Increase access to labour markets
– Reduce sprawl; conserve open space	
– Reduce road expenditures and other infrastructure outlays	

Source: Adapted from Transportation Research Board (2004), *Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects*, Federal Transit Administration, Washington, DC, available at *http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_102.pdf* (accessed 22 April 2013).

At a smaller scale, development nodes, permitting higher densities, could be targeted around future RUTA stations. It may be necessary to revisit existing zoning regulations along BRT routes and particularly near BRT stations to facilitate higher densities and the development of the most appropriate land uses, densities and site designs near transit routes and stations (Transportation Research Board, 2004). As Guerra and Cervero (2011) point out: "'mass transit' needs 'mass' – i.e., density." RUTA routes should be located where demand is highest and can have the greatest development impact, while transit stations should be sited in areas with land assemblage potential and those that are amenable to higher densities. It is also important to facilitate transfers between routes by considering how the BRT network is integrated into the existing bus network, down to the details of station design and pedestrian safety measures for transfers between routes.

Value capture tax

Another strategy for facilitating greater linkages between land use and transport investments and contributing to the financing of subsequent phases of the RUTA system would be to consider implementing a value capture tax. The principle of a value capture tax is to capture a portion of the increased value that accrues to property owners when a large infrastructure improvement is constructed in close proximity to their property. Value capture taxes can take different forms. Two common types that have been used to varying degrees in Latin America include betterment contributions (or special assessment

districts or zones) and the sale of building rights. Better contributions are charges imposed on owners of selected properties to defray the cost of a public improvement or service from which they specifically benefit. Betterment contributions have been used widely in Colombia. The sale of building rights, used with great success in Brazil, is a mechanism by which the government charges for special rights it grants, such as allowing a higher floor-area ratio (which facilitates higher densities), zoning changes (from residential to commercial) or the conversion of land from rural to urban use (see Smolka, 2012).

Value capture taxes have nevertheless faced implementation challenges in Latin America, despite their rather wide integration into the legislative framework. A recent survey of over 1 000 public officials and scholars in Latin America suggests that the challenge is not related to the legal or technical difficulties of implementing these tools, but rather a lack of understanding among public leaders, including mayors, of the potential of these tools to generate revenue and improve municipal fiscal autonomy (Smolka, 2012). Further, many respondents to the survey expressed a preference for betterment contributions over the sale of building rights, even though evidence suggests that the latter has much stronger revenue-generating potential. For example, Sao Paolo generated USD 420 million from an auction of development rights in April 2012, adding to existing revenues of USD 2.5 billion from previous auctions (Smolka, 2012). One reason for this is that sale of development rights is a less familiar instrument.

If authorities in Puebla-Tlaxcala wish to move forward with a value capture tax, to overcome any resistance, it would likely be important to educate public officials on the potential gains of these types of instruments, which include the potential to support land use and transport integration and generate revenues to improve municipal fiscal capacity. Smolka (2012) recommends targeting a number of important stakeholders for this awareness-raising, including mayors, local congresses, planners and other actors in urban development; increasing awareness among citizens could also help to build necessary political support. Further, given the greater revenue-generating potential of the sale of development rights, this method could be preferable to the implementation of betterment contributions in Puebla-Tlaxcala.

Tackle the vacancy problem

Vacant properties can be a significant drag on local economic and fiscal health, exacerbating already intense fiscal stress for local governments (Mallach and Vey, 2011). Yet, as Brophy and Vey (2002) point out, they can also be an asset, as opportunities for infill development in proximity to services, thus limiting the need to further urban expansion. It is likely that the limited rental market in the metropolitan zone, and in Mexico generally, is an additional obstacle to "activating" vacant properties more quickly. Authorities in Puebla-Tlaxcala have already begun to address the challenges posed by vacant properties in the historic centre city of Puebla through the DUIS initiative, an integrated, multi-pronged approach to urban redevelopment (see Box 3.5). In this sense, the DUIS project in Puebla indeed takes the approach of building on the potential of vacant properties. The development and design objectives of the DUIS project could eventually be extended to redevelopment efforts in other areas of the metropolitan zone. Among the possible strategies for addressing the high share of vacancies in the metropolitan zone are:

- A public inventory of vacant properties. A first step toward addressing the problem of vacant properties at metropolitan scale would be to catalogue existing vacancies throughout Puebla-Tlaxcala and to assess their potential. The Land

Bank could be tasked with developing an inventory of vacant properties, potentially beginning with the city of Puebla. Ideally, this inventory would ultimately include as much data pertaining to the property as possible, such as market value, tax status, zoning, ownership (Brophy and Vey, 2002). Some cities, like Syracuse (New York) and Saint Paul (Minnesota), have established vacant land registries, requiring property owners to self-register or risk facing fines (Knauss, 2013; Saint Paul, MN website, n.d.). In other cases, the public sector has been granted authority to purchase the property to improve its use. The Puebla State Land Bank has been granted this authority under the terms of the State Executive Order authorising its creation. This should be pursued in parallel with the important ongoing state-led efforts in both Puebla and Tlaxcala to update and digitise cadastres and land registries.

- Taxes on vacant properties. A growing number of cities and counties across the United Kingdom and the United States, as well as Hong Kong, China and the government of Israel, have implemented (or are considering) a tax on vacant properties. In many cities in the United States, a tax on vacant properties has been conceived as a way to address the challenge of abandoned properties due to mortgage foreclosures. In 2012, Washington, DC, approved an increase in the tax rate on vacant or blighted properties (District of Columbia website, 2012).

- Loans to redevelop vacant properties. Another approach has been taken by the city of Cleveland (Ohio), which offers loans to developers wishing to redevelop vacant or underutilised properties (City of Cleveland, n.d.). The loan is designed to overcome barriers to redevelopment of these types of properties; eligible properties must be at least 20 years old and at least 40% vacant for two years. Cook County (Illinois) passed a Vacant Building Ordinance in 2012, creating a master public registry of vacant properties in the unincorporated areas of the county and requiring owners or mortgagees to register their properties; creating a uniform set of guidelines for maintaining and securing vacant properties; implementing penalties for non-compliance; and establishing a legal framework for enforcement and appeals (Cook County, n.d.).

- Land value tax. Reforms to property tax could be another strategy for encouraging vacant properties to be put to a higher and better use. Two alternative reforms could be considered – a land value tax, which taxes only the land (not the structures), or a two-rate tax system, which imposes a higher tax rate on the land than on the structures. Both of these may raise revenue without distorting the incentives for owners to invest in and make use of their land (Dye and England, 2010). A two-rate system can encourage improvements on relatively small lots of land because such improvements are taxed at a lower rate than the land itself, potentially leading to increased economic development (Cohen and Coughlin, 2005).

  A land value tax, rather than a two-rate property tax, may be a preferred option in Puebla-Tlaxcala due to its potentially simpler implementation. Two-rate property taxes can be more administratively burdensome to implement and require regular and reliable assessments of land and improvements to be successful. Moreover, there is precedent for introducing a land value tax in Mexico: the city of Mexicali had great initial success with a land value tax, which was unfortunately not sustained in subsequent years due to changes in municipal administration (Box 3.7). Dye and England (2010) suggest that it may be advisable to phase in

land value taxation over several years and to offer tax credits to lower-income owners who may own land with a high value yet with low-value buildings. Also of critical importance would be to build capacity among property tax assessors; there would be a role for the states and/or federal government in this regard.

Box 3.7. **Mexicali's success in implementing a land value tax**

In 1989, the city of Mexicali shifted from a property tax on both land and buildings to a land value tax, taxing only the value of the land. The reform coincided with a federal initiative to improve local finances through a cadastre modernisation programme led by Banobras, the national public development bank. The shift required the creation of a Municipal Valuation Commission, composed of representatives from real estate organisations, professional associations and citizen representatives, which calculated the new property tax rates based on the distance from "specified high-value locations" within the city (Santoyo-Amador, 2003). After approval from the state legislature, the new system was implemented with a single rate on residential land and another rate for non-residential land.

Some of challenges to implementing the land value tax included the increased complexities of tax administration, technical capacity gaps among assessors and other public officials in charge of the cadastre, and an out-of-date and incomplete cadastre (in which just 58% of properties were registered). Despite these challenges, significant gains in property tax revenue and other taxes based on land (i.e. land transfer tax) were achieved in the years following the reform. Mexicali's share of overall property tax revenue for the state increased from 30% to 60% (Santoyo-Amador, 2003). With the additional revenues, the city undertook a large public works improvement programme (Perló Cohen, 1999). Crucial to the success of the reform was a dynamic mayor with considerable political capital (Perló Cohen, 1999; Santoyo-Amador, 2003). The reform was later adopted by the rest of the state of Baja California and the neighbouring state of Baja California Sur (Perló Cohen, 1999).

The city has faced difficulties in maintaining the initial success of the reform due to changes in municipal administrations, resulting in leadership that did not prioritise the reforms, and a failure to regularly update the cadastre (UN-Habitat, 2010).

Source: Santoyo-Amador, D. (2003), "Property taxes in Mexico", paper presented at World Bank seminar in June 2003, available at: *www1.worldbank.org/publicsector/decentralization/June2003Seminar/Mexico.pdf* (accessed 20 May 2013); Perló Cohen, Manuel (1999), "Mexicali: A success story of property tax reform", *Land Lines*, Vol. 11, No. 5, available at: *www.lincolninst.edu/pubs/334_Mexicali--A-Success-Story-of-Property-Tax-Reform* (accessed 20 May 2013); UN Habitat (2010), *Land Value Capture/Taxation (LVC/T) Scoping Study – Final Report*, prepared by the Development Action Group.

Develop tools to balance the costs and benefits of development

Urbanisation brings great benefits, including higher incomes and increased accessibility to jobs and services. Yet, it also generate costs related to infrastructure provision, for instance, as well as a range of economic, social and environmental externalities, like traffic congestion, environmental pollution or increased social marginalisation. It is clear that Mexico generally, and Puebla-Tlaxcala in particular, have experienced the benefits, just as they have paid the costs and grappled with managing the externalities associated with a rapid and expansive urbanisation process. Policy makers in Puebla-Tlaxcala could go further to balance the benefits and costs of urbanisation between public and private actors.

The ambition of Puebla's DUIS initiative is a positive step toward more sustainable development and could serve as a testing ground for policy experimentation to be replicated elsewhere in the metropolitan zone. However, there is scope for the public sector to further leverage the investment. As it stands, in exchange for the highly

attractive incentives offered through DUIS-certification (i.e. preferred financing, housing subsidies, infrastructure financing, reduced permitting times, ensuring certainty over land tenure, etc.), developers are not required to meet additional, higher environmental or social targets. Nor are they required to provide infrastructure, or funding for infrastructure, beyond the requirements generally stipulated in the development regulations. In short, local policy makers could ask more from developers.

A stronger role for the Puebla State Land Bank

In this sense, there may be a role for the Puebla State Land Bank (*Banco Estatal de Tierra de Puebla*). In June 2011, the state of Puebla established the Puebla State Land Bank as "the body responsible for generating a portfolio of land reserves in the state of Puebla to promote urban development of all types ... through the acquisition and/or management of areas ... to be allocated for growth, consolidation, conservation and improvement" (Article 3, State of Puebla, 2011). The recently established Land Bank represents an important, positive development in Puebla-Tlaxcala's institutional landscape for urban development and is a potentially powerful tool for guiding urban development. Land banking is "the process or policy by which local governments acquire surplus properties [such as those that have been abandoned or are vacant] and convert them to productive use or hold them for long-term strategic public purposes (Alexander, 2008). Land banks can have a variety of functions (Box 3.8). Recent research suggests that land banks can be powerful actors in metropolitan land policy by specialising in bridging access from private markets to land. The Genesee County Land Bank in Michigan, one of the most successful examples, acquires on average 1 000 abandoned properties annually. It has been credited with increasing property values by over USD 100 million, developing affordable housing, renovating commercial buildings and remediating brownfield properties (Alexander, 2008).

Box 3.8. **The functions of land banks**

Land banks can be powerful actors in metropolitan land policy by specialising in bridging access from private markets to land. Their functions can include:

- Engaging in asset banking by acquiring inventories of property from tax delinquencies and foreclosures, as well as nuisance abatement lien enforcement – two of the most common inventories. Other possibilities include property acquisition from excess residential real estate foreclosures, direct market purchases and deposits by third parties of properties to be held pending redevelopment. Another potential inventory source is property for which there is no present market capacity or demand, but could be strategic for future development or preservation.
- Carrying out market stablisation by intervening in property transactions in order to address the contraction and expansion of property liquidity relative to demand.
- Maintaining capital reserves that can respond to future strategic needs of the community, such as affordable housing, green spaces, or other community needs.
- Serving a bank regulatory function, required to exercise its authority consistent with the public good. Accordingly, all property transactions of land banking programmes should be consistent with clearly identified purposes and priorities for land use.

Source: Adapted from Alexander, F. (2008), *Land Banking as Metropolitan Policy*, Brookings Metropolitan Policy Program, The Brookings Institute, Washington, DC, *www.brookings.edu/~/media/research/files/papers/2008/10/28%20mortgage%20crisis%20alexander/1028_mortgage_crisis_alexander.pdf* (accessed 21 May 2013).

The Land Bank, in partnership with state and municipal actors, could take on a stronger role to guard against real estate speculation and protect the public interest. To date, its activities have mainly focused on promoting economic development in very specific areas. For instance, the Land Bank has been instrumental in fostering investment in Puebla's historical centre redevelopment project (DUIS) and facilitating the successful land acquisition process that will bring Audi to the state of Puebla. The role of the Land Bank in facilitating these investment opportunities and co-ordinating with various other public entities involved in urban development is of critical importance for the metropolitan region. However, it will be important to ensure that these economic opportunities are being sufficiently leveraged to maximise the potential for public benefit. The Land Bank could, in partnership with state and municipal authorities, seek to require more of developers in the development process, including, for example:

- Higher environmental and social targets. In exchange for reduced transaction costs, there is scope to oblige developers to meet higher environmental and/or social targets than would otherwise be required by existing legislation. Other opportunities for meeting social objectives, such as increased affordable housing, include offering density bonuses to developers (authorising a higher density for a development than the zoning provisions currently allow) in exchange for the provision of a share of affordable housing. Monitoring and strict enforcement of these provisions would be needed.
- Developer fees. Infrastructure improvements (including, but not exclusively, transport infrastructure; also water and sanitation networks) could be negotiated with developers in exchange for land, or provided by the public sector with support from developers in the form of developer fees, a one-time levy on developers to finance the growth-related capital costs associated with development. While cities across the OECD have successfully implemented developer fees, it is critical to avoid common pitfalls of their design and application (Box 3.9).
- Agreements requiring joint approval for large development projects. To more effectively guide urban development to limit *ex ante* the potential for service delivery challenges, municipalities could negotiate co-operative agreements that would foster a more co-ordinated development approach. For instance, inter-municipal agreements could be signed requiring joint approval for development projects over a certain size (i.e. a threshold of dwelling units or development area) that are liable to have a significant influence on surrounding municipalities. Additional strategies for greater inter-municipal co-ordination for service delivery are explored in Chapter 4.

Attention to potential social consequences of urban development

Finally, attention to the potential social consequences of urban development will also be important as many of the current development opportunities move forward. For instance, Puebla's DUIS urban regeneration initiative in the historic centre should be pursued as part of a broader metropolitan strategy that pays particular attention to the potential to reinforce or create social inequalities, as has been observed in Barcelona. Arbaci and Tapada-Berteli (2012) have found that Barcelona's urban renewal programmes of the 1980s in the Raval neighbourhood resulted in displacing – rather than eradicating – inequalities, and increasing their intensity; further, these types of municipal area-based urban renewal programmes have been found to reduce affordability within the

targeted area as well as for the city overall (Arbaci and Tapada-Berteli, 2012). As the authors point out and as it has been developed throughout this review, tackling the many expressions of social marginalisation and inequality will require a broad range of policies to expand education and skills-upgrading opportunities and upgrade the quality of the urban environment so as to improve access to employment and urban services.

Box 3.9. **Effectively designing developer fees to pay for the costs associated with growth**

Over the last 30 years, municipalities have extended the responsibility to developers to pay for the off-site costs associated with new development. These growth-related costs have traditionally included "hard" costs for roads, water and sewage systems and, in some jurisdictions, also "soft" costs for services like libraries, recreation centres and schools. The rationale for charging developers for off-site growth-related costs is that "growth should pay for itself" and not be a burden on existing taxpayers (Slack, 2002).

Development charges that reflect the true cost of providing services can buttress planning tools by guiding development away from high-cost areas to more efficient locations (Tomalty and Skaburskis, 2003). As Skaburskis (2003) notes, pricing policies can be an effective planning tool because "they directly engage developers, they make them accept the full project costs, they recognise and publicise the need to correct for the external costs of development by increasing the cost of land, and they raise funds for infrastructure development and compensation programmes." When urban form and density are not fully factored into the development charge, a market distortion occurs, often resulting in inefficient allocation of resources (Greater Toronto Area Task Force, 1996). A uniform charge subsidises inefficient uses of land; developments that impose higher costs are subsidised by developments that incur lower costs.

Two important lessons emerge from OECD experience as regards the design and implementation of development fees:

1. Design development charges to incentivise certain development characteristics (i.e. density levels). Most Canadian municipalities impose the same charge on all properties of a particular type regardless of location. Presumably, the practice of uniform charges has been adopted for administrative simplicity and perhaps also for reduced conflict with developers, but it is clearly inefficient. One result is likely to be over-development of low-density housing and under-development of high-density housing relative to what is economically efficient (Slack, 2002). In British Columbia, however, area-specific development charges are more common. The provincial government's *Development Cost Charge Best Practices Guide* suggests that development charges be varied according to density to encourage more compact development and reduce the amount of roads needed, increase the viability of transit and leave a smaller ecological footprint (British Columbia Ministry of Community Services, 2005).

2. Design fee structures based on the marginal costs, rather than the average costs, of infrastructure provision. In US jurisdictions, impact fees are widely used but their design is generally not consistent with efficient pricing of infrastructure (McGuire and Sjoquist, 2003). The reason is that fees are generally based on average costs rather than marginal costs. This means that fees are the same for an infill development close to existing services and a greenfield development on the outskirts of a city. Communities generally use one of two methods for calculating impact fees on single-family homes: a uniform charge regardless of size or a sliding scale that responds to either interior square footage or the number of bedrooms (Burge, 2010).

Source: Adapted from OECD (2013), *Green Growth in Cities*, OECD Publishing, *http://dx.doi.org/10.1787/9789264195325-en.*

Build municipal capacity for planning and land-use management

Building capacity in the public sector, particularly at municipal level, is a critical policy challenge for Puebla-Tlaxcala and Mexico generally. It will be especially important to build capacity for planning and urban development within the public sector. Over the medium to long-term, Mexico as a whole may look to re-evaluate the unwritten practice of administrative upheavals at each change of mayor, which has crippled municipal capacity for strategic planning and led to policy discontinuities. It will also be important for municipalities to develop the fiscal capacity required to support development with an adequate supply of infrastructure and, more generally, to effectively guide urban growth. Various opportunities for boosting municipal revenues exist, including updating the fee structures for potential property tax; water and waste are explored in Chapter 4. However, there is scope to build capacity in the short term, even if municipal staff, including planners, continue to be renewed every three years. Policy makers could focus on investing in both systems to ensure policy continuity, as well as more targeted training for municipal planners upon their arrival. The state planning department and IMPLAN, with others, could play key roles as regards the collection and analysis of reliable data and the provision of more targeted training for municipal planners.

- Collection and analysis of reliable data. There is a significant information gap within public administrations as regards data on housing, land use, transport and environmental challenges as well as information on the labour market, university entrants and graduates, and workforce needs, as reported in Chapter 2. These data are needed to enable municipal planners to prepare a diagnosis of existing challenges and opportunities and ensure that future plans are based upon a sound baseline assessment. Of equal importance will be the development of systems for managing and updating the data; to this end, a digitised database could be developed, with assistance from federal and state authorities, and made accessible to all municipalities in the metropolitan zone. It may not be necessary for the municipalities to manage the data collection and analysis function themselves; as will be explored in Chapter 4, IMPLAN and the *Colegio de Puebla*, which currently operates an urban observatory financed by the federal government, could join forces to perform this function for municipalities throughout the metropolitan region.
- Establishment of a city manager within municipal administrations. The creation of a city manager within the municipal administrative framework has been put forward as one possible strategy for improving the professionalisation of municipal administrations and, ideally, overcoming the cyclical upheavals in staff at each three-year election term (see IMCO, 2012; OECD, 2013b). OECD (2013b) suggests that the appointment of professional city managers to care for the day-to-day administrative operations of a municipality, as is the case in other OECD countries (e.g. Spain, the United States) could reduce administrative turnover within municipalities and help to improve municipalities' technical and administrative capacities.
- Targeted training for municipal planners. Training for municipal planners could be implemented by a more practical training programme through the state planning department. As discussed previously, at the outset of each municipal term, state planning authorities offer municipal planners an introduction to the plan update process and outline the steps to apply for the federal funding available

to update plans. Admittedly, there is little incentive for state planning authorities to invest significantly to train municipal authorities that will likely leave after three years. To improve the technical knowledge and administrative know-how of municipal planners, state planning authorities could consider developing a simple, user-friendly handbook or reference guide for municipal planners to communicate the everyday functions and processes. The guide could include references to relevant rules and regulations for urban development as well as "frequently asked questions" as regards the steps in the development process, common requests from developers as well as how to manage these requests. Another possibility would be to develop simple templates to conduct urban planning activities, such as for engaging civil society. This could include sample surveys to elicit opinions from the public, as well as simple, standardised reporting formats to collect and aggregate the responses.

A rare political moment?

The next mayoral term could be an ideal moment to make this investment, in light of the exceptionally long mayoral term of four years and eight months, rather than the usual three year-term (Box 3.10). State planning authorities could work with municipalities, perhaps in partnership with IMPLAN, to begin to develop these systems for policy continuity.

Box 3.10. **The next exceptional election cycle in Puebla**

In order to align municipal, state and eventually federal election cycles, the next mayoral term in Puebla will last for four years and eight months, rather than the usual three years (February 2014 – October 2018) (see table below). At state level, however, the alignment process will result in an exceptionally short gubernatorial term beginning at the end of the current governor's term in February 2017: the next governor will have only 1 year and 10 months in office (February 2017 – October 2018). Elections at municipal, state and federal levels will be aligned from 2018 onwards.

