

Aguascalientes
Baja California
Baja California Sur
Campeche
Chiapas
Chihuahua
Coahuila
Colima

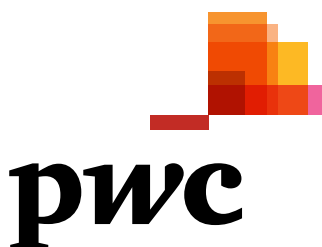
Durango
Guanajuato
Guerrero
Hidalgo
Jalisco
Mexico
Michoacan
Morelos

Nayarit
Nuevo Leon
Oaxaca
Puebla
Queretaro
Quintana Roo
San Luis Potosi
Sinaloa

Sonora
Tabasco
Tamaulipas
Tlaxcala
Veracruz
Yucatan
Zacatecas

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Mexico's States of Opportunity 2012



*I do not know if modernity is a blessing, a curse or both.
I know that it is destiny: if Mexico wishes to be,
it must be modern.*

*Octavio Paz**

Mexico's States of Opportunity 2012. Comprehensive Visions of Development makes its first analysis of the nation's fast rising urban landscape. The study compares 31 states and one Federal District where 32 *zonas metropolitanas* sit through a prism of 10 indicators that include 74 different data variables. The result is a picture of urban Mexico that is comprehensive and consistent, as well as balanced economically and socially. It reflects the reinforcing threads of city life today and provides a reliable measure of current performance that each urban area, as well as all of Mexico, can use on the journey toward shared prosperity.

Cover image: Zacatecas Downtown, world heritage.
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* Paz, O. (1990), *Pequeña crónica de grandes días*. México: Fondo de Cultura Económica, 5ta. ed., 2003, p. 57.

More strengths than meet the eye anchor Mexico's journey of transformation

Mexico means many things depending on the vantage point from which one observes.

For Mexicans, it means home, family, work. For tourists, Mexico represents beaches, historic towns, colourful traditions, warmth of people and place. For international businesses and Mexican multinational companies, the nation provides a center for manufacturing, logistics, natural resources and increasingly more sophisticated services. The geography explains some of that: Mexico stands at the crossroads of a vast, resource-rich and still growing part of the world – physically in North America, culturally linked to Latin America.

But only one perspective cuts across the spectrum of changes in Mexico as we move into the 21st century: the future of Mexico will be urban. Today almost 78% of Mexicans live in a city or *zona metropolitana*¹ -a great challenge for a nation whose history was rural. How we manage the transition to the new urban world will determine much of our success in the future.

The objective of *Mexico's States of Opportunity 2012. Comprehensive Visions of Development* is to set standards by which we can measure ourselves and build an urban Mexico based on foresight, logic, resolve and work.

“*Opportunity*” is a distinguishing word for us in developing this study. Businesses and people come to cities for a chance economically or culturally. Whether they migrate across borders, across a nation or simply commute into town from 20 miles away, the ideas of opportunity and city are often synonymous.

A “States of Opportunity” balance economic and social strengths that provide good quality of life in the present while actively planting the seeds for vibrant growth in the future. That is why our variables reflect a nearly equal mix of economic and social data. The aim is to create a balanced and realistic picture of urban Mexico that recognizes both our strengths and challenges.

For some readers, recognizing the strengths of Mexico may come as a bit of a surprise. The nation is today succeeding on a wide variety of fronts and will continue to do so based on the momentum we have created.

Economically Mexico is strong, and getting stronger. We have the second largest economy in Latin America. The nation has an open economy with greater imports and exports as a percentage of Gross Domestic Product than China or Russia, far more than Brazil. Trade is not just with the United States, but increasingly with Asia, Central and South America. A good regulatory framework protects foreign investors. What Mexico produces is diversifying also –and doing so in sophisticated, valuable areas like aerospace, biotechnology, research and development.

The nation stands on solid macroeconomic foundations. The banking and finance system has remained healthy and committed to long-term growth even during the world economic crisis. In fact, we recovered quickly from the downturn and Mexico runs a low relative budget deficit compared to other nations. Our National Infrastructure Bank, which played a key role in transforming a rural land into one with highways and transport systems, hospitals and schools in a few decades, can in many ways serve as a model for other nations.

¹ A *zona metropolitana* refers to Mexico's national system that classifies and demarcates urban areas.

Socially we can also take credit for

strengths. A young population means there will be able workers as our economy grows. *Seguro Popular*, Mexico's universal health care plan, is a world leader in providing broad medical protection to all income levels. Transparency of public information is assured legally from national and local governments. Judicial and security reform is equalizing access to speedy and fair justice. And the creative energy of Mexicans of all ages can be seen in urban projects to clean the environment, address water and waste needs, preserve historic districts and build a greater overall quality of life.

Of course, we are also confronting challenges, among them the need to stem crime and violence, to deepen the reach and extent of education, and find a way to balance the needs of cities with preservation of countryside and its agricultural and often indigenous heritage. But many successful, developed nations today have had to work in order to reach their current level of prosperity. Mexico today is doing just that.

Future progress depends on greater understanding of Mexico –to take pride in achievements; recognize challenges; see that we collectively share the responsibility to

move forward; and, know that we can do so. Our cities and our zonas metropolitanas will be the testing grounds where transformation occurs. This study is undertaken in the hope of developing an accurate view of where urban Mexico stands today so the nation continues to move ahead tomorrow.