Duration of political terms by level of government in Mexico and Puebla and Tlaxcala

	Duration of political term	Upcoming exceptional term in Puebla
Federal government	6 years	–
State government	6 years	1 year and 10 months (from 1 February 2017 to 13 December 2018)
Municipal government	3 years	4 years and 8 months (from 15 February 2014 to 14 October 2018)

Source: COESPO (2012), Background report prepared by COESPO for the OECD in view of the Territorial Review of Puebla-Tlaxcala, unpublished.

- Information sharing across municipalities. It will also be important to establish better channels of communication and co-operation across levels of government for urban development and planning, as will be discussed in Chapter 4 (Box 3.10). This could offer an opportunity to share information and good practices. In addition to working better across levels of government, officials in Puebla-Tlaxcala could also consider participating in the national professionalisation forums (*Foros Nacionales de Profesionalización*), organised by the National Institute for Federalism and Municipal Development (*Instituto Nacional para el Federalismo y el Desarrollo Municipal*). These forums are designed for participants to discuss technical issues regarding the

professionalisation of municipal public servants and the implementation of a career service in municipal governments.

- IMPLAN as a capacity builder. Finally, IMPLAN has the potential to play a larger role, both in terms of its geographic scope as well as its functions. Several strategies could be considered to leverage IMPLAN to build planning capacity and better guide urban development within the metropolitan region – provided that the institute addresses the two critical obstacles relating to its limited geographic mandate and high turnover of professional staff at each election cycle. As discussed, there are opportunities for IMPLAN to assume responsibilities like data and information gathering and stimulating debate about metropolitan issues. Further, the scale of outdated municipal plans in the metropolitan area – just 2 of 39 municipalities in the Puebla-Tlaxcala metropolitan zone have recently completed or are in the process of updating their plans – suggests that additional support should be provided to municipalities, beyond the availability of federal funds and state-sponsored training on how to access these funds. To this end, IMPLAN could potentially operate as a contractor to the state governments of Puebla and Tlaxcala for specific tasks that could include metropolitan planning, programme design, implementation and evaluation, and technical co-operation to institutionally weak municipalities. This potential will be further developed in Chapter 4.

Apply a metropolitan lens to planning challenges

There is growing recognition among authorities in Puebla-Tlaxcala, as well as throughout Mexico and many countries across and outside the OECD, that the metropolitan scale for analysing and, in time, managing urban growth, is increasingly necessary. The Mexican federal government's definition of metropolitan zones in 2004 was a step toward understanding and formalising the metropolitan scale in Mexico at a functional level. In Puebla-Tlaxcala, over the past several decades and more so in recent years, attempts to develop plans at the regional or metropolitan scale have been undertaken by various sub-national governments.

Planning at the metropolitan scale has thus far failed to generate significant results and to date, no current planning strategy or vision for the metropolitan zone exists to guide development within Puebla-Tlaxcala. The most recently approved 2-state metropolitan plan dates from 1986, covering just 16 of the current 39 municipalities in the metropolitan zone. The plan was developed jointly by the state governments of Puebla and Tlaxcala. Many of its objectives remain largely unrealised (COESPO, 2012). The 1994 Regional Land Management Programme for the Metropolitan Area of the City of Puebla, developed by the state of Puebla, covered 14 municipalities in the state of Puebla. Again, most of the plan's objectives have yet to be achieved. In 2007, the *Colegio de Tlaxcala* attempted to develop a cross-border metropolitan plan, which was ultimately not approved. The state of Puebla, with support from the metropolitan fund, made another attempt in 2009, which also failed to be approved. According to state and municipal planning officials interviewed for this review, the failure of these plans was due to the absence of continuity in government, resulting in plans being left aside when administrations changed, as well as a lack of involvement from municipal authorities, resulting in little buy-in at local level. In 2012, the state of Tlaxcala took the lead on the development of a metropolitan plan, with support from the Metropolitan Fund; the plan has not yet been approved or published. Obstacles to metropolitan planning and

governance, as well as potential strategies to overcome them, will be discussed in greater detail in Chapter 4.

The capacity for metropolitan-scale planning could potentially be developed through the institutional evolution of IMPLAN (*Instituto Municipal de Planeación*), the city of Puebla's recently established municipal planning institute. In 2011, the municipality of Puebla created IMPLAN, charged with designing, implementing and evaluating public policies, programmes and projects to foster sustainable growth and development for Puebla (Box 3.11). IMPLAN benefits from a clear organisational structure, its own budget and operational rules, and has responsibility for performing long-term planning activities for the territory within the city of Puebla. While IMPLAN is mandated and financed exclusively by the municipality of Puebla, it nevertheless has metropolitan ambitions, and key stakeholders in Puebla envision the evolution for IMPLAN as a metropolitan planning institute. Recently, IMPLAN has also taken steps to convene representatives from neighbouring municipalities to foster metropolitan-scale debate about urban issues. The results thus far have been modest, although the initiative remains recent. However, in order for IMPLAN to be effective and sustainable over the medium to long term, it will be essential to dissociate the professional staff from the political upheavals every three years and allocate meaningful roles to other stakeholders in the metropolitan zone.

Box 3.11. **Puebla's municipal planning institute: IMPLAN**

In 2011, the municipality of Puebla established its own municipal planning institute (*Instituto Municipal de Planeación*, IMPLAN) to develop and monitor urban development plans and programmes in the short, medium and long term. Its responsibilities include planning the development of the territory under the jurisdiction of the municipality, preparing projects that the municipality will implement with its own resources or resources transferred from the state or federal government as well as from international funds, and fostering debate about urban, governance, environmental and sustainable development issues within the municipality and the metropolitan zone.

It is increasingly clear that addressing uncontrolled urban development in Puebla-Tlaxcala, and the associated challenges for effective public service delivery, environmental protection and quality of life, will require a metropolitan approach to planning and metropolitan planning tools. In the absence of a larger framework to guide significant metropolitan investment opportunities like DUIS, RUTA and Audi, the full impact of these investments may not be leveraged and potential synergies could be missed. Even worse would be that a lack of co-ordination between these major initiatives would result in additional challenges for the metropolitan area: increased congestion in the city centre due to repopulation efforts without sufficient supply of transport or a continuation of the sprawling, irregular development patterns between Puebla and San Jose Chiapa in the absence of clear strategies to guide development. The development of effective, integrated planning instruments at the metropolitan scale will thus be critical to guide future development throughout the metro region and help structure and link metropolitan-scale investments. Moreover, many of the challenges faced by municipalities are shared, while solutions have, to this point, been attempted in isolation. Strategies for improving metropolitan tools and institutions are explored in detail in Chapter 4.

Summary of conclusions and recommendations

- Urban sprawl is a critical policy challenge in the Puebla-Tlaxcala metropolitan zone. Indications of urban sprawl include: *i)* the lowest overall density relative to the ten largest Mexican metropolitan zones; *ii)* a rapidly expanding urban footprint; *iii)* faster growth in the metropolitan periphery than in the urban core; and *iv)* population loss and high vacancy rates in the centre of the metropolitan zone.
- Factors contributing to urban sprawl in Puebla-Tlaxcala include, *inter alia*, rising incomes, lower transport costs, federal housing policies and limited municipal capacity for land-use planning.
- The consequences of sprawl are evident in terms of increased traffic congestion, higher costs for infrastructure provision, inadequate service delivery, increasing environmental pressures and marked territorial inequalities.
- Strategies for better managing urban growth in Puebla-Tlaxcala include:
  - Linking opportunities for land-use and transport:
    - Leverage the development potential of the newly introduced bus rapid transit (RUTA) network by developing transit-oriented corridors at metropolitan scale, linked to existing and strategically planned urban development.
    - Implement a value capture tax to facilitate greater linkages between land use and transport, and contribute to the financing of subsequent phases of the RUTA system. Of the two common forms of a value capture tax (betterment contributions and the sale of building rights), the sale of building rights may be preferred given its greater revenue-generating capacity.
  - Tackling the vacancy problem:
    - Develop a public inventory of vacant properties throughout the metropolitan zone and assess their potential.
    - Impose taxes or fees on vacant properties.
    - Offer loans to developers to redevelop vacant properties.
    - Implement a land value tax to encourage that vacant properties be put to higher use (this was achieved with success in Mexicali).
  - Developing tools to balance the costs and benefits of development:
    - Encourage a stronger role for the Puebla State Land Bank in guiding urban development, especially to guard against real-estate speculation and protect the public interest.
    - Require that developers meet higher environmental and/or social targets in exchange for reduced transaction costs.
    - Impose developer fees to finance the growth-related capital costs associated with development.
    - Pursue inter-municipal agreements stipulating that large development projects require the approval of multiple municipalities (when they are liable to have significant influence on surrounding municipalities).
    - Consider the potential social consequences of urban development.

Summary of conclusions and recommendations (*cont.*)

- Building municipal capacity for planning and land-use management, particularly at municipal level:
  - Build a reliable urban database at metropolitan level.
  - Establish the position of city manager within municipal administrations to improve the level of professionalisation and, ideally, overcome the cyclical upheavals in staff at each election term.
  - Offer targeted training to municipal planners, potentially through the state planning department, via a simple handbook or common templates for regular procedures.
  - Support efforts to share information across municipalities.
  - Investigate the potential for the city of Puebla's planning institute, IMPLAN, to serve as a capacity builder for planners in other municipalities.
- Applying a metropolitan lens to planning challenges.

Many of the challenges faced by municipalities are shared, while solutions have, to this point, been attempted in isolation. Moreover, the development of effective integrated planning instruments at the metropolitan scale will be critical to guide future development throughout the metropolitan region and help structure and link metropolitan-scale investments, such as DUIS, RUTA and Audi. In the absence of a larger framework to guide these investments, their full impact may not be leveraged and potential synergies could be missed. Even worse would be that a lack of co-ordination between these major initiatives would result in additional challenges for the metro area. Strategies for improving metropolitan tools and institutions are explored in detail in the next chapter.

Notes

1. Information provided by officials of SOAPAP (*Sistema Operador de los Servicios de Agua Potable y Alcantarillado del Municipio de Puebla*) to the OECD mission team and ratified by officials from the Tlaxcala Water Commission, January 2013.
2. Ejidal land is a form of land tenure following the Mexican Revolution which granted peasants perpetual rights to land. As will be discussed later in this chapter, a 1992 legislative reform modified the Mexican Constitution, altering the land tenure status of ejidal land. This has had considerable consequences for urban development throughout Mexico (Jones and Ward, 1998).
3. Informal housing can refer to various forms of informality: lack of title to land, lack of (or inadequate) access to urban services (i.e. water, sanitation), etc.
4. According to the authors, "while some of this housing was produced on land by owners with a clear title, in many cases the development was irregular, without a legal exchange of land ownership. Even if a formal title is held, the land may not be fully serviced. While a little more than half of homes without a title have water and sewage

service in the home, it is also true that only about three-quarters of homes with a title have these services" (Herbert et al., 2012).

5. Based on field interviews conducted during OECD mission to Puebla-Tlaxcala in October 2012.

6. Recall from Chapter 1: According to Article 115 of the Mexican Constitution, mayors in Mexico cannot run for re-election in the immediately subsequent term. They are permitted to run for re-election after sitting out one term.

7. Based on field interviews conducted by the OECD during two missions to Puebla-Tlaxcala in October 2012 and January 2013.

8. Based on field interviews conducted by the OECD during two missions to Puebla-Tlaxcala in October 2012 and January 2013.

9. Based on field interviews conducted by the OECD during two missions to Puebla-Tlaxcala in October 2012 and January 2013.

10. Information provided by officials of SOAPAP to the OECD mission team and ratified by officials from the Tlaxcala Water Commission, January 2013.

11. According to interviews with municipal and state planning officials during two OECD missions to Puebla-Tlaxcala (October 2012 and January 2013).

12. Based on cadastral data available on the website of the Instituto Registral y Catastral del Estado de Puebla.

13. Based on discussions with officials from SEDATU on 15 March 2013.

14. A note on housing: Many of the housing-related challenges facing Puebla-Tlaxcala and Mexican cities generally that were mentioned earlier in this chapter are conditioned by federal policies regulating housing finance, property rights and land tenure (i.e. *ejidos*). Accordingly, reform at the federal level will be necessary to fundamentally change the housing sector. For this reason, strategies for expanding the housing market have not been addressed in this section. At sub-national level, it is nevertheless important that the state, in co-operation with municipalities, continue to pursue tailored, targeted land regularisation and titling programmes in order to provide an alternative to informal settlements. While it would also be desirable for Puebla-Tlaxcala to bolster the rental market, it is unlikely that this can happen without significant fiscal, regulatory and financing reforms at the national level.

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Chapter 4

Governing the Puebla-Tlaxcala metropolitan area*

Successful implementation of many of the recommendations proposed throughout this review – improving workforce and economic development (Chapter 2), better managing urban growth (Chapter 3) or improving service delivery (Chapters 3 and 4) – will require Puebla-Tlaxcala to improve governance arrangements. This chapter is divided into two sections. The first section examines capacity challenges in the public sector and proposes strategies for: i) *bolstering revenue-raising capacities of municipalities;* ii) *limiting the effects of recurrent political and administrative upheavals; and* iii) *building more effective public administration. The second section assesses the key policy obstacles to metropolitan governance arrangements in Puebla-Tlaxcala and recommends ways in which regional leaders could:* i) *create operational legitimacy through the development of a strategic metropolitan vision;* ii) *create operational legitimacy via opportunities for metropolitan co-ordination; and* iii) *create institutional legitimacy by operationalising planning at the metropolitan scale.*

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

Like an increasing number of metropolitan areas around the globe, Puebla-Tlaxcala faces metropolitan challenges in need of effective metropolitan solutions. As discussed in Chapter 2, actors in the metropolitan zone[1] have yet to think, or act, as a region when pursuing economic development opportunities or managing the metro-wide consequences of these investments. This fragmented approach is one factor contributing to sprawl throughout the metropolitan zone, which has resulted in inadequate service delivery, congestion, increased environmental pressures and territorial inequalities. Current arrangements and outcomes at the metropolitan scale are stymied by ineffective frameworks, institutions and tools, including ambiguous federal frameworks, metropolitan tools in need of reform, outdated planning instruments and a planning institute with great promise, but which is geographically limited in scope. Limited fiscal, technical and human capacity, coupled with short, non-renewable terms for mayors, restricts the ability of municipal authorities to develop long-, or even medium-, term strategies to respond meaningfully to these challenges. At the same time, administrative and institutional fragmentation is a barrier to achieving economies of scale and policy coherence, particularly in critically strategic sectors such as water and transport. This fragmentation, coupled with short municipal electoral terms and highly cyclical turnover in administrative staff, is a critical obstacle to developing a shared metropolitan vision of an alternative, more sustainable future for the region.

Addressing Puebla-Tlaxcala's major policy challenges requires actors to build capacity in the public sector and to work better between and across levels of government, potentially through the development of metropolitan governance arrangements. Indeed, successful implementation of many of the strategies proposed throughout this review – which address ways to improve economic and workforce development (Chapter 2), better manage urban growth (Chapter 3) or improve service delivery (Chapters 3 and 4) – will require progress on both fronts. For instance, improving revenue-raising capacities, establishing information management systems at relevant scales, increasing the professionalisation of the workforce and developing more strategic training opportunities all rely on stronger municipal administrations. Moreover, intermunicipal and/or metropolitan arrangements are needed to better manage urban growth and economic development outcomes. This could be in the form of a group of municipalities that create a joint service delivery agreement to improve public service provision. Another option, in an effort to limit urban expansion and ensure adequate service delivery, could be for cities to negotiate agreements stipulating that development projects over a certain threshold require the approval of all of the cities concerned. Still another possibility could also be for state and municipal actors from transport and land-use planning departments to jointly develop a metropolitan transport system linked to strategically located development nodes. Finally, to address these critical policy challenges and formulate concrete steps for moving forward, the multitude of public, private and civic actors may find it valuable to determine, collectively, how they see the future of their region.

This chapter is divided into two sections. The first section will examine capacity challenges in the public sector and propose strategies for: *i)* bolstering the revenue-raising capacities of municipalities; *ii)* limiting the effects of recurrent political and administrative upheavals; and *iii)* building more effective public administration. The second section will assess the key policy obstacles to metropolitan governance arrangements in Puebla-Tlaxcala and recommend ways in which regional leaders could: *i)* create operational legitimacy through the development of a strategic metropolitan vision; *ii)* create operational legitimacy via opportunities for metropolitan co-ordination;

and *iii)* create institutional legitimacy by operationalising planning at the metropolitan scale.

Building capacity in the public sector

Municipalities play a central role in urban policy and service delivery within the Mexican institutional framework. Mayors (called "municipal presidents") are directly elected for one, not immediately renewable, three-year term and they head the municipal council (*ayuntamiento*). When the Constitution of 1917 abolished the intermediate administrative authority between states and municipalities (*jefatura política*), municipalities were converted into "free municipalities" (*municipios libres*), a first step towards greater municipal autonomy. Municipal responsibilities cover a variety of local public services, including water and sanitation, street lighting and maintenance, trash collection and disposal, public safety and traffic, supervision of slaughterhouses, and the maintenance of parks, gardens and cemeteries. In 1983, Article 115 of the Constitution was modified to expand the municipalities' authority to raise revenue, through property taxes and user fees, and to formulate budgets. Yet, despite increasing responsibilities, municipalities tend to be fiscally, institutionally and administratively weak institutions. This section will explore the challenges and strategies to build municipal capacity in Puebla-Tlaxcala.

Bolstering the revenue-raising capacity of municipalities

In Puebla-Tlaxcala, most municipalities are small. At one end, the city of Puebla accounts for over half of the metropolitan zone's population, while at the other end, 25 of the 39 municipalities in the metropolitan zone together make up around one-tenth of the total population, each with less than 1% of the total (OECD calculations, based on SEDESOL/INEGI/CONAPO, 2012). After the city of Puebla, only four municipalities recorded a population over 100 000 in 2010 (Table 4.1).

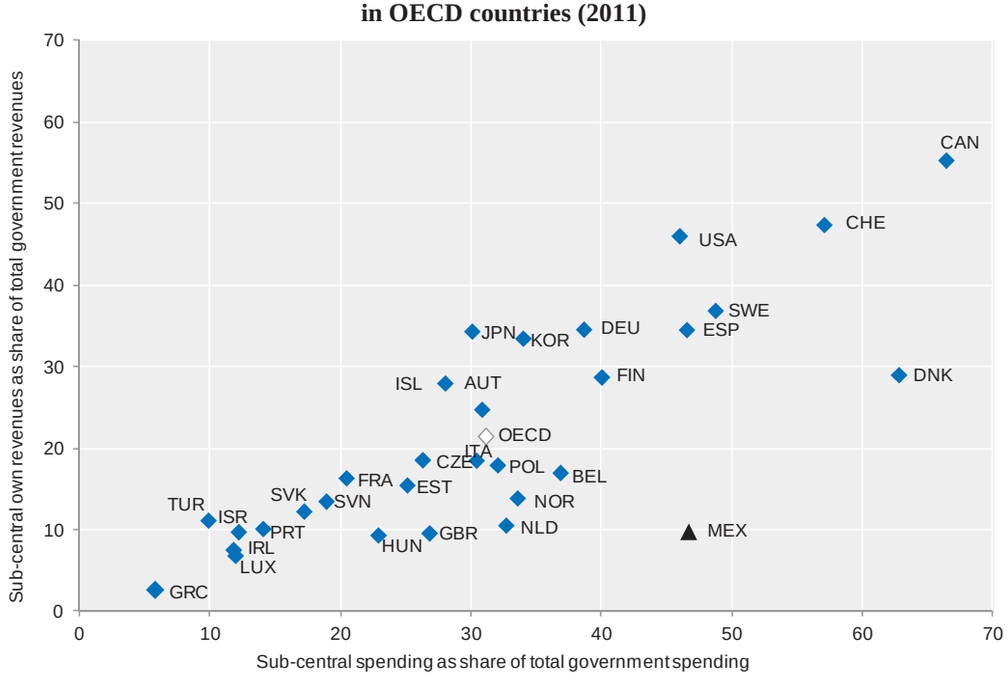
Fiscal centralisation despite increasingly decentralised responsibilities

Despite the increasing responsibilities of Mexican municipalities, Mexico is one of the most fiscally centralised countries in the OECD, even among federal countries. In 2011, sub-national governments in Mexico accounted for less than 10% of total government revenues (less than 1% of GDP) compared with an OECD average of about 21% (about 9% of GDP) (Figure 4.1). Both states and municipalities are heavily dependent on federal grants, as own taxes represented less than 5% of sub-central governments' revenues for states (compared with an average of around 42% in OECD federal countries) and around 10% for municipalities in 2010 (Figure 4.2). As reported in OECD (2013a), low tax autonomy at sub-national level, which necessarily implies high reliance on transfers from the federal government, creates disincentives for sub-national governments to exploit their own revenue-raising potential and build up their administrative capacities, given the political costs of own taxes and the resources needed to administer them.