It is in that spirit of transformation that PwC undertakes Mexico's States of Opportunity 2012. Comprehensive Visions of Development. Our task in this first edition is to provide rigorous thinking derived from research to orient the journey ahead.

We would like to thank the many government agencies at their different levels across the nation for giving us access to consistent, verifiable data. We also gratefully acknowledge the academics of the *Centro de Estudios en Administración Pública of Universidad Nacional Autónoma de México* (UNAM) who worked with us along the way and, especially, for opening a human window with insightful interviews from leaders of thought and action across many fields.

Our hope is this study not only sheds light on what makes cities healthy today, but illuminates the way ahead.

Yours sincerely,



Carlos Mendez Rodríguez
Territory Senior Partner - PwC Mexico

Overview



Streets of Queretaro, world heritage.
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PwC Mexico and PwC's Global Network are proud to present this study. It represents our effort to portray Mexico in an objective and realistic way. The result is a fair and positive picture of a diverse, geographically rich country that for the past 20 years has confronted economic and social challenges with increasing resolve and success.

Mexico is an urbanized nation with much to show and talk about. As a firm with a comprehensive, global perspective, we believe opportunities for investment and innovation thrive throughout the nation, north to south and east to west. Our objective in undertaking this study is twofold. *Mexico's States of Opportunity 2012. Comprehensive Visions of Development* offers international investors a comprehensive picture of the nation's diversity, as well as actions taken to strengthen public policies that have driven our country to be one of the strongest economies in the world.

At the same time, we want to offer Mexicans a balanced scorecard to continue social and economic progress. We decided to analyze states and the *zonas metropolitanas* within each one of them in order to provide a broader understanding of the country and its immense possibilities to all those who can gain from the knowledge.

For the reader who is not familiar with Mexican *zonas metropolitanas*, names like Aguascalientes, La Laguna, Chihuahua, Morelia or Culiacan will sound unknown or difficult to pronounce. However, a clear view of findings in *Mexico's States of Opportunity 2012. Comprehensive Visions of Development* will begin to make these names more familiar as Mexico changes into an urbanized nation with a strong and diverse economy.

Queretaro and its surrounding cluster of towns may be the best example of Mexico's urban transformation. Aerospace, manufacturing, research and engineering operations stretch into the desert around the city and airport. Bombardier Aerospace, GE, IBM, Daewoo, Samsung, Scania, and ThyssenKrupp are just some of the world's most advanced companies locating around a 500-year-old colonial city centrally located in the heart of Mexico. Skilled workers and professional Mexicans are migrating there as well.

Similar scenes are unfolding elsewhere. Information and communications as well as biotechnology companies are clustering together in Jalisco and Guadalajara, the state and its major city. Chihuahua is increasingly a center of universities and advanced learning. Inland logistics hubs are growing as dry ports to route seaborne goods arriving in the seaports of Veracruz and Acapulco to destinations throughout Mexico and eventually the world. Aguascalientes is home to a thriving automobile manufacturing and assembly cluster.

It was not this way a decade or two ago. But Queretaro and urban clusters like it are beginning to thrive all around Mexico thanks to its stable and open economy, central location in the Americas, increasing levels of education and the ability of its people to produce sophisticated products and services.

All in all, the nation exported \$278.8 billion in manufactured goods in 2011, \$38 billion of which were automobiles. Much like Japan's metamorphosis in the last half of the 20th century from an inexpensive to a high-quality exporter, Mexico's output is climbing the quality ladder in fact and perception.

The nation increasingly makes sense as a home for a wide variety of businesses and investments. As this occurs, Mexico's urbanization will continue. Long-term success revolves around how urban clusters, regions and cities cooperate to advance our economic and social environment.

Mexico's States of Opportunity 2012. Comprehensive Visions of Development is the first edition of a PwC² study dedicated to facilitating the urbanization process in a country that is transforming itself through investment in education, internet readiness, healthcare, transportation and infrastructure, urban development, promotion of sports, cultural and recreational activities, economic growth, judicial and legal reforms, and transparency -all necessary for national development.

² The partners from PwC recognize the integration and compilation of the work performed by Dr. Adriana Ortiz Ortega from Facultad de Ciencias Políticas y Sociales (Faculty of Social and Political Science) of UNAM.

This first edition establishes an initial measure by which we can orient ourselves and judge progress as it occurs, finding areas of strength and challenge as well as analysing actions needed. Mexico, of course, shares many of the same challenges as other urbanizing parts of the world. These span effective regional management, adequate transportation and infrastructure (including roads, public transit, water, waste, schools and hospitals), effective programs for education, healthcare, sustainability and preservation. We view these issues as a starting point on the road ahead. Put differently, without reliable measurement we cannot manage. Governing well, strengthening citizenship, encouraging education, innovation and entrepreneurship all begin with knowing where we stand today.

Mexico's States of Opportunity 2012. Comprehensive Visions of Development analyzes progress and development in 31 of the most urbanized states and one Federal District where the 32 *zonas metropolitanas* across the nation are located. Ten indicator categories are constructed to create a balanced economic and social picture of urban Mexico. All data are chosen for national consistency and reliability, drawn from official and publicly available sources that cover the entire nation. The study also represents a year-long effort to develop processes and measurements, create a realistic and useful balance among the social and economic data points, collect information, analyze and present results. Hence, most data available comes from 2010 in this first edition.