Table 4.1. **Municipalities within the Puebla-Tlaxcala metropolitan zone**

Municipalities in Puebla	Population (2010)	Municipalities in Tlaxcala	Population (2010)
Acajete	60 353	Acuamanala de Miguel Hidalgo	5 711
Amozoc	100 964	Ixtacuixtla de Mariano Matamoros	35 162
Coronango	34 596	Mazatecochco de José María Morelos	9 740
Chiautzingo	18 762	Nativitas	23 621
Cuautlancingo	79 153	Papalotla de Xicohténcatl	26 997
Domingo Arenas	6 946	Santa Ana Nopalucan	6 857
Huejotzingo	63 457	Santa Apolonia Teacalco	4 349
Juan C. Bonilla	18 540	Santa Catarina Ayometla	7 992
Ocoyucan	25 720	Santa Cruz Quilehtla	6 296
Puebla	1 539 819	San Jerónimo Zacualpan	3 581
San Andrés Cholula	100 439	San Juan Huactzinco	6 821
San Felipe Teotlalcingo	9 426	San Lorenzo Axocomanitla	5 045
San Gregorio Atzompa	8 170	San Martín Texmelucan	141 112
San Miguel Xoxtla	11 598	San Pablo del Monte	69 615
San Pedro Cholula	120 459	Tenancingo	11 763
San Salvador el Verde	28 419	Tepetitla de Lardizábal	18 725
Tepatlaxco de Hidalgo	16 275	Teolocholco	21 671
Tlaltenango	6 269	Tepeyanco	11 048
		Tetlatlahuca	12 410
		Xicohtzinco	12 255
		Zacatelco	38 654
Puebla-Tlaxcala metropolitan zone			**2 728 790**

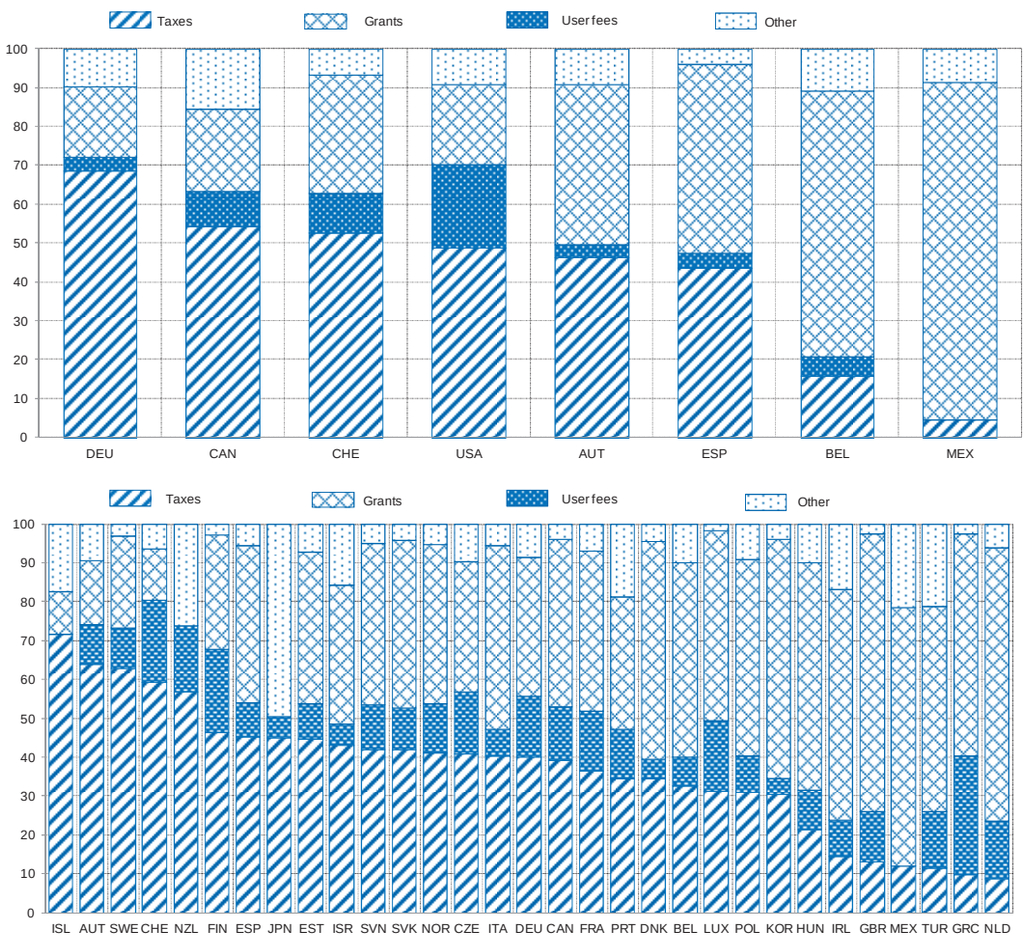
Figure 4.1. **Share of sub-central governments in total revenues and spending in OECD countries (2011)**



Note: Data for Australia, Chile and New Zealand are not available. Transfers between levels of government are excluded (apart from Japan, Korea and Turkey). Canada, Japan, Korea, Mexico and Turkey: 2010 instead of 2011.

Source: OECD (2012), "Quarterly National Accounts", *OECD National Accounts Statistics* (database), doi: *10.1787/data-00017-en*, (accessed on 15 April 2013).

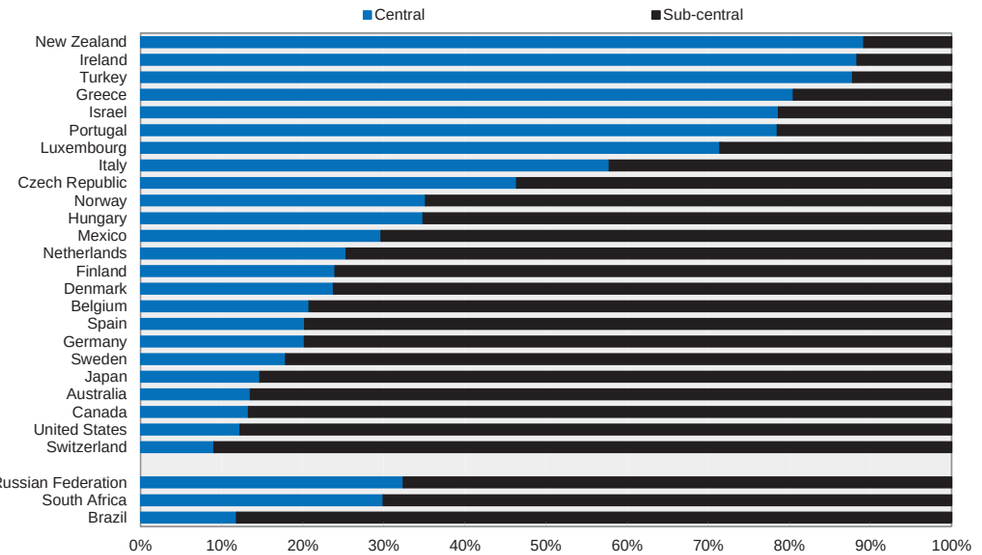
Figure 4.2. **Sub-central government revenue composition (2010)**



Source: OECD/Korea Institute of Public Finance (2011), *Institutional and Financial Relations across Levels of Government*, OECD Fiscal Federalism Studies, OECD Publishing, *http://dx.doi/10.1787/9789264167001-en*.

Meanwhile, sub-national expenditures rose sharply from the mid-1980s onwards, both as a ratio of GDP and as a share of overall public spending (OECD, 2013a). The jump was substantial after the changes to the fiscal co-ordination law in 1998, whereby sub-national governments became responsible, notably, for the provision of education. In 1990, states and municipalities together accounted for 10% of Mexico's public spending. By 2011, their share of spending had multiplied by more than four (46.69%). Moreover, over 70% of general government employment is concentrated in state and municipal administrations in Mexico, which can account for large shares of sub-central budgets. This trend is in line with the majority of OECD countries, which count a higher share of employees at the sub-central level than at the central level of government (Figure 4.3).

Figure 4.3. **Distribution of general government staff between the central and sub-central levels of government (2008)**



Source: International Labour Organisation (ILO), *LABORSTA Database*. Data for Turkey are from the Ministry of Finance and the Turkish Statistical Institute. Data for Japan are from the Establishment and Enterprise Census. Published in OECD (2011), *Government at a Glance 2011*, OECD Publishing, *http://dx.doi.org/10.1787/gov_glance-2011-en*.

Municipal revenue sources within the Puebla-Tlaxcala region also point to limited fiscal autonomy, although there is considerable variation across municipalities. Data from a handful of municipalities within the Puebla FUA indicate that total per capita revenue averages MXD 2 194: MXD 3 954 in San Andrés Cholula, more than double the average in Acajete (MXD 1 562) and Cuautlancingo (MXD 1 659) (Table 4.2). Most revenue comes from federal and state transfers, which represent on average 75% of municipal revenue, and up to 95% in Acajete and San Pablo del Monte. Federal, non-refundable transfers to municipalities tend to be managed by different federal ministries, mostly through sectoral programmes that respond to a range of municipal responsibilities. For instance, funds for territorial development programmes are managed by SEDATU (formerly SEDESOL), while the National Water Commission (*Comisión Nacional del Agua*, CONAGUA), co-ordinates funding programmes in support of various facets of the water sector. The challenges associated with revenues generated by transfers from multiple ministries are multiple. Municipalities do not have full autonomy over the use of the resources provided by the transfers, as most are earmarked for capital investments. Local officials are, thus, not authorised to re-allocate the funds according to local priorities. Moreover, because these funds are tied to finance capital investments, sub-national actors must finance the operation and maintenance of these facilities with own revenues, in scarce supply and high demand for other discretional uses.

The large share of transfers is associated with low revenues from taxes. For instance, in San Pablo del Monte, revenue from taxes and charges represents less than 1% of overall revenue, while transfers account for nearly 95%. Since 1983, municipalities are authorised to collect property taxes and water and waste fees. Yet cities do not take full advantage of these potential revenue sources, resulting in municipal budgets that are highly constrained. Most municipal tax revenue comes from property taxes

Table 4.2. **Municipal revenues for select municipalities within Puebla FUA**

	Acajete	Cuautinchán	Cuautlancingo	Puebla	San Andrés Cholula	San Pedro Cholula	San Pablo del Monte	Tenancingo	Papalotla de Xicohténcatl
Population	60 353	9 538	79 153	1 539 819	100 439	120 459	69 615	11 763	26 997
Total revenue (MXD thousands)	94 286	18 966	131 284	4 019 508	397 168	215 813	119 940	28 356	55 342
Per capita income[1]	1 562	1 988	1 659	2 610	3 954	1 792	1 723	2 411	2 050
Taxes (%)	0.9	5.2	21.1	11.8	27.4	10.3	0.9	0.5	4.5
Charges, licenses and fees (%)	0.9	2.6	13.7	6.7	18.3	7.9	2.6	3.1	2.7
Sale and rent of public property (%)	0.4	1.5	0.3	0.2	0.5	3.9	0.2	0.1	0.3
Fines, donations and other income (%)	0.0	0.1	2.1	2.3	2.1	0.7	0.5	0.1	0.4
Contributions of public works (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Federal and state transfers (%)	32.0	42.2	28.2	30.5	22.7	32.0	94.8	86.9	81.2
Earmarked federal and state grants (%)	63.2	45.4	27.8	25.7	18.9	45.2	0.0	0.0	0.0
Other income	0.0	0.7	2.6	1.2	3.2	0.0	0.1	2.5	4.5
Third-party transfers (%)	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Financing (%)	2.6	2.5	4.3	0.0	0.0	0.0	1.0	6.9	6.5
Carry over (%)	0.0	0.0	0.0	21.6	6.2	0.0	0.0	0.0	0.0

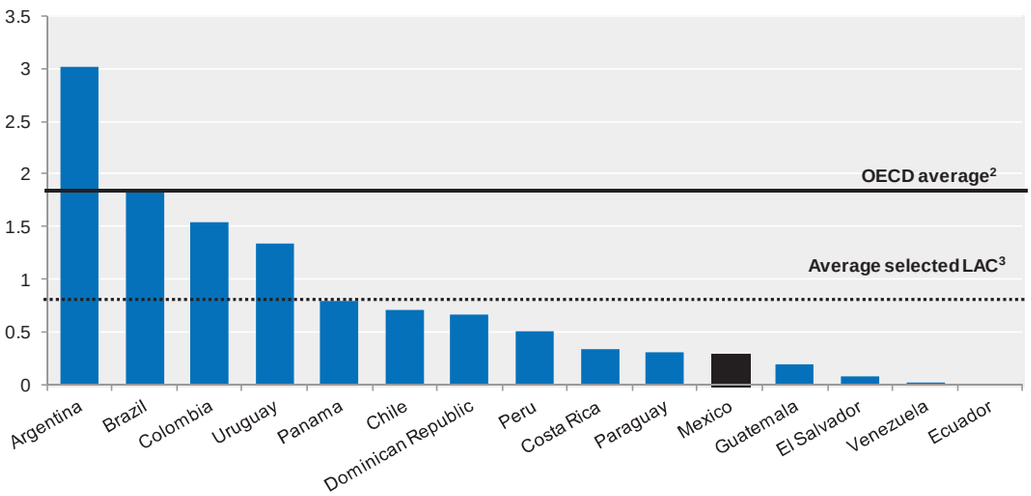
Note: Calculated based on 2010 population.

Source: INEGI, *Estadística de finanzas públicas estatales y municipales,* available at: *www.inegi.org.mx/sistemas/olap/proyectos/bd/consulta.asp?p=10961&c=23707&s=est&cl=4#* (accessed 14 May 2013).

(*impuesto predial*), which for Mexico as a whole are well below the OECD and Latin American averages (Figure 4.4). In most municipalities, tax collection remains a challenge, due to administrative challenges relating to tax collection, as well as historical arrangements.[2] As a result, there is little space in the budget to address some of the more challenging and strategic issues facing the region, such as water, infrastructure, economic development, urban sprawl and public safety. Several opportunities for bolstering own-source revenues are discussed below.

Figure 4.4. **Recurrent taxes on immovable property in select Latin American and Caribbean countries**

As a % of GDP[1] (2010)



Notes: 1. The figures exclude local government revenues for Argentina, Costa Rica (up to 1997), the Dominican Republic, Ecuador, El Salvador, Panama (up to 1998 and 2010), Paraguay (up to 2004), Peru (up to 2004), Uruguay and Venezuela as the data are not available. 2. Represents the unweighted average of a selected group of Latin American countries. Chile and Mexico are also part of the OECD (34) group. 3. Represents the unweighted average for OECD member countries.

Source: OECD/Economic Commission for Latin America and the Caribbean/Inter-American Center of Tax Administrations (2012), *Revenue Statistics in Latin America 2012*, OECD Publishing, doi: *10.1787/9789264183889-en-fr*.

The state of Puebla has one of the lowest property tax rates in the country. In the last two years, revenues from property taxes have increased by 7% as a result of efforts to re-evaluate cadastral values. At state level, Tlaxcala has made the most progress of all Mexican states in tax collection in recent years, largely due to improved co-ordination with the federal government. Until 2008, Tlaxcala had the lowest income of all Mexican states, ranking at the bottom of a number of the Mexican Institute for Competitiveness' (*Instituto Mexicano para la Competitividad*, IMCO) competitiveness indicators. The state took several measures that resulted in a jump from 31st place to 17th in terms of revenue generation in just a few years. For instance, Tlaxcala signed an agreement with the federal government allowing the state to charge fees for tax evasion. Further, through an agreement negotiated with Mexican Petroleum Company (*Petróleos Mexicanos*, PEMEX), the state now receives information on the actual volume of petrol purchased by gas stations in the state, resulting in an annual gain of MXN 35 million from receipts that

had previously gone undeclared. Even so, it is estimated that approximately MXN 80 million in uncollected taxes are lost to the state annually.

Both states have undertaken cadastre-updating processes in an effort to improve tax collection. As in Mexico generally, cadastres and land registries in both Puebla and Tlaxcala are incomplete and outdated, further limiting potential property tax revenue (see OECD, 2012c). Legally, municipalities are obliged to update any changes to the cadastre every three months, but based on interviews conducted for this review, these updates rarely occur. In Tlaxcala, the state and federal governments have together invested MXN 30 million to update and digitise the cadastre, in view of developing a system of territorial data that can be incorporated with other geographic and cartographic information that can be shared across public administrations. The development of a public registry and cadastre is also one of the strategic priorities of Puebla's current administration. Currently, at the municipal level, only 13 of Puebla's 217 municipalities operate a municipal cadastre institute. As a result, the state must step in for the remaining cities to extrapolate land values for residential and commercial properties, generating approximations at best.

Low charges and fees for services also constrain own-source revenue. Municipal water fees in Tlaxcala, which constitute a crucial source of revenue for municipalities, are the lowest of any Mexican state. Rates are not based on consumption nor are they homogenous across municipalities. Municipalities also lack basic household information to generate reliable water consumption data (e.g. size of household, number of water taps per household). There is often tension between mayors and their finance directors over tax collection, as mayors have little incentive to address the politically charged issue of tax collection; given their three-year, non-renewable term, it is unlikely that they will still be in office to reap the benefits of higher revenues. The city of Puebla is the only municipality in the metropolitan zone to charge for waste collection, although the OECD has found that the city undercharges (OECD, 2013b).

Sub-national governments with good credit ratings are eligible for loans from the National Public Works and Services Bank (*Banco Nacional de Obras y Servicios Públicos*, Banobras). With the approval of the State Planning Committee (*Comité de Planeación del Estado*, COPLADE), Banobras provides technical assistance and funding for projects in different sectors, including water and sanitation, residential and industrial solid waste collection and treatment, roads, urban infrastructure, machinery and equipment, public buildings, and cadastres and registries. Most sub-national entities in Puebla-Tlaxcala have a very limited capacity to acquire debt and thus limited access to long-term financing.

In short, sub-national revenues are highly constrained, as their responsibilities continue to expand without adequate, parallel efforts to maximise revenue-raising capacities. Municipalities have little or no incentives to increase own-source revenue, since the state and federal governments consistently make up the difference, ultimately generating perverse incentives to stay under-developed. Local authorities reported the need to educate the population about what could be done with tax revenues. Municipal struggles for fiscal resources are further exemplified and exacerbated by numerous disputes over municipal boundaries (Box 4.1). Ultimately, there is little space in the municipal budget to address some of the more challenging and strategic issues facing the region, such as water, infrastructure, economic development, urban sprawl and public safety.

Box 4.1. **Inter-municipal conflicts in Puebla-Tlaxcala**

Puebla-Tlaxcala is home to a series of conflicts between municipalities that are loathe to supply local public services to certain territories without being able to collect tax revenues in return. For example, Concepción Guadalupe is one of five colonies along a 8.5-kilometre fringe between Puebla and San Andrés where the two municipalities regularly argue over revenues from property tax and other taxes. Puebla and Amozoc de Mota also compete for over almost MXN 5 million (currently levied in Puebla) to be collected from around 3 500 inhabitants spread across 4 colonies (Salvador, Santa Margarita, Casa Blanca and Chapultepec). Such politically sensitive claims generate a continuous source of inter-municipal tension and often result in angry pleas to the State Congress to clarify boundaries – with little success in conflict resolution to date.

Strategies for raising the revenue capacity of municipalities

As the population of Puebla-Tlaxcala continues to grow, bringing with it an increasing complexity of urban challenges and exacerbating existing service delivery challenges, municipalities would do well to improve revenue-raising capacities. Strategies to raise revenues include: *i)* reforming property taxes; *ii)* updating fee structures, linking fees for utilities to consumption; and *iii)* improving systems to facilitate tax collection. Involving higher levels of government at both state and federal levels – perhaps in the form of incentives – may be necessary in order to overcome the political unpopularity of raising taxes and fees while respecting municipal autonomy in this realm.

- Reforming property taxes. As discussed in Chapter 3, one way to increase revenues from property tax would be to implement a land value tax, as has been done successfully in Mexicali (see Box 3.7). A land value tax taxes only the land (not the structures), and could raise revenue without distorting the incentives for owners to invest in and make use of their land (Dye and England, 2010). Dye and England (2010) suggest that it may be advisable to phase in land value taxation over several years and to offer tax credits to lower-income owners who may own land with a high value yet with low-value buildings. Also of critical importance would be to build capacity among property tax assessors; there would be a role for the states and/or federal government in this regard.

- Updating fee structures, linking fees for utilities to consumption. There is scope to update the fee structures for property tax, water and waste. Two municipalities in Tlaxcala have already revised their rates for water provision and are presently the only two cities in the state that are sufficient in paying for their water supply. To overcome the lack of basic household information to generate reliable water consumption data at municipal level (e.g. size of household, number of water taps per household) and ultimately facilitate the establishment of consumption-based water tariffs, state authorities, potentially led by the state water commissions, could work with municipalities to generate these data. Mexico City has installed water metres and the city of Puebla has begun to do so; these efforts could be generalised throughout the metropolitan region. It may be possible to allocate funds from the federally funded Metropolitan Fund (to be described later in this chapter) to support these efforts. If successful, consumption-based water tariffs could not only generate increased fiscal autonomy but also reduce pressure on the already stressed water supply.

- Improving systems to facilitate tax collection. State authorities could work with municipalities to put into place the necessary institutional, technical and physical infrastructure to facilitate revenue-raising capacity. This includes:
  - Continuing current efforts in both states to update and modernise land registries and cadastres to facilitate property tax collection. The state of Puebla has been successful in hiring and training the personnel and providing the infrastructure that is needed to update land registers. Municipalities should also work with state authorities to ensure that cadastral values stay up-to-date (see OECD, 2012c). The recent federal programme to update cadastres (*Programa de Modernización Catastral*) carried out by the National Statistical Institute (INEGI) and the financial support of the development bank Banobras could be further exploited. The programme has successfully contributed to updating the cadastre in the city of Merida, in the state of Yucatán (OECD, 2013a). Small municipalities that are heavily dependent on higher tier government transfers have little incentive to update the assessed values of the properties and consequently to develop capacity to update the assessed values. They need incentives, such as transfers tied to minimum levels of land tax effort, and greater capacity to update the assessments, possibly through technical assistance or services contracts with more capable municipalities or state institutions.
  - Possibly offering smaller municipalities with limited resources the option for taxes to be collected by the state or federal government, for a fee. As advised in OECD (2013a), smaller municipalities, for which limited tax collection and technical capabilities are a barrier for greater tax revenues, could agree with the federal tax administration (SAT), or with larger nearby municipalities, to collect the tax on their behalf, for a fee.

Limiting the effects of recurrent political and administrative upheavals

In addition to the constrained fiscal capacity of municipalities, there are significant disparities in the institutional capacities of public sector actors. As has been discussed throughout this review, the three-year, non-renewable mayoral term severely restricts municipal action and makes municipalities highly vulnerable to political changes. Article 115 of the Constitution stipulates that mayors, councillors (*regidores*) and community representatives (*síndicos*) may not be re-elected for the immediate next term. Rather than being a distinct professional career path, municipal executive positions often serve as a springboard to a higher office. This is a significant disincentive for mayors to adopt a long-term vision for urban and economic development and devote resources for their implementation. The introduction of effective metropolitan governance mechanisms is a case in point, as they tend to take a long time to mature and yield benefits. Mayors also face a co-ordination problem as they do not have incentives to initiate potentially politically unpopular reforms. State governors are popularly elected and have a six-year term that provides them with more leeway to adopt policies and projects that take longer to mature.

Even more problematic, every state and municipal election cycle is accompanied by a substantial – and in some cases, complete – overhaul of state and municipal civil servants. In most cases, only unionised staff (*base*)[3] remains in the administration through election cycles. Unionised staff represents 18% of the workforce in the state government of Puebla and 20% in Tlaxcala. Over 60% of the Mexican central public administration is

composed of non-unionised staff (*confianza*) or short-term staff. There is no mechanism in place to protect these workers from changes in the administration as a result of political events. As a result, at the state level in both Puebla and Tlaxcala, at least 80% of the personnel changes every six years with the arrival of a new administration (Table 4.3).

Table 4.3. **Number and distribution of public employees in the state administration (2013)**

	State level administration			
	Puebla	%	Tlaxcala	%
Personnel in the centralised public administration	**15 583**		**5 489**	**42**
Unionised staff (*base*)	2 871	18	1 103	20
Non-unionised staff (*confianza*)	9 598	62	3 466	63
Short-term staff (*honorarios*)	3 114	20	920	17
Personnel in the decentralised public administration	N/A		**7 550**	**58**
Unionised staff (*base*)	N/A		2 703	36
Non-unionised staff (*confianza*)	N/A		189	3
Short-term staff (*honorarios*)	N/A		4 658	62
Total of personnel in the public administration	**15 583**		**13 039**	**100**

Notes: N/A: not available.