In order to stress collaboration among urban areas rather than competition, results are measured on a simple four-point scale ranging from "advanced" to "in development."

The study leaves out Mexico City, the Distrito Federal, although it is obviously highly urbanized, in an effort to make the most fair, or normalized, comparison among similar urban areas and defining them as urban areas. As capital and international economic center of Mexico, much like Paris or London, Distrito Federal falls into an elite category of the world's top cities for business, commerce and culture. In fact, Distrito Federal is one of the 27 cities that PwC compares in *Cities of Opportunity 2012*, the fifth edition of a global report published by PwC US and the Partnership for New York City.

In *Cities of Opportunity 2012*, Distrito Federal ranks ninth highest in terms of growth of gross domestic product, ahead of Hong Kong, reflecting the city's healthy economy. Distrito Federal also performs well in other measures of a robust economy including ranking second in working age population and fourth in construction activity. The city also finishes third in public access to libraries, fourth in classroom size and first in the cost of public transport. Among the 27 cities compared in *Cities of Opportunity 2012*, Distrito Federal ranks 21st overall with Shanghai and Moscow just above it and Abu Dhabi, Buenos Aires, Istanbul, Johannesburg, Sao Paulo and Mumbai falling below.

This first edition of *Mexico's States of Opportunity 2012. Comprehensive Visions of Development* draws a reliable starting line to understand Mexico's urban journey for all those from business, government, academia and communities who are invested in the nation's success. In addition, we discuss the future of urban Mexico with leaders in thought and action from diverse walks of life including healthcare, law, engineering, science, and the arts.

Mexico today is on its own journey of urban transformation. As geographical obstacles are removed thanks to transportation, and as cultural barriers are lowered, people from diverse regions are coming to live in different cities around the country to gain economic and social opportunity. Our goal is to provide a new tool to help people from Mexico and beyond work together to build an urban future with fresh eyes.

In the end, this study represents PwC's contribution to making a full, current picture of Mexico visible to all those involved in the economic and social wellbeing of Mexico's cities. We sincerely hope you find value and interest in the study.



German Ganado Iturriaga
Lead Partner of Audit and Public Sector



José Antonio Quesada Palacios
Lead Partner of Clients & Market



Francisco Ibáñez Cortina
Lead Partner of Infrastructure
and Financial Services

Mexico can and deserves to be studied emphasizing its achievements: it is a nation that is fourth in biodiversity in the world, and it is no coincidence that it is among the ten first countries in cultural density. Moreover, its economic stability has been acknowledged since it ranks eleventh in the world economy; also, due to its geographic location it has become a mega-cultural country, since throughout the centuries it has accepted migrants from Western Europe, Southwest Africa and East Asia who have settled in the region.

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About the study



Streets of Tlacotalpan, Veracruz, world heritage.
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PwC Mexico has taken a firm and decisive stance in addressing a study with an optimistic approach and an analytic perspective that allows us to understand where we are positioned as a country. This effort responds to the fact that, in the last decade, most newspaper articles and international forum discussions about Mexico have emphasized problems and not the conscientious efforts made to achieve positive transformations. There may be many reasons to do so: for example, stark competition among countries and the need to address persistent internal tensions and contradictions justify such approach. Even so, we find good reasons to emphasize achievements and have a positive discussion.

Mexico can and deserves to be studied emphasizing its achievements: it is a nation that is fourth in biodiversity in the world, and it is no coincidence that it is among the ten first countries in cultural density. Moreover, its economic stability has been acknowledged since it ranks eleventh in the world economy; also, due to its geographic location it has become a mega-cultural country, since throughout the centuries it has accepted migrants from Western Europe, Southwest Africa and East Asia who have settled in the region. Not only biodiversity and cultural density have been critical factors in promoting indigenous languages, popular music and dance traditions, as well as a renowned handicrafts industry; more importantly, its cultural and historical heritage explains why Mexicans have been capable of proposing original solutions and becoming involved in designing economic alternatives in a nation that has been characterized by constant change.

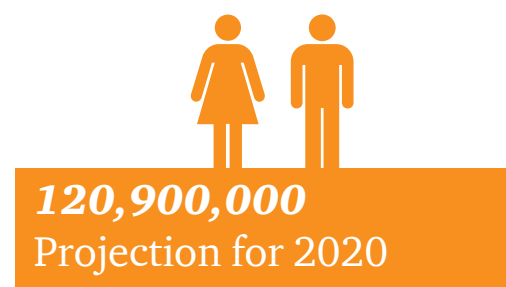
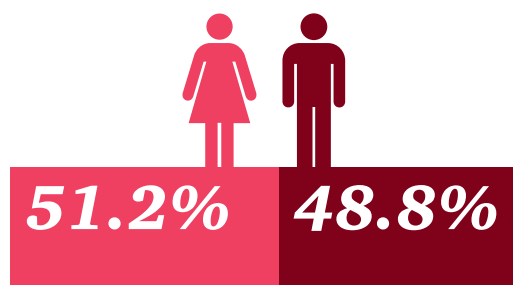
As mentioned in the Introductory Letter, this study offers an analysis of the findings in 10 indicators and 74 variables that examine different aspects of urban life so as to provide a better idea of what Mexico is today. Since we realized that a quantitative perspective would not be enough to capture transformations, we performed interviews with opinion leaders so that we might understand more about their respective fields from their experience. We spoke about Mexico with men and women whose performance has not only been outstanding in Mexico, but who have also gained international recognition. That is to say, our indicator findings were combined with some interviews with intellectual, academic, social and technical leaders who are inspiring or have directed transcendental actions in guiding the country.

The selection of variables was based on the global study *Cities of Opportunity*.¹ This means that when we sat down to sketch our measurements we realized that we would depend on available statistical information. This not only implied that we had to adjust to such information to design performance rankings, but more importantly, we had to look for a way to maintain our dialogue with *Cities of Opportunity* so that results were coherent locally and internationally. Thus, we designed indicators that refer to similar topics and emphasize Mexico's challenges. In some cases, our indicators include more than ten variables and in others, only three if the information was closer to what we needed to measure.

It is worth mentioning that data credibility was tested so as to improve it and ensure that comparisons and a truthful and reliable analysis could be performed. We checked against other studies and presented preliminary results to small groups of experts.

At present, more than 77% of the population is urban, and 35 million people live in cities with more than one million inhabitants. It is also important to mention that urbanization has produced a greater scattering of the population that lived in urban areas: if in 1970 Mexico had 55,000 locations with less than one hundred inhabitants, in 2000 there were already 140,000 locations where less than 2% of the population lived.²

In this publication we will analyze the life pattern of 112.3 million Mexicans living in *zonas metropolitanas*, according to figures from the 2010 Census. The proportion of men is (48.8%) and women (51.2%). Projections for the year 2020 estimate a population of 120.9 millions with an annual population growth rate of 0.69%.³ Together, men and women are working to construct and reconstruct their personal life paths in a country that is always seeking better avenues for economic growth and opportunities.



¹ See Methodological Items.

² Schteingart, M. and Garza, G. (coordinators) (2010), "Desarrollo urbano. Los grandes problemas de México", II. Mexico: El Colegio de México, 11-30.

³ Instituto Nacional de Estadística, Geografía e Informática 2011, Censo de población y vivienda 2010. Aguascalientes: INEGI.

Defining the concept of “zona metropolitana”

As Mexico enters the 21st century in a globalizing world and as a new administration is about to start, it seems the right time to perform a check and balance of where Mexico stands. To meet this end our departing point were quantitative data and a careful selection of *zonas metropolitanas* and states according to where they stood.

For this study we adopted Conapo’s,⁴ definition of *zona metropolitana*, as a group of two or more municipalities where a city of 50,000 inhabitants or more is located and whose urban area, roles and activities, surpass the limits of the municipality that originally contained it, incorporating as part of itself or of its area of direct influence neighbouring municipalities, predominantly urban, with which it has a high degree of socioeconomic integration; it also includes those municipalities that for their specific characteristics are relevant for urban planning and policies.

We chose the concept “*zona metropolitana*”⁵ as it refers to how relationships, networks and economic exchanges are expressed within a certain territory. This seemed a better concept than “metropolitan areas”, which is often associated with what is constructed within a specific zone. As we can see, what constitutes a *zona metropolitana* or area is an ever-evolving concept. Therefore, what is important is to know how to capture the different lifestyles of Mexicans: according to the 2010 INEGI Census on Population and Housing⁶ 77.8% of the population lives in urban zones, while 22.2% live in rural zones. A location is considered rural when it has fewer than 2,500 inhabitants, while an urban location is where more than 2,500 people live.

This first edition of *Mexico’s States of Opportunity 2012. Comprehensive Visions of Development* arises from PwC’s vision that healthy urban change can be accelerated by monitoring the performance of *zonas metropolitanas* in 10 indicators that address key aspects of urban life, such as educational performance, technological readiness, health access and coverage, infrastructure, economic development, urban development, ease to do business, recreational, sports and cultural activities, implementation of judicial reforms in security, and transparency. These indicators are composed of many variables, and together are the foundation of a serious, but non-academic and easy-to-handle publication. However, it is important to emphasize that PwC is undertaking an effort to start its own benchmarking in constructing indicators. This means that discussing Mexico in a positive sense implies the reconstruction of data without losing objectivity.

Graph indicators description

| | |
|--|--|
| Education performance and entrepreneurial capabilities of young people | It shows the quality of the educational system and student performance in basic and mid advanced grades, including activities concerned with leadership or empowerment. |
| Technological readiness | Its shows technological access and by the inhabitants of metropolitan zones and/ or states. It refers to educational and daily life purposes. |
| State infrastructure | It is federal, state and municipal investment (metropolitan zones) in physical, economic and social infrastructure. It shows the development of infrastructure through public and/or public-private partnership. |
| Health access and coverage | It refers to the progress made in total coverage and access to healthcare, as well as to the relationship between health centers and number of inhabitants in each state and metropolitan zone. It includes both private and public sectors. |
| Economic development | It refers to the population’s well-being as a consequence of the implementation of public and private plans for increasing productivity and the performance of the economy. |
| Ease to do business | It refers to the legal requirements, costs and time to set up a business, from the moment it is legally/fiscally constituted to the moment it opens. |
| Urban development | It refers to growth quality of new real state development in cities. It also refers to the increase in well being as a consequence of urban growth, planning and access to housing credits. |
| Recreational and cultural activities | It shows recreational, cultural and sports activities available to the population in states and metropolitan zones. |
| Judicial reforms implementation and security | It shows the enforcement if laws, reforms and actions of legal institutions that influence citizen’s perception concerning security. |
| Transparency | It shows accessibility to public information on the origin and destination of public resources, as well as law enforcement that harmonizes financial information systems and transparency in states and municipalities. |

⁵ According to the book *Delimitación de las zonas metropolitanas de México 2005* edited by Conapo, Sedesol and INEGI, the definition of *zona metropolitana* includes municipalities with a city of at least 100 thousand and up to 500,000 inhabitants and even cities with 1 million or 250 thousand inhabitants that share urban processes with the United States. This proves that the definition is more conceptual and relates to the connections and type of activity rather than to the number of inhabitants.