Source: COESPO (2012), Background report prepared by COESPO for the OECD in view of the Territorial Review of Puebla-Tlaxcala, unpublished.

Within the Puebla-Tlaxcala metropolitan area, the public workforce at the municipal level is also largely composed of non-unionised staff (Table 4.4). Only the municipalities of Puebla, San Pedro Cholula in Puebla and San Pablo del Monte in Tlaxcala reported having unionised staff. This implies that with the exception of these three municipalities, all the other municipalities face a complete turnover of the public workforce every three years with the arrival of a new administration.[4] This high rate of administrative turnover every three years has clear policy implications, notably a lack of continuity, low capacity and incentives to develop and implement policy, and limited experience and technical capacity.

Table 4.4. **Number and distribution of employees in the municipal administration (2013)**

	State of Puebla				State of Tlaxcala		
	Puebla	San Andres Cholula	San Pedro Cholula	Cuautlancingo	Tenancingo	San Pablo del Monte	Papalotla
1) Personnel in the centralised public administration	**5 067**	**634**	**788**	**400**	**98**	**274**	**105**
Unionised staff (*base*)	1 727	–	262	–	–	9	–
Non-unionised staff (*confianza*)	3 337	634	526	240	90	265	103
Short-term staff (*honorarios*)	3	–	–	160	8	–	2
2) Personnel in the decentralised public administration	**1 284**	–	–	–	**3**	**10**	**13**
Unionised staff (*base*)	613	–	–	–	–	–	–
Non-unionised staff (*confianza*)	586	–	–	–	–	10	13
Short-term staff (*honorarios*)	85	–	–	–	3	–	–
Total of personnel in the public administration	**6 351**	**634**	**788**	**400**	**101**	**284**	**118**

Notes: N/A: not available. (–) Not applicable.

Source: Interviews with municipal authorities.

This practice reflects a national pattern and has considerable implications for the level and quality of service provided by public administrations at all levels of government. Mexico registers one of the highest rates of turnover among civil servants with a change of government among OECD countries, alongside Greece, Hungary and Portugal (OECD, 2011a). On the one hand, relying on non-unionised and short-term staff reflects a need for flexibility within the public administration in order to acquire individuals with skills and competencies on an as-needed basis. On the other hand, constant levels of high staff turnover lead to the loss of institutional memory and restrict the continuity and coherence of public investment projects and overall public policy in municipalities.

Two strategies could be considered to limit the implications of the three-year mayoral term and associated upheaval of public staff that accompanies the change in administration:

- Reform to the three-year mayoral term. First and foremost, the states of Puebla and Tlaxcala could consider extending the three-year term for mayors or abolishing the non re-election provision, as the OECD has advised elsewhere (OECD, 2012a; 2013a). The state of Chihuahua recently lengthened the term for mayors to four years. In January 2013, the mayor of Puebla was elected to chair the National Association of Mayors (*Asociación Nacional de Ayuntamientos y Alcaldes*, ANAC) and one of its top priorities will be to push for a constitutional change that would allow mayors to run for re-election.
- Appoint city managers to handle daily operations. Another strategy to bolster administrative capacity within municipalities, discussed in Chapter 3, could be to appoint professional city managers to handle the day-to-day administrative operations of the municipality in order to improve municipalities' technical and administrative capacities. Greater security of tenure for such city managers and for other municipal employees could also reduce the disruptive impact of frequent mayoral elections, allowing greater professionalisation and the accumulation of institutional memory. Professional city managers are common in other OECD countries, such as Spain and the United States (see OECD, 2013a).

Building a more effective public administration

One result of high administrative turnover is limited technical capacity of public servants responsible for providing citizens with essential public services. Many state and municipal governments in Mexico face serious capacity limitations in providing citizens with essential public services. This has been recognised as a major constraint to future competitiveness in the 2012 Urban Competitiveness Index for Mexico (IMCO, 2012). Evidence of capacity challenges at municipal level can be found in a range of sectors affecting urban policy. For instance, OECD (2013c) has found that Mexican municipalities do not have the necessary staff, skills, expertise, know-how or infrastructure to ensure adequate water service delivery. Similarly, in many municipalities, cadastre resolutions and assessments for the registry of property may take several days due to the lack of technical staff (OECD, 2012b). An adequate management of the public workforce at state and municipal levels would be one way to ensure the government has the necessary knowledge and experience at its disposal. To build more effective public administration, Puebla-Tlaxcala could consider the following strategies: *i)* transitioning toward a merit-based, inclusive recruitment process; *ii)* developing professionalisation as an investment in public sector capacity; *iii)* improving forward-

looking planning and management; *iv)* enhancing performance orientation; and *v)* strengthening multi-level governance for professionalisation.

Recommendation 1: Developing a merit-based, inclusive recruitment process

Both Puebla and Tlaxcala have a legal framework that establishes the rules and procedures for managing state and municipal workforces. According to the law, the public employment system should focus on selecting the best candidate for each position, either by external recruitment or internal promotion,[5] and OECD (2008, 2010b, 2011b) has found that merit-based recruitment is one of the cornerstones of an effective and representative public service. However, in the public service of the Puebla-Tlaxcala metropolitan region, there are no professional recruitment and selection processes to find the best candidates for the positions. In practice, entering into public employment at both municipal and state levels is generally a product of personal and political relations. Moreover, recruitment occurs as need arises, without adequate scope to match the skills and experience of the workforce to the needs of the administration. There are no open competitions to fill vacancies or grant promotions, and vacancies are not publicly advertised. Safeguards, such as examinations, to ensure that new recruits have the skills and competences required for the job are non-existent in most municipal administrations. Where examinations are used, they focus on psychological tests but not on knowledge, skills and competences. In the administration of the state of Puebla, for example, the human resources department uses a psychometric programme called "psycowin" to assess values, behaviours and certain competences of operative staff and middle managers.[6] Although these practices provide for recruitment on more documented grounds, a lot remains to be done to make the recruitment process more competence-based.

Politically-based recruitment decisions extend to senior management positions, further contributing to the absence of a career civil service in the state governments and municipalities of Puebla and Tlaxcala. Indeed, in Puebla-Tlaxcala, there are no safeguards to ensure that senior officials have the capability of leading and managing change, providing high-quality advice, dealing with complex problems, and delivering improvements to municipal public services. At the state level, and in some municipal governments like Puebla, managers do have a relevant professional background. However, there are no provisions to ensure high standards of performance, accountability or competence from senior managers. The political environment, the short municipal term and non-competitive salaries may further prevent public authorities from attracting the best management talent. Officials interviewed for this review commented that a director in the private sector may earn three times more than a director in the local public sector and has more possibilities for career development.

Public authorities in Puebla-Tlaxcala could also implement strategies to transition toward a merit-based recruitment process for public sector workers. The transition would undoubtedly require considerable political will at all levels of government. A merit-based recruitment system should ensure consideration of a candidate's educational background, competences and experience and link qualifications to clearly articulated competencies required for the job. The system needs to avoid personal and political patronage and ensure that the best-qualified candidates are selected through a transparent, competitive recruitment process. Since merit-based recruitment in sub-national governments in Mexico is not a common practice, a first step would be to ensure that recruitment conforms to the letter of the law. Testing should take the full range of candidates' merit into account. In the state government of Puebla and the municipality of Puebla, recruitment examinations, where used, are limited to psychometric tests that do not

sufficiently target and select candidates based on the skills and aptitudes required for the public service.

Concrete areas of consideration for developing a merit-based recruitment process for public sector workers include:

- Focus on competencies. Authorities in Puebla-Tlaxcala could look to improve the quality of the recruitment process by using validated testing methods during the recruitment process to assess candidates' relevant competencies (knowledge, skills and behaviours required to do the job well). While generalist examinations are an appropriate way to organise large intakes at base grades (e.g. recruitment of recent graduates for entry-level positions), more advanced or specialised positions require testing for job-specific competencies. The state and municipality of Puebla have begun this process, and progress should be closely monitored in order to expand the scope of reforms and extend them to other municipalities. Belgium and Korea have both developed systems for using competencies in the recruitment process (Box 4.2). There is a strong emphasis on testing for competencies, and the methods have been applied at national and sub-national levels of government.

Box 4.2. **Recruitment and selection in Belgium and Korea**

Belgium offers an example of a country with relatively sophisticated recruitment arrangements. The basic form of recruitment of tenured civil servants is open and competitive examinations. These are based on job descriptions and competency requirements drawn up by the recruiting organisations. Over time, the recruitment process has moved away from large generalist examinations towards recruitment based on specific competency profiles. Presently, selection is based on generic competency profiles in only 10% of cases and on specific competency profiles in 90% of cases.

Possession of a diploma may be a prerequisite for participation in an examination. The breadth and quality of the educational background affects the assessment of a candidate. Applicants who meet the formal requirements take part in different tests of skills, competences and aptitudes. The content of these tests depends on the type of post and recruitment criteria and may include a psychological test. In 90% of cases, recruitments are based on ranked selections. Most administrations follow the rankings, but together the Flemish and Dutch administrations make the final selection. The administrations are allowed to draw up a reserve list of candidates for possible future recruitment.

In **Korea**, testing for the selection of new civil servants includes several stages, each using various tools for evaluating competencies and knowledge. In a series of civil service entrance examinations for a Grade 5 position, the first exam is the Public Service Aptitude Test (PSAT), which evaluates the basic traits and competencies necessary for civil servants. The second exam measures professional knowledge. The third exam estimates competencies, attitude and values through interviews and group discussions. The competency model has recently been applied throughout the selection process. For example, at the third entrance examination for Grade 5, the government identifies specific competencies for each grade and job category by applying qualitative and quantitative approaches, then constructs competency maps and a competency encyclopaedia by mapping the identified competencies. In the interviews, competency assessment, applying Behavioural Event Interview and Assessment Centre methods is implemented.

Source: OECD (2007), *OECD Reviews of Human Resource Management in Government: Belgium 2007: Brussels-Capital Region, Federal Government, Flemish Government, French Community, Walloon Region*, OECD Publishing, *http://dx.doi.org/10.1787/9789264038202-en*; OECD (2010), "Managing competencies in government: State of the art practices and issues at stake for the future", GOV/PGC/PEM(2010)1, OECD, Paris.

Another option could be for state authorities in Puebla and Tlaxcala to build a competency framework, detailing the professional skills required for the public workforce. The United Kingdom's Professional Skills for Government (PSG) Competency Framework emphasises that civil servants at all levels should think about the competencies needed for their current role as well as those required for their continued development. Given the high level of staff turnover in municipal and state governments, a competency framework developed by the two states and shared among all municipalities could facilitate the transition of skilled staff between various administrations with each election cycle.

- Improve recruitment for senior managers. As discussed, it would also be important for authorities to ensure a transparent, competitive process for filling senior positions in order to give the local public service access to the best talent. While it is understandable that governments wish to maintain discretion over the appointment of their direct collaborators, such as secretaries, there is scope to open up other higher management positions (such as head of department, director or director general) to a competitive recruitment process that is advertised publicly. Decisions should be shared among members of the municipal council (*ayuntamiento*), as well as members of a selection panel. Another option could be for members of the municipal council (*síndicos* and *regidores*), after conducting a public and competitive recruitment process, to submit a short list of the top candidates to the mayor for final decision. The system used in the United States demonstrates the possibility of reserving a limited number of senior management positions to political appointment, with clear job descriptions and confirmation procedures to ensure competence and suitability, combined with a corps of tenured civil service managers, recruited on merit through open competition. Alternately, the system of fixed-term appointments used in the Chilean senior management system (*Sistema de Alta Dirección Pública*, ADP) might be considered a helpful model, as it can achieve a balance between the need for flexibility and political neutrality of management positions.
- Develop standardised job profiles to facilitate service-wide pools of qualified workers for positions for which there is a large intake. Job profiling is a way to combine a statement about what is expected from a job with a view of what the job holder must bring in terms of skills, experience, behaviours and other attributes needed to do the job well. It is an approach that helps organisations think about the outputs and results they want from jobs, as well as what they are looking for in terms of the person who will do the job. Job profiles differ from traditional job descriptions used in Mexico in two important respects: *i)* they focus on the outputs or results expected from the job, rather than the tasks or functions to be carried out; and *ii)* they include a statement about the skills and personal attributes needed for the job. Whereas traditional job descriptions tend to be treated as stand-alone items, job profiles lend themselves to integration with other elements of human resource management and with broader organisational and management imperatives.
- Outsource recruitment to a third-party recruitment firm, operating for multiple municipalities. Setting up a dedicated public recruitment agency in each state, which is subject to oversight by municipal and state governments, could help to improve the quality, transparency and efficiency of the recruitment process. This body could be formally mandated to manage recruitment for state and municipal administrations, and integrated by staff trained and certified as HR professionals.

It would be critical that staff arrangements within the recruitment agency are not influenced by electoral calendars. The head of the organisation could be appointed for a specific time with the possibility of renewal based on performance. There is already an antecedent of this type of appointments in Puebla. In 2003, for example, the Government Board (*Junta de Gobierno*) of the State Commission for the Regulatory Reform (*Comisión Estatal de Mejora Regulatoria*, CEMER) notified CEMER's Director General that his appointment would be for four years with the possibility of being renewed for a second term. This helped to limit not only the turnover in senior positions but for technical/professional level staff as well (OECD, 2010c).

To begin, the recruitment agency could focus on the hiring of professional and/or technical positions, but eventually expand its mandate to middle and senior managers. This would be similar to the approach of the Canadian provinces of Manitoba, Saskatchewan and Nunavut, which entrust the central HR unit to organise the competitive examination. The federal selection office of Belgium (SELOR) and the Public Appointments Service (PAS) of Ireland might serve as alternative models for such a body in Puebla and Tlaxcala (Box 4.3). Although they are national agencies, both also conduct the recruitment process for some of the local governments in their countries. The use of a recruitment agency is perfectly compatible with merit-based recruitment of senior officials, provided the position is advertised publicly and the recruitment criteria and methods are objective.

Box 4.3. **Recruitment agencies: SELOR and PAS**

In **Belgium**, recruitment criteria are agreed between SELOR (the federal selection office) and the recruiting organisation, specifying the skills and types of employees the organisation wants to recruit. SELOR advertises the selection, receives applications, vets the applicants for formal requirements, conducts the different tests and examinations, and draws up a ranked list of applicants who have passed the selection process and are eligible for tenured public service.

SELOR's main advantages are its professionalism and its independence from the recruiting organisations. It is a modern recruitment agency using state-of-the art methods. It has developed competence in competency and methodology certification. It has invested in modern facilities and equipment, is actively developing its use of the Internet, and seems to be leading in developing and using e-supported recruitment processes. It is funded by the federal budget and has been able to expand its activities without increased funding.

In **Ireland**, the Public Appointments Service (PAS) offers a shared recruitment service to a wide range of public sector organisations, including local authorities. The PAS recruits for senior positions in the local authorities, such as County Manager, Director of Services and other senior professional and specialist posts. All other recruitment tends to be carried out by individual local authorities, operating within the Code of Practice of the Commission for Public Service Appointments (CPSA) and subject to the CPSA's powers of monitoring, audit and complaints process. Elected members of local authorities have no direct role in HRM generally or in recruitment.

Source: OECD (2007), *OECD Reviews of Human Resource Management in Government: Belgium 2007: Brussels-Capital Region, Federal Government, Flemish Government, French Community, Walloon Region*, OECD Publishing, *http://dx.doi.org/10.1787/9789264038202-en*; and *www.publicjobs.ie/publicjobs* (accessed on 18 March 2013).

- Foster diversity. OECD (2011c) has found that encouraging diversity in hiring decisions for public administration assists in strengthening social cohesion, creating a more representative public service and broadening the skills pool.[7] In addition, diversity may contribute to raising the quality of public services by improving the understanding of community needs and ameliorating social dialogue and communication with the wider population. Information provided by officials interviewed for this review suggests that in the state and municipal governments of Puebla-Tlaxcala there is no strategy to attract members of the indigenous communities to work in the public sector. Considering that local authorities aim at improving service delivery and policy dialogue, integrating members of those communities into the public service is a critical step.

  The recruitment process is one area where diversity should be promoted, while still ensuring that the process is merit-based. The experience in OECD member countries suggests that Puebla and Tlaxcala state and municipal governments could foster diversity and avoid discrimination by: *i)* diversifying communication channels to reach a wider audience, in particular indigenous communities; *ii)* motivating people to apply for vacancies in the public service; *iii)* making the selection process and criteria more inclusive, but still focused on analysing skills, qualities and competencies required for a job; *iv)* eliminating discriminatory elements from the recruitment-selection process, such as requiring information on age, gender, marital status, sexuality and ethnicity; *v)* providing training opportunities for members of indigenous communities to prepare them to compete for jobs in the local public service on their own merit; and *vi)* facilitating the integration and retention of new recruits to the workplace through coaching or mentoring. Vienna and Amsterdam have developed different approaches to encourage diversity in the public workforce (Box 4.4).

The requirements for merit-based recruitment are that the selection criteria are objective and relevant to the work the candidate is being recruited to do; that the selection process is transparent, adequately documented and open to audit; and that the recruitment process is open to competition. These requirements can be met by defining the skills and aptitudes required to do the job and using a range of valid, targeted methods for testing candidates.

Recommendation 2: Professionalisation as an investment in public sector capacity

The public service must be given a purpose for the short, medium and long terms (OECD, 2011b; 2011c). In the Puebla-Tlaxcala metropolitan region, municipal and state actors lack a strategic vision to guide the public administration as well as a clear understanding of the role and potential of the public administration system in helping to achieve economic and urban development objectives. Although the state development plans set the priorities of the current administrations, they do not clarify the vision of the public administration that is required to achieve those development goals. The absence of a strategy for improving public administration has, in turn, hampered the development of policies for human resource development in the local public sectors.

Box 4.4. **Diversity in sub-national levels of government: The case of Vienna and Amsterdam**

Vienna: In 2003, the city of Vienna decided to develop its integration policy. The aim was to bring the topic of integration and diversity management into the city administration itself. Because a third of Vienna's 1.6 million inhabitants have a migration background, the city government felt the need to strengthen its administration for the new requirements of a socially, culturally and ethnically diverse society. In 2004, the city administration introduced diversity management, to reflect the diversity of its population in the services provided by the city and in the staff composition of the city administration. Thus, Vienna offers apprenticeships in 30 professions for about 800 students. To reach out to students and their parents, information folders in German, Serbian, Bosnian/Croatian and Polish have been published by the personnel department. The homepage openly advertises apprenticeships for students with a migration background. The city administration now wants to take advantage of the various language skills that apprentices have and gives extra points for tested language skills on the application exam. While all apprentices receive basic training courses in intercultural management, students who are trained as office clerks can opt for a voluntary, one-hour per week intercultural competence course. The subjects are ethics, religious and cultural basics, stereotypes, intercultural communication and integration.

While Vienna is increasingly aware of people's ethnic backgrounds, a quota system would not be appropriate as it would be established through the affirmative action approach. Bringing more people with a migration background into public administration is in line with the view that these people can contribute to the success of the organisation through their particular skills, knowledge and experiences. The approach is therefore to find the most qualified ones to meet the needs and challenges in public administration over the next decades.

Amsterdam: Diversity and integration policy in the broadest possible sense are high on the political agenda of the City Council of Amsterdam as there are 178 different nationalities in the city. The diversity and integration policy's target groups include: women (in a deprived position); immigrants (in a deprived position); native Dutch in a deprived position; the disabled; and homosexuals. The city of Amsterdam has 770 000 inhabitants: 52% are originally Dutch, 34% have a non-western background, and 14% are western immigrants, for instance: Surinamese (69 000), Moroccans (65 000), Turks (38 000) of which the large majority are Muslim. Relatively high percentages of these groups face difficulties in terms of unemployment, debts, language, health and school dropout rates.

The internal measures adopted by the city of Amsterdam include: *i)* always incorporate diversity results as part of the yearly appraisal between the city manager and the city services directors; *ii)* include diversity in all HR instruments such as competency management, appraisal, etc. at all levels of the organisation; *iii)* set up training in diversity management; *iv)* reserve places for immigrants in the internal training programmes; and *v)* give preferential access, in case of equal suitability, to immigrants in recruitment and selection. As part of the external measures adopted, the City Council implemented an Intercultural Communications and Anti-discrimination Programme and the Amsterdam Gay Capital Programme.

The main lessons learnt from the experience of the city of Amsterdam are that setting targets may initially help to firmly embed diversity policies in all HR instruments. Guiding these processes from the uppermost levels of the organisation is an absolute prerequisite for success. It is paramount to have a discussion about quality, as the criterion of "the best" can actually be interpreted in many ways. Constant attention needs to be paid to executive appointments at the highest levels, to role models and to the training of talent. Yet the most important lesson drawn is that responsibility should be taken where it belongs: at every management level, with managers taking responsibility for their own teams.

Source: OECD (2011), *Public Servants as Partners for Growth: Toward a Stronger, Leaner and More Equitable Workforce*, OECD Publishing, *http://dx.doi.org/10.1787/9789264166707-en*.

In many cases, HR decisions are largely handled by the mayor rather than the human resources department. In some municipalities in Tlaxcala, for example, the municipal president overrules the decisions made by the HR director regarding disciplinary measures of staff or dismissals due to poor performance. This situation reveals a lack of real authority of the HR department, limiting its power to manage the workforce on a daily basis and to properly implement regulations and procedures. This also shows that HR decisions are largely made on a political and personal basis rather than on documented grounds. In larger municipalities like Puebla, the HR department seems to have more room for manoeuvre, as it has an active role in the recruitment of staff, detection of training needs and competence management. However, despite promising HR practices, such as the pilot programme for competence management per hierarchical level, more needs to be done to give HR functions a more strategic role in the management of the municipal workforce.

Across OECD countries, training and development have taken on increased importance as public services find themselves in competition for scarce skills in the knowledge economy, requiring new or improved competencies (OECD, 2008, 2011c). The professionalisation of the local public workforce remains a pending task in both state and municipal levels of administration in Puebla and Tlaxcala. As in many state and municipal governments in Mexico, in Puebla and Tlaxcala there is a lack of a conceptual and methodological framework and the instruments for the development and formation of public servants. Professionalisation of the public workforce, understood as the acquisition of a qualified and integral performance profile in a position or function within the public service (Acosta Arévalo and Baldeón Larrea, 2008), has been weak. Training of state and municipal public servants is not systematic, planned or comprehensive. Most OECD countries carry out initial training at entry into the civil service (OECD, 2010c), yet few municipalities in Puebla-Tlaxcala provide this type of training.