⁶ INEGI, *Censo de población y vivienda 2010*. Available at: <http://www.inegi.org.mx/est/contenidos/proyectos/ccpv/cpv2010/Default.aspx>

⁴ Consejo Nacional de Población (Conapo), *Delimitación de las zonas metropolitanas 2005*. Available at: http://www.conapo.gob.mx/es/CONAPO/Zonas_metropolitanas_2005

On the geography of our selection of “zonas metropolitanas”

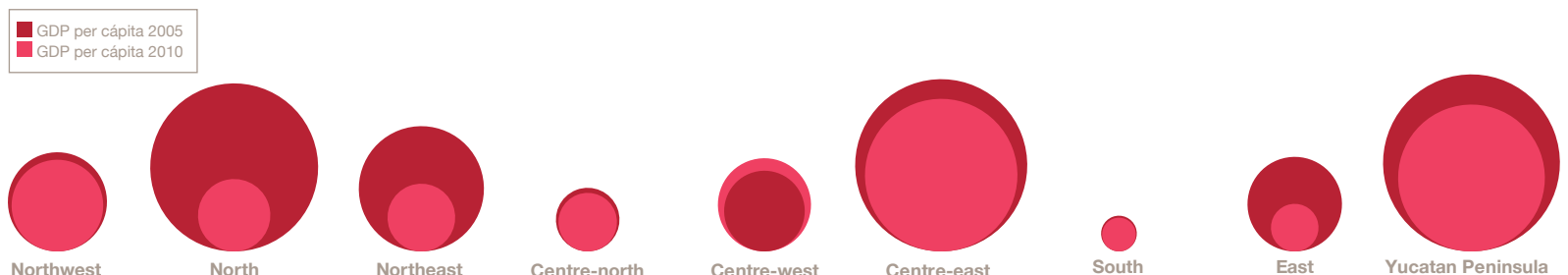
Our choice of *zonas metropolitanas* and states responds to the fact that everywhere we look, we find change. And as Mexican geography is so varied and composed of valleys, mountains, deserts, lakes and seafronts, there are *zonas metropolitanas* in all of these places showing how history and geography shape the country's urban aspect. Many of the 32 *zonas metropolitanas* chosen, such as Aguascalientes, Campeche, Tepic, Morelia, Puebla, Queretaro, Toluca, Chihuahua, Merida, Guadalajara, Zacatecas, Cuernavaca and San Luis Potosi were once colonial cities which played a key role in Mexican history throughout the colonial, and sometimes even pre-Hispanic periods. In post-colonial, post-revolutionary and modern times, urban expansion has implied the incorporation of municipalities and delegations, which have become complex and broader urban spaces.⁷ Other *zonas metropolitanas* like Cancun, Valle de Mexico or Tijuana only began to figure as cities in the second half of the 20th century, becoming hubs of industrial or commercial activity. The reason why Mexico City is not included in this first edition has two explanations: first, PwC Global has published for the past 5 years Global Cities of Opportunity and for the past editions, Mexico City has been included together with 25 other global cities, and, second, we consider that it is a priority to give importance to the diversity, willingness and opportunities offered by the States and *zonas metropolitanas*, which play a key role for the political, economic and social development in Mexico.

As stated above, we chose a national view of Mexico because we found that it was necessary to show that extensive changes are taking place across states, and in the last two decades many more *zonas metropolitanas* have been recognized as webs of urban development and motors of economic growth where people gather to work, live and build communities. New regions are appearing, such as in the southeast part of the country where the Yucatan Peninsula has become a hub of growth due in part to tourism. Similarly, some *zonas metropolitanas* located in the Center-East region are showing significant growth. In contrast, the North is the region that has experienced a slowdown in economic growth.

Nonetheless, it is necessary to take a closer look at the infrastructure, education and government policies in the north of Mexico, as we do here, because it demonstrates that this region has all the elements for setting up business, universities, fiscal incentives, utilities and even industrial parks in order to form conglomerates. Hence, gaining a better understanding not only of insecurity but also of the general transformation will help the reader to know how and why investments should be made in these states.

In this first edition of *Mexico's States of Opportunity 2012. Comprehensive Visions of Development* we decided to refer explicitly to the location of Mexican *zonas metropolitanas* by region so that it is easier for the reader to locate the zones geographically. However, being part of a region is no guarantee of growth or decline. For example, undoubtedly, *zonas metropolitanas* located in the south of the country still have a strong indigenous presence, while the ones in the center-east and northeast boundaries are located within the region that has had the most outstanding economic growth in the country. Yet, as new opportunities emerge, new configurations are also possible.

GDP per cápita by regions



Source: INEGI (2010)

⁷ Mexico experienced the first revolution of 20th century and consequently, the Partido de la Revolución Institucional (PRI-Institutional Revolutionary Party) remained in power for 70 consecutive years. In 2000 the Partido Acción Nacional (PAN-National Action Party), considered conservative, won the elections and has remained in power for 12 years. In 2013 PRI will rule the country, having been declared winner by the Tribunal Federal Electoral (Federal Election Tribunal) not without controversy in which the candidate from the united left, Andrés Manuel López Obrador, confronted results for the second consecutive time.

Ángel Bassols Regionalisation

In what follows we offer a location of Mexican states by region as a means to illustrate that *zonas metropolitanas* from every region of the country are included.

We thought that it would be useful to have a deeper understanding of the states and economic growth patterns, so in what follows we refer to the location of the states in the regions:

Northwest: Located next to the USA border and includes the states of Sonora, Baja California Norte and Baja California Sur. These states are highly influenced by their border status, as are most northern states. In this region, we find the *zonas metropolitanas* of Hermosillo, La Paz and Tijuana.

North: Comprises the states of Chihuahua, Durango and Coahuila, the area where the *zona metropolitana* of Chihuahua is located, as well as those of Matamoros, Torreón (which belongs to Coahuila) and Gómez Palacio and Lerdo, which belong to Durango.

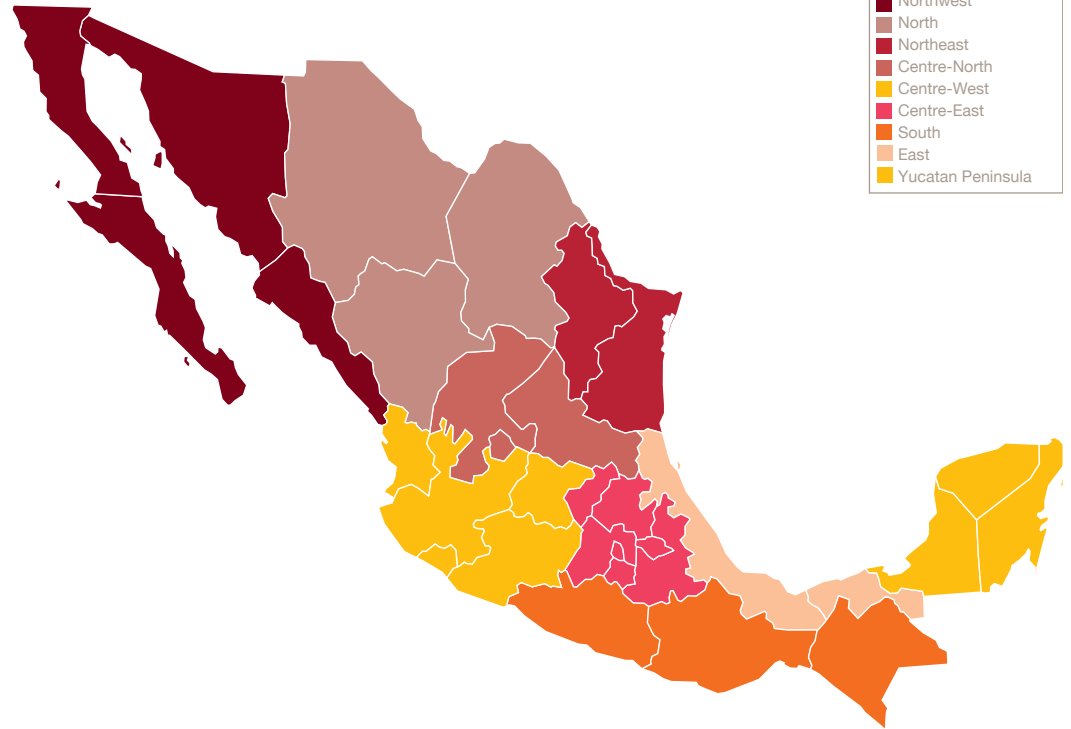
Northeast: In this region, the two states that stand out are Nuevo Leon and Tamaulipas; the first one is where the third most important industrial zone of the country is located.

Centre-North: Includes Aguascalientes, San Luis Potosi and Zacatecas.

Centre-West: Corresponds to Jalisco, Nayarit, Guanajuato, Michoacan and Colima.

Centre-East: This is one of the regions with greater industrial development, and where Hidalgo, Puebla, Morelos, Distrito Federal, Estado de Mexico, Tlaxcala and Queretaro sit. Estado de Mexico and Mexico City are, in that order, the two most populated entities.

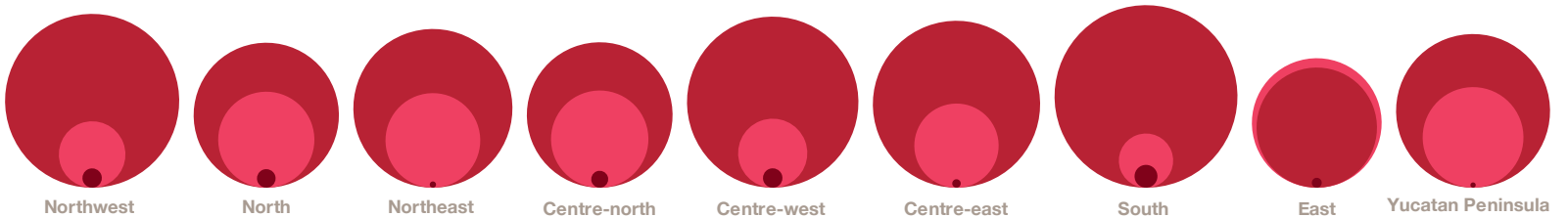
South: In this area we find a triad of states with important coastal and strong indigenous populations: Guerrero, Oaxaca and Chiapas.