Moreover, when training is provided it does not necessarily target the skills most valuable to the administration. OECD (2012a) found that public employees in Mexican sub-national governments would benefit from training in customer services and more specialised skills according to their area of work. For instance, staff at service counters require training to provide accurate information as regards procedures for accessing government services or permits. Targeted training could be developed for municipal planners aiming to develop a professional cadre. Cadastre assessors require training to use specialised software, such as Autocad, while cadastre inspectors could be trained to be multi-functional so as to obtain all of the required information in a single visit and enhance efficiency. In short, training is not aimed at moving the administration forward by acquiring and developing skills required for a new knowledge era. As a result, scarce training budgets available to municipal governments are spent with limited connection to the strategic workforce development needs of the administration. The three-year term of municipal administrations acts as a major disincentive to invest in training.

Concrete actions for investing in the professionalisation of public sector workers could include:

- Enact legislation that prioritises the professionalisation of the public workforce. Sub-national governments in Mexico already benefit from a well-articulated methodological framework as well as instruments for professionalisation that have been designed at the federal level (Box 4.5). Puebla and Tlaxcala could build on the national reference framework by enacting specific legislation on the issue of professionalisation as well as secondary legislation (*reglamentos*) to

operationalise the strategy. For instance, state authorities may consider including the issue of professionalisation in the State Development Plan (*Plan Estatal de Desarrollo*) as a public policy, giving training a strategic role. It would be necessary to adapt the Budget Law to ensure sufficient resources are allocated at state and municipal levels for the professionalisation of the workforce, such as a specific budget for training. Moreover, building on the experience of other local governments in Mexico that have already issued legislation on professionalisation, it is recommended to avoid focusing on the administrative, procedural issues, but rather on the substantive aspects of professionalisation, such as identification of training needs, curricular design and formulation of the content of training programmes; and long-distance learning programmes. Finally, the professionalisation process would involve establishing acceptable qualifications and defining standards of performance for different professions in the public service, and be used to grant accreditation for different skill levels.

Box 4.5. **Conceptual and reference framework for workforce training in Mexico**

Sub-national governments in Mexico already benefit from a well-articulated methodological framework as well as instruments for professionalisation that have been designed at the federal level, including: the Permanent National Forum of Professionalisation that issued the Mexican Letter for Professionalisation and Professional Career Service in Local Governments, and the works of the National Institute for Federalism and Municipal Development (INAFED). The letter contains a series of guiding principles for professionalisation based on the experience of local governments that have already legislated in the area and that of the federal government. The letter stresses several important elements such as: *i)* adopting a whole-of-government approach when designing a career civil service; *ii)* professionalisation as the basic underpinning of a career civil service based on the continuous and systematic development of knowledge, competencies and experience; *iii)* coherence between the labour regimes in state and municipal governments; and *iv)* performance assessment as a guarantee for quality in service delivery. This work underscores the viewpoint in Mexico that the professionalisation of civil servants is critical to building solid institutions. However, progress across the country has been patchy. Puebla and Tlaxcala, for example, took part in the discussions that led to publication of the letter, but progress in its implementation has been rather limited.

- Make training more strategic. The increasing knowledge content of work makes ongoing skill development increasingly important. The capacity of the workforce could be further enhanced by viewing employees' development as a strategic issue for enhancing public organisations. Several actions which would complement the workforce development policy checklist described in Chapter 2 (Box 2.12) can be taken to ensure that training public employees becomes more strategic in a quest for boosting the professionalisation of the local public workforces:
  - Ensure alignment between individual training and workforce needs, so as to improve the skills of the workforce for the benefit of public administrations.
  - Develop a systematic approach to detect training needs, through the collection of organisational, occupational, curricular and personal information as regards the main profiles in the administration. State administration should take the necessary steps to develop a comprehensive, up-to-date personnel database. Authorities would then be in a position to better detect and orient training needs.

  - Link training plans to workforce analysis and planning so that staff development becomes an integral part of how local administrations plan their workforce, rather than having to depend solely on recruitment to meet changing needs. A competency gap analysis carried out in the context of workforce planning is a useful way of identifying the gap between the existing competencies of staff and those of the municipalities.
  - Issue guidelines at state level for municipalities as regards the planning, programming and budgeting of training programmes.
  - Complement job-specific training by other forms of learning to develop a range of technical and behavioural competencies, such as developmental assignments, coaching, mentoring, knowledge sharing (as it is done in some cases in IMPLAN) and team-based learning.
  - Employ new technologies for training – like the federal government's *@Campus Mexico* portal for federal employees – in order to widen the number of participants and integrate public employees from different municipalities. This type of interface can encourage participants to take part in training courses, reduce costs and help monitor training delivery. This would require co-ordination across levels of government.

- Focus on training for senior managers. OECD countries increasingly use competency management to systematically identify the capabilities senior managers should bring to their jobs, set consistent standards and reinforce the desired values and culture of the public service. Typically, the required profile includes leadership capabilities, management skills, the ability to achieve results and personal integrity. Competencies are commonly used in recruitment and selection, succession planning, identification of potential future leaders among middle management ranks, performance management, training and leadership development. An example is the Korean framework for competencies for senior managers (Box 4.6). State governments in Puebla and Tlaxcala could consider taking a similar approach, building on their current efforts to introduce competency management, using a competency profile for senior managers to develop a consistent approach to their recruitment, training and development. Current efforts in the state and municipal government of Puebla to ensure that middle managers pass psychometric tests and an interview to assess their competencies constitute a good starting point to move to a more merit-based system. However, more needs to be done to enhance the managerial capability of the metropolitan municipalities and state administrations.
- Offer certification of competencies. Based on the experience of the federal Professional Career Service (*Servicio Profesional de Carrera*, SPC), authorities in Puebla and Tlaxcala could consider certifying the competencies of local public employees. Competence certification is designed to acknowledge the knowledge and abilities of an individual, irrespective of the method in which they were achieved. Competence certification can give curricular value to training received as well as encourage staff to pursue professional development opportunities. In Puebla-Tlaxcala there are a number of public and private institutions authorised by the National Council for Normalisation and Certification of Competencies (*Consejo Nacional de Normalización y Certificación de Competencias Laborales*, CONOCER) to certify labour competencies (see Box 2.10). State and municipal

governments could make use of this opportunity to certify the competencies of public employees at professional and technical level.

Box 4.6. **Korea: Assessing competencies for senior civil servants**

In 2006, the Korean government introduced a competency evaluation framework for the senior civil service. This framework has been used to appoint senior officials regardless of seniority. Based on the successful operation among senior officials, the competency evaluation framework was expanded to division-director level officials in the second half of 2010. Competency evaluation has improved the reliability and fairness of HR management. In addition, with the results of the competency assessment reflected in training, overall government competitiveness has been upgraded.

Competencies subject to assessment include strategic decision making and commitment to change, as for high-ranking government officials, along with skills required for effective organisation management and efficient policy execution. Assessment focuses on work competency needed to run an organisation. Competencies are organised around three main areas, as shown in the table below.

Competency model for Senior Civil Service

Competency group	Competency name	Definition
Thinking	Problem recognition	Detect problems in a timely manner through information analysis, and find root causes by analysing diverse factors related to problems.
	Strategic thinking	Set long-term vision and objective, and decide how to achieve them by prioritising several options to work on them.
Working	Performance orientation	Seek various ways to maximise the performance of given work, and pursue effectiveness and efficiency in the process of achieving targets.
	Change management	Understand direction and trends of environmental changes, and make sure that individuals and organisations adjust and respond to them appropriately.
Building relations	Communication	Capture exact meaning by listening to others' opinions, and deliver one's opinion in a clear and effective manner.
	Customer satisfaction	Consider job-related counterparts as customers, and make efforts to understand and meet their needs.
	Adjustment consolidation	Identify conflicting interests and tensions among stakeholders, and come up with reasonable and balanced solutions.

Source: Ministry of Public Administration and Security (MOPAS) of Korea (n.d.), "Competency evaluation selects top talents to lead the country into a bright future", brochure, Republic of Korea.

- Certification for public employees could have multiple benefits, including: *i)* ensuring credibility in the competence of the staff to perform at the highest national standards; *ii)* fostering the mobility of public employees across sectors and levels of government; *iii)* better aligning the educational offer with the requirements of the public and even private sectors; and *iv)* strengthening the capability of state and municipal governments by having staff that performs at national and international standards. Mexico's Federal Electricity Commission (*Comisión Federal de Electricidad*, CFE) is one success story in this regard. CFE has been certifying its procurement staff (*agentes compradores*) for more than 15 years. The result has been increased standards for procurement functions and career development for employees. Another useful example is Canada's Professional Development and Certification Program, which recognises the need for a common knowledge-based approach for all those involved in the life cycle

management of assets – from assessment and planning of requirements throughout acquisition until disposal (Box 4.7).

Box 4.7. **Professional Development and Certification Program in Canada**

The Professional Development and Certification Program aims to help professionals in the Procurement, Materiel Management and Real Property Community acquire the skills, knowledge, abilities and training required for their functions. Development of the programme was driven by the community to raise the professionalism and recognition of procurement as a knowledge-based profession. What binds this community is its relationship to and responsibility for the life cycle management of assets. As a consequence of this shared responsibility, the community has many common competencies, learning goals and knowledge requirements. A unique feature of the Professional Development and Certification Program is its explicit recognition of this community commonality and the creation of a competency profile and learning mechanisms that target them. The programme's two components are:

- Professional development: this consists of the core competency profile and web-based assessment tool, and the programme curriculum of courses and other learning activities to build core and function specific knowledge and skills. The core competency profile outlines the 4 competency clusters and the 22 competencies and their associated behavioral indicator statements, by 3 increasing levels of proficiency.
- Certification: this includes the standard for competencies, the Certification Program Manual and the Certification Application and Maintenance Handbook. The CGSB Standard for Competencies of the Federal Government Procurement, Materiel Management and Real Property Community builds upon the competencies and behaviors of the core competency profile and defines the knowledge, training and experience required by the community for certification.

Source: Canada Treasury Board website, *www.tbs-sct.gc.ca/pd-pp*.

- Create a body for professionalisation. State authorities in Puebla and Tlaxcala could follow the lead of Chiapas and Nuevo León by creating a specific body for the professionalisation of the public service, the Professionalistion Institute of the State (*Instituto de Profesionalización del Estado*). These decentralised bodies function as a competence assessment centre linking assessment to the certification of competencies.[8] Puebla and Tlaxcala could go one step further by tasking the institute with providing guidance on workforce issues and employment law to state and municipal authorities, and helping municipal governments develop a framework for their roles and responsibilities as employers so as to boost accountability for staff career development. It could help municipal governments develop a flexible and productive workforce. It could also deliver advice and support to help municipal authorities solve their HR problems and even to design and implement a civil service system. A state professionalisation institute would need to work closely with the proposed recruitment agency described above, and under the supervision of state administrative authority and the municipalities that request their services.

Recommendation 3: Improving forward-looking planning and management

Public sector state and municipal officials in Puebla-Tlaxcala, in particular HR staff, frequently lack reliable data for decision making in terms of staffing levels, competencies and skills needs, staff costs and training needs. This is also consistent with the findings of Castro Lozano (2008) for Mexican municipalities generally. For instance, until 2012, the

municipality of Cuautlancingo lacked a database of existing personnel. In most cases, information regarding personnel is concentrated in the payroll database, but is limited to basic personal information, departmental affiliation and salary. In some cases, even this basic database is not updated. The state and municipal administrations of Puebla manage more sophisticated personnel databases, but could do more to improve accounting practices for workforce numbers and costs. There is little indication that state and municipal administrations in Puebla-Tlaxcala have an overall strategic view of their workforce or of possible strategies to increase efficiency and generate savings on workforce costs. Nor do administrations have the tools to engage in competency management by analysing and planning their competency needs in terms of wider public administration priorities.

Concrete actions for improving forward-looking planning and management could include:

- Develop an effective workforce management information system. To improve forward-looking planning and assign a more strategic role to the management of the public workforce, states and municipalities could look to develop an effective workforce management information system. Quality and timely workforce information would enable state and municipal governments to develop a whole-of-government perspective on the allocation of staff across sectors and the size and costs of the workforce.

  As a first step, states and municipalities need to gain a proper understanding of the size and structure of the workforce by building workforce databases that include data on skills and competencies, work experience and even training needs, in addition to standard personal data. The range of information outlined in the workforce policy checklist, proposed in Chapter 2, is equally relevant for the public workforce. Databases should include all categories of staff: unionised (*base*), non-unionised (*confianza*), consultants (*honorarios*), part-time and short-term employees. Authorities could emulate the Civil Servant Registry of the Federal Government (*Registro de Servidores Públicos del Gobierno Federal*, RUSP).[9] Technical co-operation and co-ordination with the federal Ministry of Public Administration (*Secretaría de la Función Pública*, SFP) would likely be necessary. State authorities could take the lead in building and co-ordinating such a database, which could be co-managed with municipal governments. Another useful example is Chile's National System of Municipal Information (*www.sinim.cl*) created by the Undersecretariat for Regional Development (SUBDERE). This is currently the most comprehensive source of information about the management of the 345 municipalities in Chile, as it includes data on municipal budgets, human resources and services.

  It will be important, however, to prioritise public governance reforms at state and municipal level and set short-, medium- and long-term objectives. In the short term, sub-national governments could develop simple, practical tools to assist in workforce planning, such as flow charts to identify the critical steps and formalities in administrative processes (see OECD, 2012a).

- Link workforce planning to overall strategic planning. Establishing strategic planning and performance management frameworks for government organisations could be part of Puebla-Tlaxcala's medium-term public governance reforms. The importance of a well-managed public sector should be emphasised in the strategic documents of state and municipal governments, with reference to the importance

of the public workforce in achieving economic development goals within the region. Many OECD countries have established procedures to link workforce planning to the strategic planning, budgeting and performance management frameworks of organisations. Human resource management strategies and personnel plans are included in strategic plans and managers are made accountable for workforce planning in the context of organisational performance and reporting frameworks. One example that the governments of Puebla and Tlaxcala might benefit from is the strategic alignment and workforce planning system used in the US government, which demonstrates how workforce planning links directly to the organisation's objectives and performance plans (Box 4.8). It is also a useful example of how competency management is used within workforce planning to identify critical needs and plan for how they will be met through recruitment, training and talent management.

Box 4.8 **United States Strategic Alignment System and workforce planning**

Senior managers are responsible for implementing workforce planning as part of the human capital strategy of their organisation. Human capital management strategies are integrated into strategic plans, performance plans and budgets and are linked to indicators that identify how well the organisation is performing.

Activities and outcomes of the system are assessed through documented evidence of a Strategic Human Capital Plan, which includes human capital goals, objectives and strategies, a workforce plan and performance measures and milestones. Organisations are required to submit their strategic Human Capital Plan to the Office of Personnel Management annually.

The workforce plan links directly to the organisation's strategic and annual performance plans and is used to make decisions about structuring and deploying the workforce. Mission-critical occupations and competencies are identified and documented, providing a baseline of information for the organisation to develop strategies to recruit, develop and retain the talent it needs to deliver its programme.

A business forecasting process identifies probable workforce changes which require action. Analysis of functions, customer needs and workload distribution is carried out to ensure the organisation has the right mix and distribution of the workforce to support its mission.

Source: US Office of Personnel Management website, *www.opm.gov*; presentation given by Jonathan Foley, US delegate to the Public Employment and Management Working Party annual meeting, OECD, 9-10 December 2010.

Recommendation 4: Enhancing performance orientation

Municipal and state governments in Puebla-Tlaxcala lack performance-oriented practices and procedures, including a governance framework for developing performance information, such as evaluation and performance measures. Across OECD countries, efforts to improve human resource management systems for motivating staff and managing the performance of individuals and teams are becoming a high priority (OECD, 2008; 2011a). Remuneration is one instrument to enhance motivation and performance. It is widely acknowledged that positions in the public sector in Puebla-Tlaxcala are not competitive relative to opportunities in the private sector, which offers better salaries, working conditions and career opportunities.

Recent initiatives at the federal level may point to positive developments. State and municipalities in Mexico have been asked to submit their budget requests under a performance budgeting approach to the federal Ministry of Finance (*Secretaría de Hacienda y Crédito Público*), which could be the basis for integrating a performance

management strategy and accountability processes into the budget at the state level in the near future.[10] This reform provides a momentous opportunity to introduce performance-oriented elements more widely into public management. This implies a fundamental cultural re-orientation which undoubtedly will create new challenges for state and municipal administrations. For example, this reorientation will require new managerial competencies at the operational level and adequate supporting arrangements and structures to assist employees in their quest for better performance. Also necessary is a parallel adaptation of human resource management as a prerequisite for performance management, and thus an essential part of government policies aimed at better value for money and better service to citizens.

Concrete actions for enhancing performance orientation could include:

- Create incentives to transition toward performance management. OECD experience suggests that one of the biggest challenges will be to create the incentives, both positive and negative, to motivate state and municipal employees and politicians to change their behaviour. Incentives may be simple (communicating the benefits of performance-oriented management and budgeting) or more challenging to design and implement (increasing the flexibility of managers to get the job done). Ireland's experience in introducing performance management into the public service, in which departmental and individual goals are derived from the strategic goals and business plans of the organisation, may be helpful (Box 4.9).

Box 4.9. **Introducing performance management into public service: The Irish case**

Ireland uses performance management and development (PMD) to manage individuals' work performance, careers and development needs. It is seen as a process for establishing a shared understanding about what is to be achieved and how it is to be achieved – and as an approach to managing and developing people that increases the probability of achieving success.

The Strategic Management Initiative (SMI), launched in 1994, identified six reform areas: delivering quality customer service; reducing red tape; delegating authority and accountability; creating a new approach to human resource management; ensuring value for money; and supporting change with information technology. The 1996 report *Delivering Better Government* identified performance management as the key to enhanced service delivery in the Irish public service, and argued that major reforms to existing human resource management structures and processes were required; it stated that "the creation of a results-driven civil service with government priorities and focused on quality of service is not possible within existing personnel structures".

Irish departments and offices prepare statements of strategy which set out the high-level goals and objectives they wish to achieve. They then engage in a business planning process which translates these goals into divisional objectives, and which may include quantitative and/or qualitative performance indicators or measures.

This enables them to link the organisational objectives and strategy to staff's the jobs and tasks, whether as individuals or as part of a team. They can also adapt the general PMD framework to the business needs of their organisation and use it for a structured dialogue with each of their employees about performance and development. The Irish Centre for Management and Organisation Development (CMOD) has also developed a competency list oriented towards behavioural competencies as part of this framework.

Source: OECD (2008), *The State of the Public Service*, OECD Publishing, *http://dx.doi.org/10.1787/9789264047990-en*.

Recommendation 5: Strengthening multi-level governance for professionalisation

Professionalisation is a permanent process of cultural change. Municipal governments alone will not be in a position to carry out strategies for professionalisation. As a result, the process should be considered a shared responsibility among the federal, state and municipal governments, tasked with designing and implementing strategies for the formation, actualisation, training and specialisation of state and municipal public servants. Consistent with OECD (2011b), managing relations between levels of government are a critical element if Mexico is to address capacity challenges and bridge the information, fiscal, administrative and policy gaps in regulatory reform, e-government strategies and the management of the public workforce. Multi-level governance depends on relationships between the central and sub-national levels of government, as well as among peer-level agencies (e.g. among ministries, across regions, between municipalities).

Establishing enabling conditions for the development of state-of-the-art practices at the sub-national level also makes sense given that most of Mexico's public servants are located in sub-national administrations. Further, decisions taken by sub-national governments can also have a major influence on the national government's ability to handle its own responsibilities, including macroeconomic and social stability, sustainable growth and social equity. In terms of implementing a professional career system, experience varies widely across states: as some, like Guanajuato, Nuevo León and Zacatecas have made substantial progress, while others, like Puebla and Tlaxcala, are still very much behind.

In some cases, it is important to institutionalise co-operation across levels of government in order to facilitate the exchange of information and enhance co-operation. In Mexico, several mechanisms are already in place that can be channels of communication and forums for the exchange of information and good practices. Municipalities in the metropolitan area of Puebla-Tlaxcala may look to take advantage of these mechanisms to build and strengthen relations with other municipalities and levels of government:

- Municipalities in Puebla-Tlaxcala could take an active role in the national professionalisation fora (*Foros nacionales de profesionalización*), organised by the National Institute for Federalism and Municipal Development (*Instituto Nacional para el Federalismo y el Desarrollo Municipal*). Established in 2001, these fora are designed for participants to discuss technical issues regarding the professionalisation of municipal public servants and the implementation of a career service in municipal governments.
- The mayor of Puebla is currently the President of the National Conference of Municipalities of Mexico (*Conferencia Nacional de Municipios de México*, CONAMM), another potential venue for exchanging proposals to improve public management. Among CONAMM's current proposals are to: *i)* include the establishment of a professional career service in municipalities as a Constitutional precept; *ii)* extend the mayoral term to four years and allow immediate re-election; *iii)* amend the Constitution to give municipal governments a leading role in the discussions and planning of metropolitan issues; and *iv)* legislate on the participation of municipal governments in the elaboration of the National Development Plan, mainly regarding municipal development planning. Puebla's current leadership over this conference is a momentous opportunity to advance the metropolitan and professionalisation agendas.

- Finally, there is discussion to create a National Confederation of Municipalities to enable municipal representation at the federal level and ensure a voice in national initiatives, such as the Pact for Mexico (*Pacto por México*), a series of strategic reforms currently under discussion in Mexico. This confederation could be similar to the National Confederation of Municipal Employees of Chile, created in 1990, which has been part of the negotiations of the general annual wage adjustment between government and representatives of associations of public employees. This initative could be a way to establish a learning system for policy implementation, as mayors would be in a position to exchange experiences and improve their own practices.

Prioritising steps to build capacity in the public sector will be of critical importance, as it is not be feasible for any region to address each of these issues simultaneously. Box 4.10 proposes a possible hierarchisation of next steps for Puebla-Tlaxcala. It is also important to note that reforms will need time to mature and produce results.