East: Veracruz and Tabasco represent the east of the country, and although both are well-known for their strong pre-Hispanic and colonial history, the amount of oil that sits in both states has become a key element of their urban development. Veracruz is the third most populated state in the country.

Yucatan Peninsula: Comprises Campeche, Yucatan and Quintana Roo; some measures signal that it is the fastest-growing region of the country, precisely for the amount of international tourism it attracts.

Economic activity per region



Source: INEGI (2010)

Understanding the Scoring

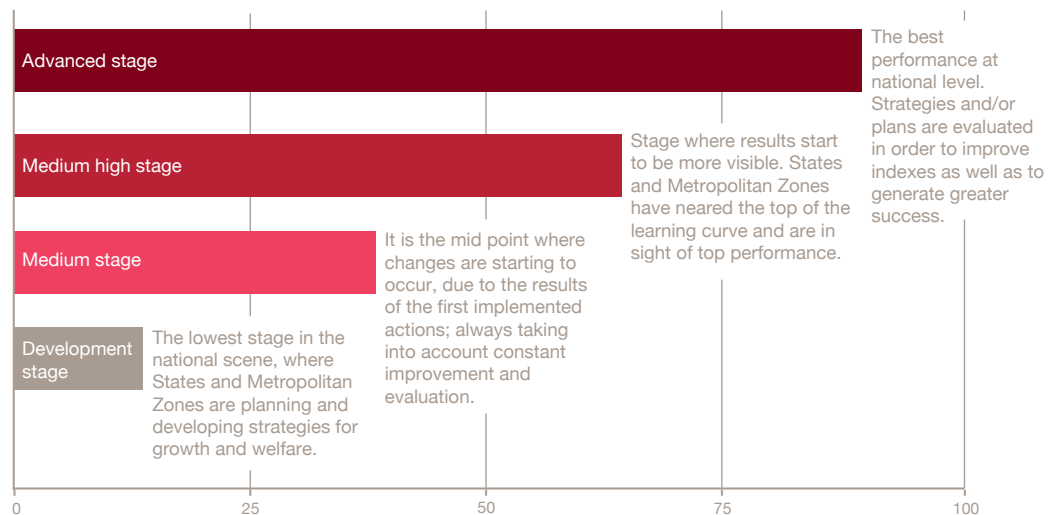
We use different colors to depict the stage of each *zona metropolitana* and state rather than numerical scoring to stress collaboration and learning among urban communities for the good of all rather than for competition. Showing shades of light as a means to portray stages of development is another way of saying that *zonas metropolitanas* are on a journey of growth within the country and among themselves. We seek to classify information that could be presented in an intuitive, understandable and appealing, yet objective way for readers in the public sector, policymaking, business and academia. As a response, we propose a color system that portrays stages of development within a national context, as follows:

- **Advanced stage:** Represents the advanced stage and it signals the highest or best performance nationwide.
- **Medium high stage:** Corresponds to the medium high stage where results are visible but still need improvement to be in the top 25%.
- **Medium stage:** Indicates the intermediate point at which all the elements of change are present given that the initial steps were already implemented.
- **Development stage:** Indicates the stage where the planning and development of strategies have been drafted but not necessarily put in place. It is the lowest point of the curve at a national level.

The idea of using colors emanates from the principle that *zonas metropolitanas* and their citizens prosper or fail together, so pursuing the colors of change for different indicators is part of a formula for continuous improvement.

In this first edition of Mexico's States of Opportunity 2012. Comprehensive Visions of Development, we decided to refer explicitly to the location of Mexican zonas metropolitanas by region so that it is easier for the reader to locate the zones geographically. However being part of a region is no guarantee of growth or decline.

Graph indicators system



Indicator discussion & interviews

Here we present all ten indicators chosen:

Santa Lucía Promenade, Monterrey.
iStockphoto ©Miguel Malo

Economic development

Today, Mexican *zonas metropolitanas* are changing as a result of a transformation in their vertical alignment with the global economy, their dynamic vertical linkage vis-à-vis traditional international/vertical subcontracting which occurs regardless of local economies. In other words, Mexico's economic performance today is the expression of a response to wider global economic transformation. Policies implemented in this country reinforce macroeconomic stability; continue opening the Mexican economy to establish it as a manufacture exporter; promote deregulation among sectors and foster the attraction of foreign investment (investment by sector).⁸

In short, during the last two decades, economic policy has set the following strategic alignments: a) strengthen exports by creating profitable conditions and market accessibility; b) promote the development of the domestic market and import substitution and c) encourage the development of highly competitive industrial, regional and sector groups with a high participation of micro, small and medium-size businesses. Recently, private enterprises have committed themselves to the implementation of policies that promote competitiveness, productive chain integration and innovation. This is a consequence of a new generation of businesses set up in Mexico and characterized by labour based on intensive competition in knowledge through setting up research, development and design Centers, as well as through linkages and cooperation among companies in regions and commercial parks.