Box 4.10. **Prioritising steps to public sector capacity building**

The profile and management of the state and municipal public workforce will have to change to increase the level of capacity of the public sector in Puebla-Tlaxcala. The heterogeneity across municipal governments within the region suggests the need for increased co-operation between municipalities and a change and improvement in the skills and competencies of the workforce. If the public sector is to play a role in triggering economic development and boosting the potential of the region, municipal governments will need to manage and motivate their workforce to increase productivity and transform municipal public services. The governments of Puebla and Tlaxcala may want to consider the following actions or priorities as a way to build a roadmap for public employment reform in the state and municipal administrations:

- The first priority for the state and municipal governments in Puebla and Tlaxcala would be to acknowledge the importance of people (human capital) and recognise the specificity of human resources in the public sector. The importance of human resources in ensuring public sector capacity and capability has to be clearly stated in all of the strategic documents of the government at state and municipal levels.
- A second priority would be to begin to build the professionalisation of the state and municipal public workforce. This is of great importance as the public function at state and municipal level would transform itself into a profession with the highest integrity and competence. This would involve establishing groups of norms of conduct and the acceptable qualifications – through certification – that professionalised public servants should have.
- A third priority would be to develop the capacity for conducting strategic workforce planning. Building reliable sources of information on the profile of the workforce and having a vision on the desired workforce profile needed is essential to make informed HRM decisions. State and municipal governments would have timely and high-quality information on the costs, allocation and competencies of the workforce and be able to plan for the long term.
- A fourth priority would be the establishment of a civil service system in state and municipal public administrations. This would be a way of protecting the core government administration from political interferences and thus ensure government by law. Revising and reforming the recruitment process so as to make it more merit based and with a focus on competencies is the first critical step towards the installation of a civil service system. However, it is important to consider that a civil service system cannot be reduced to a recruitment process, but it should facilitate the career development of employees, triggering their potential for the benefit of the administration.

Box 4.10. **Prioritising steps to public sector capacity building** (*cont.*)

- A fifth priority might be to re-dimension the HRM function to make it a strategic activity in enhancing government's capacity and capability. Professionalising the HR function would strengthen HRM in municipalities, and would help line managers to achieve their goals through effective people management.
- A sixth priority would be to establish channels of communication and co-operation across levels of government. Facing many of the challenges in the metropolitan area, not only in terms of workforce management but also on urban planning, water management and transport, requires joint efforts as many municipalities lack the capacity to provide even basic services. Sharing information and good practices and working together is of the utmost importance to make the most of scare resources.

State and municipal authorities in Puebla and Tlaxcala could take preventive action to enhance efficiency in the management of public resources. OECD (2013a) reported Mexico's growing levels of municipal debt in recent years, reflected in the level of resources dedicated to pensions. Puebla and Tlaxcala are not, for the moment, largely affected, but early action could help mitigate a future drop in resources. One option could be to generate efficiency gains in back-office services (HRM, ICT, procurement, audit, financial services) and consider the creation of shared support service agencies across municipalities. This is a measure taken in several OECD countries at the national level but that could be adapted to and adopted by sub-national levels of government. The aim would be to increase the quality of services and reduce the amount of resources dedicated to a series of individual services.

Metropolitan governance arrangements in Puebla-Tlaxcala

As has been discussed throughout this review, the multiplicity of public actors in Puebla-Tlaxcala must contend with the complexities of governing a dynamic metropolitan zone that has undergone dramatic demographic and urban expansion over the past 30 years. Moreover, policy makers face the challenge of co-ordinating service provision and distributing the costs and benefits in efficient and equitable terms across 39 municipalities straddling 2 states. OECD experience has shown that greater co-operation between and across levels of government (vertical and horizontal) can help to improve service efficiency and effectiveness, improve the management of urban growth and lead to more co-ordinated approaches to regional economic development (OECD, 2006). Developing a metropolitan governance system can be a difficult task, however, as it calls into question the relative roles and responsibilities of diverse actors, intergovernmental co-ordination mechanisms and the nature of the relationship with the private sector as well as civil society (OECD, 2011d).

This section will begin with a brief discussion of the challenges related to intergovernmental co-operation and metropolitan governance arrangements in Puebla-Tlaxcala. It will then outline a series of strategies for reforming existing tools, establishing an information base, creating new co-operative arrangements and building capacity to engage in long-term planning at the metropolitan scale. Among the questions that will guide this section: What form could metropolitan governance take in Puebla-Tlaxcala? What functions could be fulfilled by these arrangements? How might existing tools and institutions be strengthened to achieve better development and service delivery outcomes?

Metropolitan challenges in need of metropolitan solutions

Puebla-Tlaxcala suffers from a host of metropolitan challenges yet lacks adequate tools and incentive mechanisms to develop effective metropolitan solutions. Even though most of the region's 39 municipalities face similar obstacles, developing common solutions to shared problems has proven difficult. It is striking that the protection of the common good in Puebla-Tlaxcala – land use, transport, water and other public services – is handled by weak, fragmented or ineffective institutional arrangements. There tends to be little awareness on the part of many citizens and government officials about the need for co-ordination on metropolitan issues beyond the obvious (traffic congestion, natural disasters and emergencies, such as floods). Moreover, as will be discussed, consultation and co-ordinating committees address most metropolitan issues through procedures that are, to a great extent, removed from public scrutiny.

Challenges to metropolitan governance in Puebla-Tlaxcala include:

- Administrative and institutional fragmentation of actors and policy mandates, which stands as a barrier to achieving economies of scale and greater policy coherence. As a result, there are few frameworks for co-ordinating service provision or distributing the costs and benefits among multiple entities in efficient and equitable terms. Moreover, while many of the challenges faced by municipalities within the region are inter-related, solutions tend to be conceived in isolation.
- Outdated, ineffective or partial frameworks, institutions and tools for urban and economic development and co-ordination at the metropolitan scale. Governance arrangements at the metropolitan level remain ambiguous in Mexico's legislative framework. Even the metropolitan tools that have been developed to facilitate greater urban and economic development policy coherence within the region – such as the federally established Metropolitan Council and Metropolitan Fund, the Puebla State Land Bank or the municipality of Puebla's municipal planning institute, IMPLAN – have significant limits.

Creating political legitimacy: Toward a strategic metropolitan vision

Puebla-Tlaxcala is composed of 39 municipalities of varying size and fiscal capacity, which straddle 2 states which also vary in size and resources. The sheer number of small cities that are located at a "functional", or commuting, distance from the city of Puebla is an important factor contributing to the ill-controlled metropolitan development patterns within Puebla-Tlaxcala. This is partly for historical reasons. In the north, for example, municipalities are much bigger because these areas were developed later. The state of Baja Norte, for instance, has only five municipalities in the entire state.

Overcoming administrative and institutional fragmentation

Across the OECD, as economic activities and population expand into territories under the jurisdiction of multiple local authorities, as has occurred in Puebla-Tlaxcala over the past three decades, a misalignment can be created between the territories represented by elected officials and those areas affected by their investment decisions on service provision. For instance, service provision has remained in the hands of individual municipalities, even though the functions and flows within the region pay little attention to administrative boundaries. In Puebla-Tlaxcala, the fragmentation of administrative

jurisdictions, a common problem across the OECD, results in a lack of correspondence between administrative and functional territories. As reported in OECD (2011d):

> …as major cities expand geographically outward, old administrative boundaries usually remain in place, creating a patchwork of municipalities within the urban area, each with its own vested interests to defend. This creates a complex policy environment in which area-wide consensus on medium- and long-term goals in environmental quality, economic development and competitiveness, social cohesion, equitable public finance and the level and quality of public services across the urban region is difficult to reach.

OECD experience indicates that co-operative arrangements among local jurisdictions are essential if metropolitan areas, and the municipalities composing them, are to effectively meet their tasks. Insufficient intergovernmental collaboration – both vertically and horizontally – can limit the effectiveness of policies undertaken by various levels of government, due to overlap, incoherence and lack of "buy-in" by relevant actors, often, for instance at the local level. Horizontal co-operation can help metropolitan areas overcome two critical challenges: a lack of policy co-ordination, for example in urban planning and economic development; and suburbanisation and functional separation, which creates internal tensions and imbalances within the metropolitan area (OECD, 2011d).

This administration fragmentation is compounded by institutional fragmentation within key urban sectors. The assignment of urban-related responsibilities in Puebla-Tlaxcala is fractioned, often overlapping, across a wide spectrum of federal, state and municipal authorities, as well as some private providers and community organisations (Table 4.5). This fragmentation across policy sectors complicates efforts to undertake an integrated approach to urban policy making. Moreover, it is important to recognise the high level of institutional fragmentation within a given sector. Such is the case of water and, as described in Chapter 3, transport, two highly strategic sectors for the metropolitan zone.

The case of water. Institutional fragmentation is among the many governance challenges facing Mexico's water sector.[11] As reported in OECD (2013c), the sheer number of entities involved in water management at federal, state, municipal and basin levels is a reflection of the wide range of water users and uses that operate at different scales with competing demands (i.e. drinking water, irrigation, hydropower and environmental needs). Water management in Mexico is distributed among various federal, state, basin and municipal actors, with the involvement of non-governmental actors (Figures 4A.1 and 4A.2). The federal government retains significant authority over water policy design, financing and regulation, led by the National Water Commission (CONAGUA) and several ministries and agencies involved in water-related policies. At sub-national level, state governments are in charge of planning, regulating and developing infrastructure for water resources. Municipalities are primarily responsible for water supply and sanitation, as articulated in Article 115 of the Constitution, though responsibilities and resources vary widely (OECD, 2013c). Service provision may be managed directly by the municipal government or indirectly by public companies owned by the municipality, or delegated to private operators. If requested by municipalities, states may also provide water services in line with the subsidiary principle. Overall, most service providers are operating in the red, setting tariffs remains a highly political issue, and limited corporatisation of utilities (with an independent fiscal system) has been observed.

Table 4.5. **Assignment of responsibilities of urban functions**

Main function	Sub-function	Authorities with competence in this area				
		Municipality	State government	Federal government	Private sector	Community organisations
Roads and transport	Public transport		X	X	X	
	Highways		X	X	X	
	Trunk roads		X			
	Local roads	X				
	Traffic control	X	X	X		
Public utilities	Potable water	X				
	Sewerage	X				
	Electricity			X		
	Gas			X	X	
Education	Secondary	X	X	X	X	
	Post-secondary	X	X	X	X	
	Adult education		X	X		X
Health	Secondary		X	X	X	
	Tertiary		X	X	X	
	Emergency		X	X		
Land development planning	Regional territorial planning		X	X		
	Metropolitan land development					
	Local land development planning	X				
	Development control	X				
Domestic and industrial wastes	Solid waste collection	X				
	Solid waste disposal	X				
	Wastewater treatment	X				
Drainage	Construction	X				
	Operation and maintenance	X				
Parks and protected areas	Protected areas		X	X		
	Regional parks		X	X		
Citizen security		X	X	X		X
Emergency services		X	X	X		
Fire protection		X				

This fragmentation can pose critical capacity and co-ordination challenges that ultimately hamper effective policy design and implementation. This is especially evident in the weak control over irregular urban and rural activities that proliferate in aquifer recharge areas (Iracheta Cenecorta, 2012). Bridging the co-ordination gap is a major challenge in the Mexican water sector and more efforts are needed at local and watershed levels to enhance policy coherence, especially between water and land-use planning. In Puebla, rainwater drainage faces challenges because state authorities responsible for the infrastructure fail to co-ordinate with municipalities in charge of land-use conversions that reduce water infiltration and modify drainage patterns, or the authorities responsible for road construction. Moreover, activities of municipal authorities responsible for water within the Puebla-Tlaxcala region are stymied by underfunding due to low fees (an

exception is the city of Puebla, which has the highest tariffs in Mexico), limited bill collection and high delinquency threatening the security of water networks; significant water losses from ageing infrastructure, compounded by diminishing yields of aquifers; and the uneven implementation of waste and wastewater management practices and policies (Iracheta Cenecorta, 2012; OECD, 2013c). In the state of Puebla, of the 312 treatment plants, 90% are out of operation because of malfunctioning or outdated infrastructure. The resulting water service is sporadic at best and represents a clear threat to the environmental sustainability of the region.

In the state of Tlaxcala, institutional fragmentation within the water sector is compounded by challenges as regards continuity of water policy, which provides little incentive for long-term planning or pluri-annual investments. The state passed legislation transferring responsibility for water over to municipalities in 1982 and in the same year created the State Water Commission to co-ordinate treatment plants with municipalities. However, the commission disappeared in 1990, only to be revived two decades later, in 2010. Of the 127 treatment plants in Tlaxcala, only 40% are in operation; some treatment plants are operated by the state (covering 17% of the total need), others by municipalities. In most cases, municipalities cannot afford to maintain plants. Municipal collection for water taxes is minimal and null for waste management. Only about 50% of the state of Tlaxcala's wastewater is treated, and just two municipalities in the state are sufficient in paying for water needs, following a restructuring of their water fees. No fewer than 297 water commissions operate in the state of Tlaxcala, because each well has its own commission, and each operates according to its own rules.

In part as a result of these institutional challenges, in most municipalities within the metropolitan zone, service provision is not continuous. Approximately 3% of the serviced area of the city of Puebla receives continuous service, 6% receive service every day and 91% receive alternate service that varies between one to five days a week. As in Tlaxcala, approximately 40% of water in the city is lost due to obsolete or malfunctioning infrastructure. The city has undertaken several efficiency measures to reduce water consumption: installing metres in some areas, with the objective of instituting a payment system based on actual consumption); improving infrastructure (some progress has been made in certain areas of the city); and separating rainwater and greywater.

Moreover, water pollution remains a significant problem, which has the potential to constrain economic development opportunities (see OECD, 2013b). Currently, IMPLAN is developing a sustainable urban development programme in Valsequillo, with the objective of monitoring the water quality of the Valsequillo Lake. The lake suffers from high levels of pollution due to both human activities in the southern part of the city of Puebla, as well as indsutral pollution in the river basin. Even in the southern section of the municipality nearest the lake, residents are obliged to import water from elsewhere because the nearby source is too polluted.

Ambiguous metropolitan frameworks

Mexico has developed some avenues for intergovernmental co-operation (both horizontal and vertical) in recent decades, though metropolitan governance arrangements, where they have been attempted, remain relatively weak given their ambiguous treatment within the legislative framework. The Federal Constitution of Mexico has no provisions for a metropolitan level of government, contemplating only the federal, state and municipal tiers. Article 115 states clearly that "there is no intermediate authority between the City Council and the state government." As Spink et al. (2012) point out, even the term "metropolitan" is ambiguously defined within the country's legal framework.

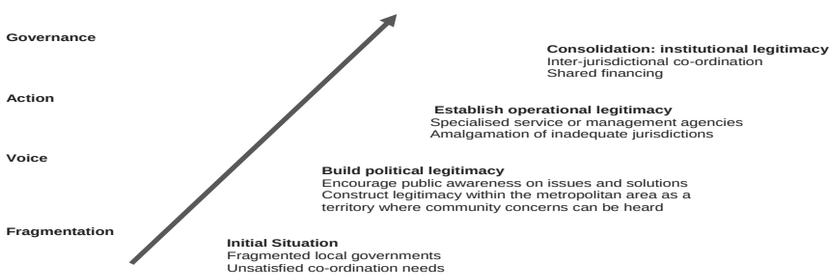
Intergovernmental co-operation and collaboration may occur through loosely defined and structured urban conurbation commissions, state-run metropolitan councils (discussed in further detail below), national councils for mayors (CONAMM) and governors (CONAGO), or other forms of voluntary intergovernmental agreements, councils and commissions. Metropolitan co-ordination is thus left to state-led initiatives, formal or informal, or through voluntary associations of municipalities.

Strategies for building metropolitan "voice"

In Puebla-Tlaxcala, most co-ordination arrangements are either *ad hoc* or weak and bureaucratic in nature – in the form of co-ordination roundtables or inter-agency committees – created to tackle metropolitan issues. However, these tend to effectively remove decision making from the scrutiny of voters and weaken accountability. There are no elected bodies or citizen-based entities to debate metropolitan issues, creating a situation that Lefèvre (2008) calls lack of "voice." For instance, the existing public participation structures in Puebla-Tlaxcala, such as the citizens councils of Puebla, are restricted to municipal level and do not provide channels for participation on metropolitan issues nor for oversight and accountability of officials.

Good governance in metropolitan areas tends to result from a complex political process, in which, to overcome institutional fragmentation, metropolitan issues and citizens first gain voice, then representation, and gradually build institutional and fiscal capacity to provide services and solve metropolitan problems (Lefèvre, 2008). This process of building metropolitan governance may be considered as a guide for Puebla-Tlaxcala within the existing institutional and legal framework (Figure 4.5).

Figure 4.5. **The process of building metropolitan governance**



Source: Rojas, E. (2008), "The metropolitan regions of Latin America: Problems of governance and development", in Rojas, E., J.R. Cuadrado-Roura and J.M. Fernández Güell, *Governing the Metropolis. Principles and Cases*, Harvard DRCLAS and Inter American Development Bank, Boston and Washington, DC, *http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=981722*.

Recommendation 1: A forum to discuss metropolitan issues

To move beyond the institutional fragmentation experienced in Puebla-Tlaxcala and build "voice" among stakeholders, a first step would be to create political legitimacy for metropolitan issues. The objective is to increase public awareness on the part of public and civic stakeholders about metropolitan issues and the potential solutions, as well as their costs and benefits. This step is critical in order to mobilise public opinion to demand solutions for metropolitan problems and to mobilise voters to support the elected officials that promote them. To meet this need, Puebla-Tlaxcala could build on recent efforts on the part of IMPLAN to organise a forum to discuss metropolitan issues. It would be important to provide a neutral platform for all stakeholders to discuss their views and priorities. Such a forum requires technically validated information on metropolitan issues and thus needs to operate closely to the institutional mechanisms that provide this information. To overcome the centre city bias of IMPLAN, the forum could be initiated by IMPLAN, with leadership and technical support from one or more regional universities and the two state governments. The forum would also need to include the municipalities in the metropolitan zone, as well as community organisations and professional, industrial and commercial associations. The experience of the *Conférence Métropolitaine* and subsequent *Paris Métropole* in France could be of interest to Puebla-Tlaxcala, as they were initiated by the city of Paris but have grown to include 188 municipal partners (Box 4.11). Alternately, the forum could be led by a non-governmental organisation (NGO), as with the *Fundación Metropolitana* in Buenos Aires (Box 4.12).

Box 4.11. **The *Conférence métropolitaine* and *Paris Métropole*: A forum for metropolitan issues in Paris-IDF, France**

Paris Métropole, launched at the initiative of the city of Paris, represents a promising option for governance of across the Paris/Ile-de-France region. In 2003, the city of Paris proposed a dialogue with its near suburbs, and in 2006 the Metropolitan Conference was established as a forum for discussion and informal consultation among elected officials of the Paris region. This was followed by *Paris Métropole*, a study group (*syndicat d'études*) that today embraces 151 municipalities in the Ile-de-France region as well as the *départements* and the Regional Council of Ile-de-France. *Paris Métropole* has its own budget and is independent of existing institutions. It is administered by a group of municipal officials, including a committee representing local authorities, an executive board (with a representative from the region, a representative of each of the member *départements* and a representative of the city of Paris) and a president (elected annually by majority vote of the committee).

Paris Métropole is an informal forum for discussion and appears, at the moment, to be rather successful in an institutional landscape that is otherwise diffuse and contentious. In addition to participation by public players, there is an alliance with a committee of partners, including representatives of public agencies and establishments, businesses and associations. A partnership has also been established with the Chamber of Commerce of Paris.

In March 2013, the national government announced the formation of "*Métropole de Paris*", a metropolitan authority that would be governed by the mayor of Paris and presidents of inter-communal associations in the IDF. If approved, it would be established in 2016.

Source: Kamal-Chaoui, L. and M. Plouin (2012), "Cities and green growth: Case study of Paris-IDF", OECD Regional Development Working Papers, No. 2012/02, OECD Publishing, *http://dx.doi.org/10.1787/5k9fd0fg78bs-en*; *www.parismetropole.fr*.

Recommendation 2: Data collection and analysis at the metropolitan scale

The activities of the metropolitan forum should be closely linked to the functions of information gathering and analysis to improve the decision-making process and increase transparency and accountability in the management of metropolitan affairs. The availability of reliable data on economic and urban development, environmental risks and pressures, transport, housing, social marginalisation – to name a few – would be critical to support the debate of metropolitan challenges and solutions. One possibility to consider could be for IMPLAN and the *Colegio de Puebla*, which currently operates an urban observatory financed by the federal government, to join forces. The joint effort could help to overcome the principle weaknesses of IMPLAN (its high rate of staff turnover and its geographic focus on the municipality of Puebla), and at the same time go beyond the traditional functions of an urban observatory. That is, in addition to data collection, the authority could support the formulation of municipal or metropolitan strategic plans and provide analysis on the issues and evaluation of potential solutions (Fernandez-Güell, 1997). In this sense, it would function more like a technical secretariat rather than a simple urban observatory. This joint initiative could be the foundation of a more permanent information-gathering and analysis institution serving all municipal governments within Puebla-Tlaxcala. These types of institutions often play a central role in improving citizen oversight and accountability. By identifying emerging issues and analysing the effectiveness of policies and programmes, they contribute not only to increasing public awareness on metropolitan issues but also to holding elected officials and public servants accountable for the policies they implement. The regional monitoring initiative in the metropolitan region of Nuremburg (Germany) could be of interest to Puebla-Tlaxcala (Box 4.13).

Box 4.12. **A metropolitan forum: The *Fundación Metropolitana* in Buenos Aires, Argentina**

The *Fundación Metropolitana* (Metropolitan Foundation) is a non-governmental organisation in Argentina founded in 2000 and devoted to the analysis and debate of metropolitan issues affecting the metropolitan area of Buenos Aires (13 million inhabitants, 55% of the Argentinean GDP in 2010). The Metropolitan Foundation has varied membership, including individuals and corporations that contribute to its finances. The foundation works in association with local governments in the metropolitan area (42 municipalities), the city of Buenos Aires, the province of Buenos Aires, universities, other NGOs and community associations. The Metropolitan Foundation promotes an ample and non-partisan debate on metropolitan issues and solutions. The topics of the most recent forum in 2012 included urban land use, waste management, transport and citizen security. The forum debates mostly bottom-up perspectives on the issues and circulates its conclusion and recommendations to corresponding governments and agencies.

Source: *http://metropolitana.org.ar.*

This information-gathering function would need a stable source of financing that should come from all sub-national governments within Puebla-Tlaxcala. The contributions of all participating municipalities and the two states would be important, even if contributions are not evenly distributed. This form of financing not only can be more stable than funding coming from one source but also enhances the sense of ownership of the activity on the part of the sub-national governments. The proposed approach would require that many municipalities generate greater own-source revenue to become less dependent on transfers from the federal and state governments. As discussed

previously, there is scope for municipalities to establish – or increase the rates – of fees and charges for services like potable water and waste collection. Current efforts in both states to improve and modernise the cadastres and land registries, also as discussed previously, would also facilitate tax collection efforts – but municipalities would also need to do their part to improve collection and enforcement.

Box 4.13. **Regional monitoring in the European Metropolitan Region of Nuremburg**

The European Metropolitan Region of Nuremberg is one of Germany's smaller metropolitan regions, with nearly 3.5 million inhabitants. It consists of 11 towns and 22 counties. The economic situation and demographic trends are highly heterogeneous throughout the region. The region is also home to a number of territorial inequalities.

As a first step toward establishing a baseline for monitoring various indicators in the region, the metropolitan region recently published a 120-page brochure of statistical data for each of the towns and counties. Topics include demographic trends, economic performance, the labour market, research and innovation, social challenges, land use and the housing market. The brochure provides maps and charts to visualise the empirical findings, illustrating both opportunities and challenges in each of the cities and counties. Scientists, politicians and business people within the region support the findings with policy proposals or regional development programmes. The brochure is a valuable resource, especially to those who are less familiar with statistics and maps. A glossary explains the statistical indicators used.

A final impact worth mentioning: despite the territorial disparities, the process of developing the brochure has contributed to strengthening an overall sense of "regional identity" in Nuremburg.

Source: European Metropolitan Region of Nuremburg (2012), *Regional Monitor*, Metropolregion Nürnberg, Nurenburg, *www.nuernberg.de/imperia/md/statistik/dokumente/veroeffentlichungen/metropolregion/regional_monitor_2012.pdf* (accessed 16 July 2013).

The activities of a metropolitan forum supported with information gathering and analysis outputs would be important to build a shared sense of ownership for metropolitan challenges and solutions. Among municipalities in the region there seems to be a general understanding of the costs generated by ones' neighbours – increased congestion, improper waste management, untreated water supply – yet little motivation or enabling tools to join forces to address the shared issue. A forum for debate, which includes examples of how such challenges have been addressed elsewhere in Mexico and internationally, could help individual actors see both the costs and benefits of living in a metropolitan region and envision concrete strategies for greater co-operation. Ideally, these exchanges could lead to the formulation of a long-term, shared vision for the metropolitan area. Such a vision would be an essential input to design and implement the longer term plans that are discussed in the next section. Germany's urban-rural partnerships could be an interesting framework for Puebla-Tlaxcala to consider (Box 4.14).

Creating operational legitimacy: Opportunities for metropolitan co-ordination

Metropolitan tools in need of reform

Reflecting an understanding of the increasing size and significance of metropolitan areas in Mexico, in 2004, a federal initiative jointly undertaken by SEDESOL, CONAPO and INEGI resulted in the establishment of the first definition and delimitation of metropolitan zones (*zonas metropolitanas*) in Mexico, based on census data from 2000.

The results were updated in 2007 to reflect the 2005 census, and again in 2012 following the 2010 census. In 2008, the federal government established the Metropolitan Fund (*fondo metropolitano*) to fund projects of a metropolitan scope – primarily related to infrastructure – in the newly designated metropolitan zones. The fund, intended as a leverage fund to complement state resources, was created to facilitate co-ordination across multiple jurisdictions around metropolitan solutions (SHCP, 2012). In 2009, the governors of Puebla and Tlaxcala signed an agreement to create a Council for the Metropolitan Development of the Puebla-Tlaxcala Metropolitan Zone (*Consejo para el Desarrollo Metropolitano de la Zona Metropolitana de Puebla-Tlaxcala*), the authority responsible for the management of Puebla-Tlaxcala's share of metropolitan funds. The council is supported by a technical committee (*Comité Tecnico*) and technical sub-committee for project evaluation (Table 4.6).

Box 4.14. **Urban-rural partnerships in Germany**

Metropolitan regions are a major topic in the German discussion of spatial development. Among the potential benefits of metropolitan co-operation is the increased visibility and "voice" for a number of rural and smaller communities – especially those in the periphery with modest economic strength and less visibility than bigger towns in the metropolitan region. The initiative of the Federal Ministry for Transport, Building and Urban Development was to promote the idea that every partner can contribute to economic growth and the quality of life within the metropolitan region, but at the same time can benefit from this arrangement as well – irrespective of a town's size, location or economic potential. Thus, urban-rural partnerships aim to generate territorial cohesion.

Germany's approach to urban-rural partnerships was to postpone theoretical discussions about the ways to manage such large-scale co-operation until the end of the process. Instead, the process was both incremental and action-based. The region, in partnership with local actors, developed 40 concrete projects in order to learn how to work together. Examples of projects include strengthening regional chains of value-added, developing clusters and networks within and between economic branches, improving public transport, developing strategies for regional marketing, pursuing joint land-use planning, and establishing shared visions and development plans. Nevertheless, all projects were based on a discussion about the aims and the best way to reach the objectives, anchored by a common strategy.

This kind of co-operation is not easy, however, especially if the actors do not have a history of working together. Therefore, it is appropriate to begin with potential "win-win" projects. These could include linking tourism sites within the region, a favourable endeavour for many partners. In the longer run, once trust has been established among the stakeholders, more challenging subjects can be pursued.

Another feature has been the involvement of different actors from the public administration, business, academia and civil society. This was challenging due to different ways of thinking about the common goal of better regional development. But it highly inspired the process. Furthermore, it became obvious that such a partnership consisting of actors from urban, suburban and rural backgrounds can only work when they meet on the same level with mutual respect. Urban priorities are not more important than rural ones and vice versa. This implies that urban-rural partnerships require continuous efforts and motivated actors – but can be well worth the effort.

Source: Federal Ministry for Transport, Building and Urban Development (2012), *Urban-rural Partnerships: Growth and Innovation through Cooperation*, Federal Ministry for Transport, Building and Urban Development, Berlin, available at: *www.bbsr.bund.de/BBSR/EN/Publications/BMVBS/SpecialPublication/2012/DL__UrbanRuralPartnerships,templateId=raw,property=publicationFile.pdf/DL_UrbanRuralPartnerships.pdf* (accessed 16 July 2013).

Table 4.6. **Composition of the Metropolitan Council and its bodies**

		Metropolitan Council (*Consejo para el Desarrollo Metropolitano*)	Technical Committee (*Comité Tecnico*)	Technical Sub-committee for Project Evaluation
State of Puebla	Governor	x		
	Secretary General of Government	x	x (joint presidency – head of Programming and Budget Unit)	x
	Secretary of Finance	x	x	x (joint presidency - (Director of Monitoring and Investment)
	Secretary of Infrastructure	x	x	x
	Secretary of Social Development	x	x	x
	Secretary of Environmental Sustainability and Territorial Affairs	x	x	x
	Secretary of Accounting			x
	COPLADE	x	x	
	Joint Technical Secretary (Subsecretary of Expenditure of the Secretary of Finance)	x	x	x
State of Tlaxcala	Governor	x		
	Secretary of Government	x	x	x (joint presidency)
	Secretary of Finance	x	x	x
	Secretary of Public Works, Urban Development and Housing	x	x	x
	Secretary of Social Development	x	x	x
	Secretary of Economic Development		x	x
	General Co-ordination of Ecology	x		
	COPLADE	x	x	
	Joint Technical Secretary	x (Director of Governmental Accounting of Secretariat of Finance)	x (Subsecretary of Expenditure of Secretary of Finance)	x
Federal government	Secretary of Social Development through the Subsecretary of Urban Development and Territorial Affairs	x		
	Secretary of Environment and Natural Resources through the relevant subsecretary	x		

Source: Interviews with the state government of Puebla.

Despite its intent, the Metropolitan Fund has not yet succeeded in improving metropolitan co-ordination and performance, generally across Mexican metropolitan zones and particularly in Puebla-Tlaxcala. An evaluation of the fund for 2006-09 (Iracheta Cenecorta, 2010) found that the projects financed by the fund fail to strengthen long-term metropolitan planning and co-ordination as they respond mostly to sector initiatives focused on resolving short-term problems that are close to the interests of the elected officials in office but not necessarily of metropolitan priority. In the case of Puebla-Tlaxcala, there is little to no co-ordination between the two states in the design and implementation of the projects. The states split the annual allocation of funds based on population: approximately 74% of the 2011 budget (MXD 270-300 million) was distributed to Puebla; the other 26% to Tlaxcala, equivalent to less than 1% of the state of Tlaxcala's general budget. The rules governing the fund do not authorise carrying funds

from one fiscal year to the next, and any unused resources must be returned to the federal government. As a result, project sponsors tend to split large integrated projects into pieces whose cost fits the availability of funds. This practice creates significant implementation problems for the contracting of the works as well as uncertainties about the timely completion of large projects (Iracheta Cenecorta, 2010).

Between 2006 and 2009, the fund supported a total of 30 projects in the Puebla-Tlaxcala metropolitan zone, the majority of which were roads (78%) and water (13%) projects. Many of the projects (particularly on the Puebla side) are devoted to roads that may not be in best long-term interest of the metropolis (Iracheta Cenecorta, 2010). Further, the fund does not provide for the operation and maintenance of infrastructures or services, which is left to state and municipal budgets and often postponed to give priority to new investments. The social impact of the projects is further constrained by the absence of a "bigger picture" to guide metropolitan investment, as Puebla-Tlaxcala is without a metropolitan vision or any sort of prioritisation mechanism upon which the allocation of funds could be based. Moreover, even though critical issues affecting the development of Puebla-Tlaxcala are under the control of municipalities, municipalities have little, if any, involvement in the identification, selection or implementation of projects funded by the Metropolitan Fund, which are determined by the state-led commission.

The state-level institutions with supra-municipal standing, such as the Metropolitan Council, are only partially effective in Puebla-Tlaxcala given its two-state nature. Absent an updated metropolitan planning instrument and formal agreements among the various entities in charge of providing metropolitan services, the development process in Puebla-Tlaxcala proceeds with little public management. State secretariats seek state-centered solutions to issues of metropolitan relevance. A clear example of this state-centered vision of metropolitan issues is the current practice of splitting the funds provided by the Metropolitan Fund among the states in proportion to their populations instead of implementing projects of metropolitan importance. At the municipal level, new subdivisions are approved haphazardly, roads are planned and built with little consideration for their impacts on land uses, investments in health and education facilities are dominated by municipal needs and do not take on a wider metropolitan perspective. Furthermore, the operational rules of the Metropolitan Fund fall short of promoting greater metropolitan co-ordination of investments and services. Investment priorities are decided without the framework provided by a long-term vision shared by all metropolitan stakeholders, nor are they fully co-ordinated with other sector or municipal initiatives. The fund can be a powerful tool to promote better co-ordination but needs adjustments and development to do so.

Recommendation 3: Reform the use of metropolitan funds in Puebla-Tlaxcala

Puebla-Tlaxcala's Metropolitan Fund could be a much stronger asset to promote metropolitan co-ordination in the provision of services. However, there is a need to promote a territorially integrated approach to improve the region's ability to support competitive economic activities and a high quality of life for its residents. According to Iracheta Cenecorta (2010), important revisions to current operations, which may require some reform at federal level but also depend on sub-national actors, should include provisions to:

- Promote a long-term and integrated view of the development of the territory requiring that all investment proposals submitted to the fund be grounded in a shared long-term vision of the future of the metropolitan zone and fully compliant with metropolitan development and structural plans.
- Invest resources from the fund in accordance with a well-defined metropolitan development plan, with clear project priorities and coherence to other metropolitan projects, and within a metropolitan environmental management framework to ensure that projects are sustainable.
- Allow for multi-annual programming and financing of investments, thus promoting a longer term approach to the development of the metropolitan area and eliminating the current practice of splitting large projects into pieces to fit the annual allocations of the fund but which create complex implementation problems.

One option would be for the Metropolitan Fund to adopt the form of a block grant allocated annually to Puebla-Tlaxcala by the federal government on the basis of a transparent formula and a long-term commitment that would allow long-term planning on the part of the institutions managing the fund.

Contemplating different forms of metropolitan governance

There are various models for metropolitan governance arrangements (Box 4.15). Of these, "hard" co-ordination arrangements for the provision of services in metropolitan areas may exist in three forms: one-tier, two-tier or functional/special purpose metropolitan co-ordination arrangements. These may co-exist with "softer" forms, such as voluntary co-operation agreements.

- A one-tier supra-municipal form of government provides the full range of local services, yet may face challenges in attaining direct contact with beneficiaries and responding to the diverse needs and preferences of a heterogeneous population. Further, they tend to be unpopular with central and state governments in Latin America given their potentially large concentration of power.
- The two-tier model consists of an upper-tier metropolitan or regional institution with jurisdiction over a large geographical area, which co-exists with lower tier municipal governments. This model of metropolitan management is rare in Latin America (see Klink, 2008) as the basic conditions for their efficient operation are difficult to attain given the highly fragmented and competitive local government structures in Latin American metropolises. Municipalities are often reluctant to relinquish responsibilities and resources, and central governments are wary of the concentration of power that they may have, particularly in the largest metropolitan areas.
- Functional metropolitan governance arrangements can be established to deliver services that spill over municipal boundaries. They tend to be efficient because they can address the specialised needs of the provision of specific services within the territory where the spillover occurs; are capable of engaging professional management; and, if properly designed, often enjoy dedicated financing through user fees, taxes and transfers.

Box 4.15. **Models of metropolitan governance**

Better management of metropolitan regions can be pursued through a spectrum of governance models that range from relatively "hard" to relatively "soft" in terms of the scope of the reform they imply.

- Relatively "hard": at this end of the spectrum are functional models whereby governance structures are re-shaped to fit or to approximate the functional economic area of the metropolitan regions. Examples include municipal amalgamation (mergers) and the creation of a metropolitan government.
- Mid-position: in the middle of the spectrum are a wide range of usually voluntary co-operative arrangements through inter-municipal joint authorities. Examples include sectoral or multi-sectoral agencies whose main functions generally cover transport, urban planning or economic development (sometimes on an *ad hoc* basis).
- Relatively "soft": at the other end of the spectrum are informal co-ordination bodies such as platforms, associations or strategic planning partnerships, often relying on existing networks of relevant actors, without necessarily following the logic of territorial boundaries.

In addition to these different categories are fiscal arrangements – such as equalisation mechanisms and tax-base sharing – whose main purpose is to deal with fiscal disparities and territorial spillover within the area, as well as public-private partnerships and contract services. Depending on the amount of funds involved, they might be referred to as either hard or soft forms of co-operation.

Source: adapted from OECD (2006), *Competitive Cities in the Global Economy*, OECD Publishing, *http://dx.doi.org/10.1787/9789264027091-en*.

These models of "hard" co-ordination may co-exist with "softer" forms, like voluntary co-operation arrangements, a less formal structure to manage the necessary co-ordination among jurisdictions in a metropolitan area. Voluntary co-operation arrangements may be able to provide services to multiple jurisdictions, but could face problems of accountability given the multiplicity of entities involved and the voluntary nature of their association. Moreover, they do not always properly address fragmentation problems, especially if there is a poor culture of co-ordination and co-operation and no incentive or sanction structure to work together. Nevertheless, most central and state governments in Latin America have tended to prefer either voluntary co-operation or functional government structures.

Recommendation 4: Public or public-private service delivery companies

In the case of Puebla-Tlaxcala, it may be most effective to establish functional metropolitan governance arrangements, which may take the form of public, or public-private, companies that involve the participation of all levels of government (federal, state and municipal). These companies could be tasked with managing metropolitan infrastructure and services, including water and sanitation, public transport and health services. Critical to their success would be a clear framework to guide the terms of their operation and management. The governance structure could be based on joint ownership by all interested entities and voting powers that compensate for the economic, demographic and fiscal dominance of the central municipality yet induce it to participate in the arrangement. In this sense, governance arrangements with voting powers based on qualified shares could be one possibility. The entity could be financed by charges levied on the beneficiaries and programmed transfers from federal, state and

municipal governments. If well established and efficiently managed, they could also potentially borrow from capital markets to expand and improve their services.

Functional co-ordination allows the full involvement of stakeholders in decision making, yet as sector-focused arrangements, they prevent the concentration of fiscal and decision-making power inherent to a one-tier supra-municipal entity. Operating at the scale of the Puebla-Tlaxcala metropolitan zone would enable these institutions to develop the technical and institutional capacities necessary to provide good services to the population and businesses and gain operational legitimacy. Adherence to these entities could be voluntary but actively promoted by the state governments through the benefits that membership brings to the participants, or through incentive mechanisms.

The construction of such an atomised, yet capable, structure of metropolitan management requires attaining a good level of political consensus among the municipal, state and federal level institutions involved in metropolitan management and the concurrence of the private sector with stakes in the long-term development of the area. This consensus among government institutions and the willingness to contribute from the private sector can be better attained when the institution-building process is established with ample participation of all stakeholders.

As a first step toward establishing service delivery companies, the state governments of Puebla and Tlaxcala could consider financing detailed feasibility studies for establishing separate public companies for public transport, water and sanitation, and waste management. These companies could be jointly owned by the state governments and the municipalities could follow the lead of many successful public companies of this kind in Latin America. A fundamental condition for success is the ability of these companies to charge fees for their services, which would involve a cultural shift for a population that is not accustomed to paying – or paying rates at a sufficiently high level to cover costs – for these services. State governments could negotiate with the federal government a scheme to assist low-income users, following many other subsidy programmes pioneered by Mexico. In the case of transport, this type of company could assume the management of the RUTA system, extending service gradually to the rest of the metropolitan zone and working in partnership with the private providers of services.

There are multiple forms of organising these companies. Curitiba is an outstanding example of a centrally managed, privately provided public transport system with an integrated ticketing system. Medellín's public service company provides energy, water, communications and water services to 123 municipalities (Box 4.16).

Box 4.16. **A public service company: *Empresas Públicas de Medellín* (EPM), Colombia**

The *Empresas Públicas de Medellín* (EPM) is a public commercial and industrial company owned by the municipality of Medellín that provides energy, communications and water services to 123 municipalities in the province of Antioquia, including 3.6 million customers in the metropolitan area of Medellín. The company has been in operation since 1955 and currently has subsidiaries in several provinces of Colombia providing water, energy and communications services and in other countries: El Salvador, Panama, Guatemala in energy; in communications. EPM owns Orbitel, a communications company operating in Canada, Colombia, Spain and the United States. The company is present in the water sector of Mexico through its company EPM Capital Mexico S.A. de C.V.

Source : *www.epm.com.co.*

Integrated metropolitan water and sanitation companies are common in Latin America, either owned by state governments (Brazil) or by municipalities (Colombia and Ecuador) or associations of municipalities (Mexico) (Box 4.17). These companies can directly operate the services or enter into concession agreements with private operators. Similarly, there are multiple examples of well-managed companies of this type handling the sanitary disposal of solid wastes: residential, industrial and medical. A similar entity can manage metropolitan transport services. Establishing entities to manage these services may take time to mature. In the meantime, the two state governments could establish a temporary programme to assist municipalities in managing these services by introducing micro-measurement of the services and establishing credible mechanisms for collecting charges and penalising non-compliance.

Box 4.17. **Inter-municipal co-ordination for water management in Mexico**

Intermunicipal associations have been relatively successful in Mexico in managing water and other urban services.

The inter-municipal environment board in Jalisco

The Inter-municipal Environment Board for the Integrated Management of the Lower Ayuquila River Basin (*Junta Intermunicipal del Medio Ambiente para la Gestión Integral de la Cuenca del Rio Ayuquila*, JIRA) was established in Jalisco in 2008 to co-ordinate public policy for climate change mitigation and adaptation (in particular, curbing deforestation and forest degradation) and develop a Measurement Reporting and Verification (MRV) system to monitor carbon emissions. This public deconcentrated body aims to foster integrated management of natural resources of ten municipalities in the state of Jalisco, establish socio-economic conditions to recover the natural resources of the river basin and improve the quality of life of its citizens.

It is managed by an Administrative Council, a Citizen's Council and a Board acting as operational body providing technical support to municipalities to elaborate, manage and implement environmental projects and programmes. The Board executes the budget, deals with technical studies and oversees the implementation of projects and programmes. The JIRA's operational resources come from municipal and state contributions executed through an annual operational programme. More than ten years of experience have led to more transparent, efficient and professional decisions.

Inter-municipal management of water and sanitation services in the state of Colima

In the state of Colima, the municipalities of Colima and Villa de Alvarez came together to create the CIAPACOV, an inter-municipal commission for the provision of water and sanitation services (*Comision Intermunicipal de Agua Potable y Alcantarillado de los Municipios de Colima y Villa de Alvarez*) with the objectives to: *i)* extend service coverage; *ii)* ensure safe drinking water and adequate treatment of wastewater; *iii)* promote integrated management of water resources; and *iv)* ensure the population's health.

The CIAPACOV Executive Board gathers representatives from both municipal administrations. They benefit from advice and recommendations of the Consultative Council comprised of representatives from the Chamber of Commerce and Industry; associations from the tourism sector; associations of engineers, architects, accountants and lawyers; and organisations of public landowners and legal user associations. The CIAPACOV has been successful at providing efficient services with 100% coverage for potable water and 98% for sanitation (in 2009). It has also fostered transparency by publishing management diagnoses and evaluations based on various indicators of operational and commercial efficiency, such as the number of rehabilitation operations and the management of customer complaints. The commission is engaged in information campaigns to raise awareness on water conservation, health benefits and ecosystem protection.

Source: CIAPACOV official website: *http://ciapacov.gob.mx* (consulted in October 2012) in OECD (2013), *Making Water Reform Happen in Mexico*, OECD Publishing, *http://dx.doi.org/10.1787/9789264187894-en.*

Key to the effective management of these functional metropolitan entities will be:

- Technical management independent of short-term political pressures, even though members of the board of directors could include representatives from the affiliated sub-national governments controlling the entity.
- Sufficient and stable financing through charges or tariffs, calculated according to methodologies based on the marginal cost of providing the service. These calculations should be made independent of the subsidies provided to low-income populations to assist them in paying for the cost of the services or transfers from upper-tier governments to compensate horizontal disequilibrium in the provision of services among portions of the territory.
- Long-term vision and planning in the provision of the services.
- Co-ordination with metropolitan-wide land-use and economic development planning entities.

Creating institutional legitimacy: Planning at the metropolitan scale

Outdated planning instruments

As discussed in Chapter 3, metropolitan co-ordination is further hampered by outdated municipal plans for land use and urban development and the absence of a metropolitan-scale plan. States and municipalities are obliged to develop long-term urban master plans (10-20 years), which identify land use, urban expansion areas, basic infrastructure and protection areas, in addition to a short-term (three-year) urban development programme that articulates the investments and programmes of the administration in office. However, most municipalities do not have updated master plans and carry out the development control process on the basis of *ad hoc* decisions of technical teams. To date, there is no metropolitan plan to frame the planning and investment decisions of the municipalities. Both states have entered into an agreement to jointly prepare an Urban Development Programme for the Puebla-Tlaxcala Metropolitan Zone. The programme is under preparation by a technical team led by the Planning Secretariat of the State of Tlaxcala and funded by the Metropolitan Fund. However, it should be noted that several past attempts to develop a metropolitan plan for Puebla-Tlaxcala have failed.

Promising planning institutions, hobbled by insufficient geographic scope

In 2011, the municipality of Puebla established its own municipal planning institute (*Instituto Municipal de Planificación*, IMPLAN) to develop and monitor urban development plans and programmes. Specifically, its responsibilities include planning the development of the territory under the jurisdiction of the municipality, preparing projects that the municipality will implement with its own resources or resources transferred from the state or federal government, and fostering debate about urban issues within the municipality. IMPLAN benefits from a clear organisational structure, its own budget and operational rules, and has responsibility for performing long-term planning activities. Recently, IMPLAN has also taken steps to convene representatives from neighbouring municipalities to foster metropolitan-scale debate about urban issues. The results thus far have been quite modest, although the initiative remains recent.

While IMPLAN holds great promise in bolstering the long-term planning capacity of the municipality of Puebla, several issues must be addressed if the institute is to be effective over the long term. One chief drawback of the institute is the lack of continuity of its director and professional and technical staff, who change every three years with the arrival of a new municipal administration. This circumstance impairs IMPLAN from developing capacity to implement long-term approaches to urban development. In addition, IMPLAN is an institution fully controlled and funded by the municipality of Puebla. If the institute is to take on a metropolitan planning role, as some stakeholders in Puebla have proposed, it will be important to temper the dominance of the municipality of Puebla over the institute.

Recommendation 5: A metropolitan planning institute

To plan and guide metropolitan development with a long-term vision, Puebla-Tlaxcala could establish a metropolitan planning institution tasked with the management of land use and environmental issues. The institution could be jointly owned by the governments of the two states and the municipalities within Puebla-Tlaxcala and managed by a board composed of representatives of the owners. Voting powers should aspire to be proportional to the contributions of the different members, but avoid the dominance of the central city or a subset of cities. Two critical features of the institution would be for it to have a stable professional staff hired on the basis of capacity and proficiency, in addition to a stable source of financing based on contributions from its owners set as recurrent expenditures in their annual budgets. The institution could also support sub-national governments by improving their capacity to manage the territory. It could undertake the following activities:

1. Prepare long-term plans to supply the territory with the infrastructures and services required by the development process, improve the quality of life of the population and ensure the sustainability of the territorial development by protecting the environment.
2. Provide technical assistance to the authorities responsible for urban services, such as public transport, water and sanitation, and waste management, and prepare plans and programmes to improve services in the metropolis.
3. Advise the Metropolitan Council, through project preparation and evaluation services, as to investments with high metropolitan priority that could be financed from federal transfers from the Metropolitan Fund or other federal programmes.
4. Prepare integrated metropolitan development projects co-ordinating the inputs from relevant sub-national governments and sector institutions.
5. Support sub-national governments in improving the territorial management by providing technical assistance for activities that may include the preparation of an urban development programme or land-use master plans, and assistance in exercising their development control authority or in updating and improving the management of land cadastres and land tax rolls.

Municipalities could retain their land-use and development control authority through their master plans and by continuing to exercise their development control responsibilities. However, a provision could be introduced into the legislative framework conditioning the approval of master plans by the municipal council upon its coherence with a metropolitan planning framework provided by the institute and approved by the state legislatures. The institute could also support municipalities facing challenges in the

review and approval of urban development initiatives by providing technical assistance to municipal planning teams. There are many examples of metropolitan-scale planning institutions financed by the public sector that could provide relevant lessons for Puebla-Tlaxcala, such as the *Institut d'Aménagement et d'Urbanisme d'Île-de-France* (IAU) in France (Box 4.18).

Box 4.18. **A metropolitan planning institute: The case of the *Institut d'Aménagement et d'Urbanisme d'Ile-de-France***

The *Institut d'Aménagement et d'Urbanisme Île-de-France* (IAU) was established as a public interest organisation (a foundation) in 1960 as the urban institute for the Paris Region; in 1982 the IAU became an associated body of the Regional Council. Although focused on the territory of the Île-de-France Region, the IAU's mandate is to identify critical challenges faced by the region from local to regional (that is from the Paris Basin to Europe) in order to formulate planning and development policies to take advantage of opportunities and face development challenges. Planning activities of the IAU include: the preparation and implementation of master plans for regional and urban land use and regional sector development plans; research on population and economic development; consultancy and research services to various sub-national authorities; gathering and disseminating information on regional development issues.

The IAU is managed by a Board of Directors that include four representatives of the national government, the members of the Regional Council of the Île-de-France, two members from the Economic and Social Regional Council and four founding members of the institute. The IAU has a multi-disciplinary team of specialists including: architects, urban planners, engineers (agricultural, transport, sanitation, computer scientists), economists, demographers, geographers, experts in the areas of law, the environment and health, specialists in infographics and mapping, demographers, statisticians and librarians. The Regional Council covers 80% of the institute's annual budget with the remaining 20% coming from contracts and central government subsidies.

Source: *www.iaurif.org.*

A metropolitan role for IMPLAN?

There is interest on the part of IMPLAN to ultimately expand its geographic scope to fulfill some or all of these activities. IMPLAN is a well-organised and well-funded institution in Puebla, tasked with planning responsibilities for the municipality. The challenge for IMPLAN over the medium to long term is to determine how to take advantage of these strengths and mitigate the high rotation of managerial and professional staff and the dominance of the Puebla City Council and mayor over the institute. IMPLAN does appear to be equipped to assume some of the responsibilities associated with a metropolitan institution, such as: *i)* gathering data and information to bolster evidence-based decision making and foster transparency and the accountability of government officials; *ii)* stimulating debate about metropolitan issues and promoting stakeholder agreements on a long-term vision for the territory through a metropolitan forum; *iii)* providing technical assistance to municipalities within Puebla-Tlaxcala for urban development plans; and *iv)* preparing projects with metropolitan impact for submission to the federal Metropolitan Fund.

One option could be for IMPLAN to operate as a contractor to the state governments of Puebla and Tlaxcala for specific tasks that could include metropolitan planning, programme design, implementation and evaluation, and technical co-operation to institutionally weak municipalities. The contracts would: *i)* specify the deliverables;

ii) bind the institute to producing the deliverables independent of changes to management and staff; and *iii)* ensure that the activities are funded independent of budgetary cuts or changes in programmatic priorities. Contracts could be negotiated with both state governments to ensure the political support from the entities with the strongest interest in co-ordinating actions in the territory. The presence of the state government of Tlaxcala in the contracts could also help mitigate the apprehensions of the municipalities in Tlaxcala over the dominance of municipalities from Puebla; likewise, the presence of the state government of Puebla could play a similar role for municipalities in Puebla *vis-a-vis* the dominance of the municipality of Puebla. Further, state governments have more resources and longer terms, which combined could help transform plans and projects into viable propositions. Under the same arrangements, IMPLAN could expand its role as co-ordinator of a metropolitan forum, as discussed previously, potentially in co-operation with area universities and the state governments.

However, for IMPLAN to be effective and meaningful over the long term, it will be critical to make three major modifications to its existing structure: *i)* dissociating the institute's managerial and professional staff from political upheaval every three years; *ii)* expanding its sources of funding beyond the municipality of Puebla; and *iii)* allocating meaningful roles to a range of other key public actors in the metropolitan area. The difficulty to overcome these challenges should not be underestimated. Ward and Robles (2012) discuss the intergovernmental frictions encountered in Guadalajara to establish a metropolitan planning institute that may vary well cause the initiative to flounder. Guadalajara's experience underscores the importance of the broad-based, strong political will needed to address metropolitan challenges.

While the challenges facing Puebla-Tlaxcala may appear daunting, a number of recent reforms undertaken at different levels of government are encouraging. Proposed policy shifts, such as the federal government's plans to limit housing subsidies to projects within the metropolitan core, could help curb further urban sprawl. Institutional innovations like the establishment of a university consortium as a potential partner to municipalities for development, Puebla's Municipal Planning Institute and the Puebla State Land Bank are signs that leaders in Puebla-Tlaxcala are taking critical first steps to co-ordinate economic development at a regional scale and build capacity for better urban land management. Moreover, there is a growing – if not yet substantial – sense among public and private sector actors in the area that regional development outcomes could be improved by greater co-operation among the 2 states and 39 municipalities. These are all positive developments, but there is more to be done, particularly to improve the business climate and to strengthen governance at a metropolitan scale. To ensure the region's competitiveness and sustainability over the longer term, Puebla-Tlaxcala's leaders will need to build on these early steps and work towards deeper co-operation, on both strategic planning and day-to-day management and service delivery, across the metropolitan region.

Summary of conclusions and recommendations

- Rapid and dramatic demographic and urban expansion over the past three decades have generated a host of challenges – urban sprawl, congestion, service delivery challenges, and increased pollution and environmental pressures.
- Addressing these challenges is rendered even more complex in a metropolitan zone comprised of 39 municipalities straddling 2 states. Developing common solutions among municipalities to shared challenges has proven difficult for several reasons: *i)* there is a significant human, technical and fiscal capacity gap at the municipal level, which cobbles the effectiveness of policy design and implementation, generates policy discontinuities and represents an obstacle to inter-municipal collaboration; *ii)* the administrative and institutional fragmentation of actors and policy mandates are a barrier to achieving economies of scale and greater policy coherence; and *iii)* existing frameworks, institutions and tools for urban and economic development and co-ordination tend to be outdated, ineffective or partial.
- Addressing Puebla-Tlaxcala's major policy challenges requires actors to build capacity in the public sector and to work better between and across levels of government, potentially through the development of metropolitan governance arrangements.
- To build capacity in the public sector, state and municipal authorities in Puebla-Tlaxcala could consider the following strategies:
  - Bolstering the revenue-raising capacities of municipalities through property tax reform, updating fee structures and improving systems to facilitate tax collection.
  - Limiting the effects of recurrent political and administrative upheavals by extending the three-year term for mayors and/or abolishing the non re-election provision, in addition to appointing city managers to handle daily operations.
  - Building more effective public administration, by developing a merit-based recruitment process for civil servants, investing in the professionalisation of the public workforce as a strategic orientation for the administration, improving forward-looking planning and management, enhancing performance orientation and strengthening multi-level governance for professionalisation.
- To improve metropolitan co-ordination and outcomes, several opportunities could be considered in Puebla-Tlaxcala, including:
  - Creating political legitimacy through the establishment of a metropolitan forum and an agency tasked with collecting metropolitan data.
  - Creating operational legitimacy by reforming the current use of metropolitan funds in Puebla-Tlaxcala and investigating the feasibility of delivering urban services (transport, water and sanitation, waste management) through functional public or public-private companies.
  - Creating institutional legitimacy through the establishment of a metropolitan planning institute responsible for preparing long-term metropolitan development plans and projects, and providing technical assistance to municipalities on issues of land use, urban development and territorial management. IMPLAN may be able to fulfil this role, but would require several critical reforms if the institution is to be effective and meaningful over the long term.

Notes

1. Two units of analysis are used in this report to refer to the metropolitan scale: the Puebla-Tlaxcala metropolitan zone corresponds to a functional definition jointly developed by three federal institutions in Mexico (SEDESOL, INEGI and CONAPO); the area straddles 2 states and is comprised of 39 municipalities, 19 in Puebla and 20 in Tlaxcala. The Puebla FUA corresponds to a functional definition developed by the OECD that has been applied consistently across OECD metropolitan areas to facilitate international comparison; the Puebla FUA is comprised of 11 municipalities: 8 in the state of Puebla and 3 in the state of Tlaxcala. The terms metropolitan area or region are used throughout this report to refer to Puebla-Tlaxcala generally, when the precise unit of analysis is not relevant.

2. Tax collection is notoriously difficult in the state of Tlaxcala, a vestige of the state's historic alliance with Spain in the 16th century. Even today, some residents insist that they are not subject to taxation, presenting tax collectors with decrees from the Spanish crown.

3. Public employees at the federal, state and municipal level in Mexico are divided into three categories: unionised affiliation (*base*); non-unionised or free appointment (*confianza*); and short-term staff (*honorarios/temporales*), who may be temporary staff or internal consultants. While unionised affiliation – generally reserved for administrative and technical personnel – implies a significant level of stability, free appointment refers mostly to higher positions or professional positions with contracts that can be terminated at any time.

4. This was a point also made by officials interviewed for this review.

5. The legislation that contains the rules for the management of the public workforce contemplates the creation of a civil service system in the municipal and state administrations in both states and sets the underpinnings for the professionalisation of the public service. The Municipal Organic Law of the State of Puebla, for instance, indicates in Chapter XXV that municipal administrations (*ayuntamientos*) should establish a merit system for recruitment, promotion and stability as well as a system for continuous training and personal development. However, progress in the implementation of the law remains minimal in the region as a whole. Municipal governments have not established the Commission for the Career Civil Service, as recommended in the Organic Municipal Law, to support the administration in implementing a career civil service, like in municipalities such as Celaya in the state of Guanajuato, and Morelia in the state of Michoacán. Political and personal connections have the heaviest weight in the decision.

6. The "psycowin" programme has been used for recruitment by the Mexican oil company (PEMEX) with mixed results.

7. Diversity can be described not only as the mixture of backgrounds and competences but also as valuing and using people's competences, experience and perspectives to improve government efficiency and effectiveness, and to meet public servants' professional expectations (OECD/Korea Institute of Public Finance, 2011).

8. For further information and discussion see: *www.nl.gob.mx/?P=iprof_atribuciones*; and *www.profesionalizacion.chiapas.gob.mx/atribuciones.*

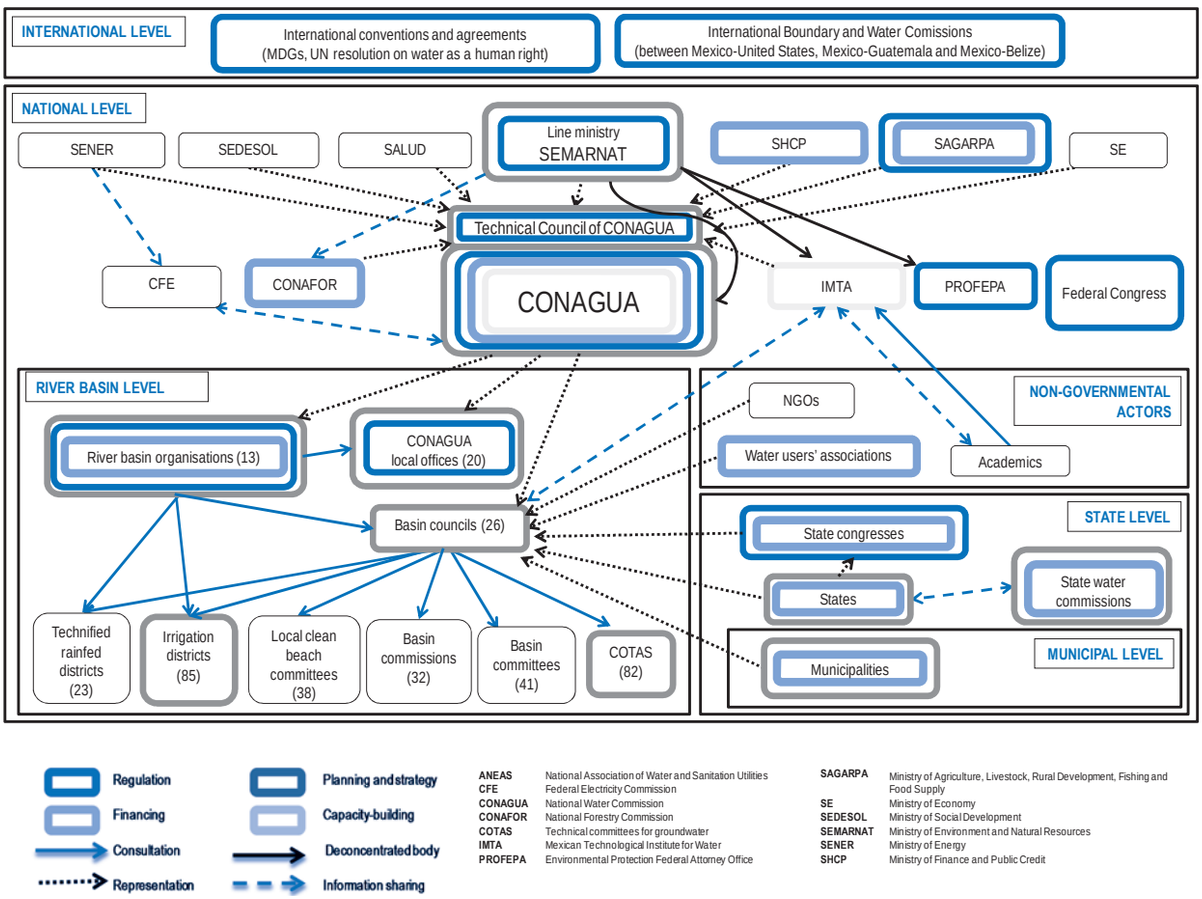
9. For further information see: *www.rusp.gob.mx/RUSP/documentos/MATERIAL_DE_APOYO_RUSP_Ene_02_2012.pdf* (accessed on 26 February 2013).

10. This is part of the federal Ministry of Finance to introduce performance budgeting. In 2007, the Ministry of Finance introduced the Performance Evaluation System (*Sistema de Evaluación del Desempeño*, SED) for the evaluation of budgetary programmes. How state and municipal governments are complying with the request to introduce performance information in their budget proposals deserves follow-up as this is also a challenge for OECD countries. This requires not only co-ordination across levels of government but also building capacity in sub-national governments. See OECD (2009c) for further discussion on performance budgeting in Mexico.

11. Water governance challenges in Mexico have been explored extensively in OECD (2013a).

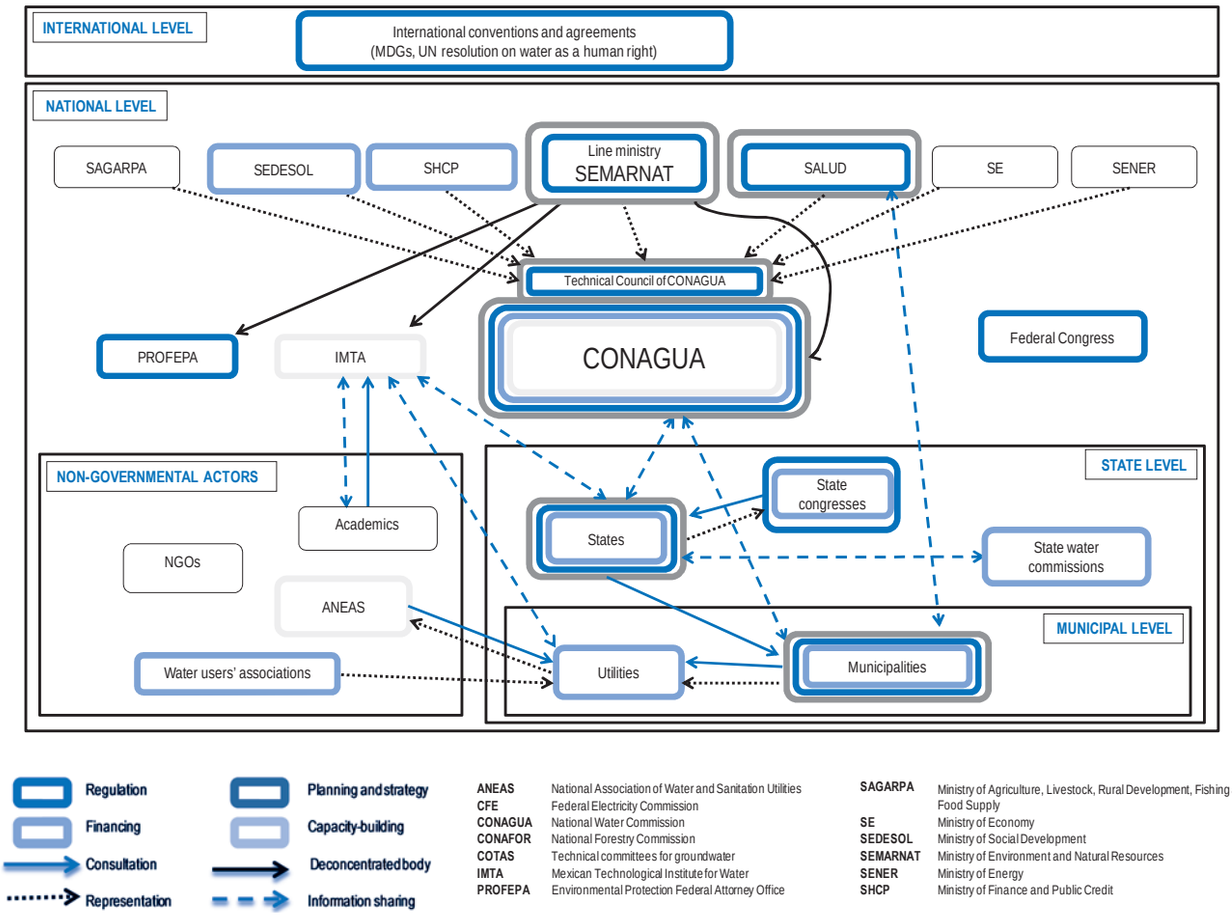
Annex 4A.1
Institutional mapping of Mexico's water sector

Figure A4.1. **Institutional mapping for water resources management**



Source: OECD (2013), *Making Water Reform Happen in Mexico*, OECD Publishing, *http://dx.doi.org/10.1787/9789264187894-en.*

Figure A4.2. **Institutional mapping for water and sanitation services**



ANEAS	National Association of Water and Sanitation Utilities
CFE	Federal Electricity Commission
CONAGUA	National Water Commission
CONAFOR	National Forestry Commission
COTAS	Technical committees for groundwater
IMTA	Mexican Technological Institute for Water
PROFEPA	Environmental Protection Federal Attorney Office

SAGARPA	Ministry of Agriculture, Livestock, Rural Development, Fishing and Food Supply
SE	Ministry of Economy
SEDESOL	Ministry of Social Development
SEMARNAT	Ministry of Environment and Natural Resources
SENER	Ministry of Energy
SHCP	Ministry of Finance and Public Credit

Source: OECD (2013), *Making Water Reform Happen in Mexico*, OECD Publishing, *http://dx.doi.org/10.1787/9789264187894-en.*

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