⁸ Pérez Mendoza, J.S. (1991), "Macroeconomic Recovery Trends. Urban Impact on the Population", *Temas de población*, December, 1 (4): 33-37. Abarca, G.L.A., Benavides, G.B., Rangel, J.G.C (2012), "Exchange Rate Market Expectations and Central Bank Policy: The Case of the Mexican Peso/U.S. dollar from 2005-2009", *Journal of Derivatives*, June, 19(4): 70-90. Javalgi, R.G., Deligonul, S., Ghosh, A.K., Lambert, D.M. and Cavusgil, S.T. (2010), "Foreign Market Entry Mode Behavior as a Gateway to Further Entries: The NAFTA Experience", *International Business Review*, 19(3): 209-222. De Mello, L. and Moccerro, D. (2011), "Monetary Policy and Macroeconomic Stability in Latin America: The Cases of Brazil, Chile, Colombia and Mexico", *Journal of International Money and Finance*, 30(1):229-245. Caglayan, M. and Torres, R.I.M. (2011), "The Effect of the Exchange Rates on Investment in Mexican Manufacturing Industry", *Open Economies Review*, 22(4): 669-683.



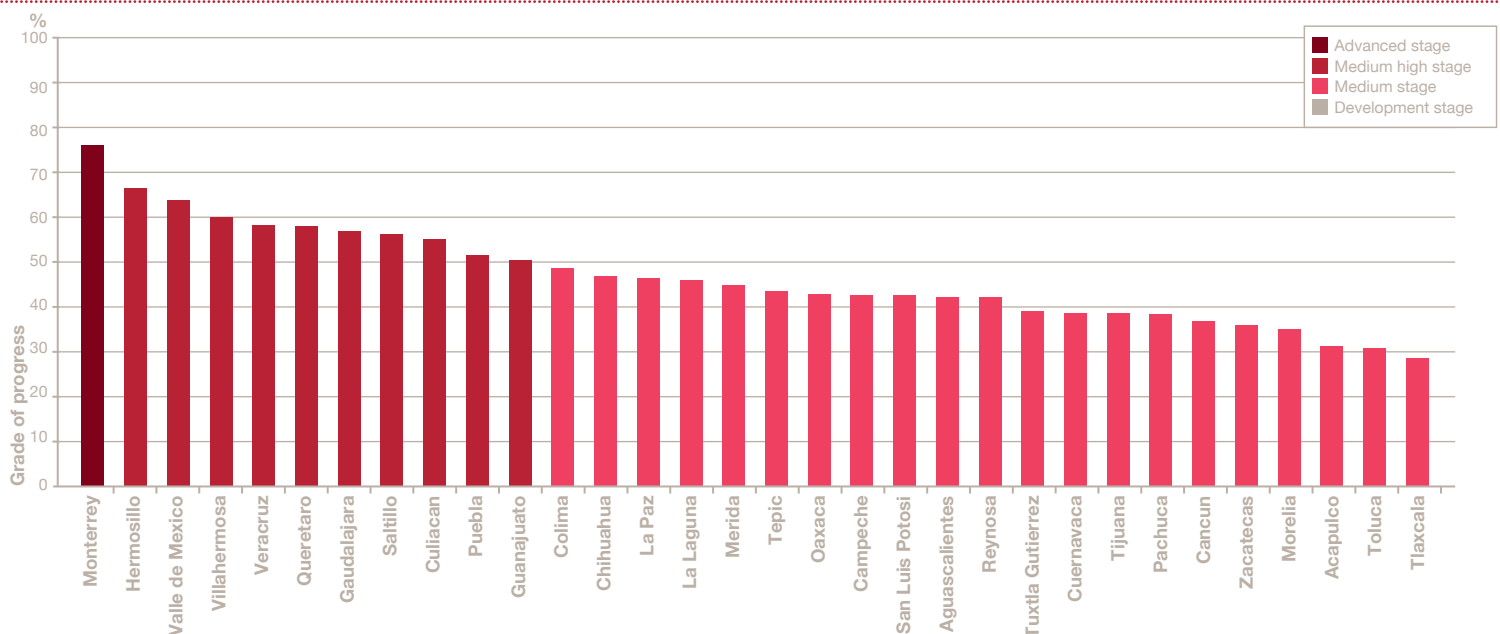
Recently, private enterprises have committed themselves to the implementation of policies that promote competitiveness, productive chain integration and innovation.

According to our data, the consequences of public and private efforts are heading in a positive direction: at present, only one *zona metropolitana* has achieved an advanced stage: Monterrey, while most other states classify as intermediate.

A key component of Mexican economic performance has been the promotion of industrial clusters. Developing these clusters implies actions taken by the states so as to achieve transformations through policies and actions oriented to technological innovation, hiring human resources (both qualified and unskilled). Clusters result from private and public funding that generate what has been termed zones intensive in industrial and knowledge creation, since industries create added value through technology-oriented research centers that are involved in carrying out market research, product development and services needed throughout the production, administrative, distribution, sales and financing processes. Different types of clusters (qualifying linkages, as they are known in Spanish) exist nowadays in Mexico.

Throughout the country, we find two clusters that have reached a mature stage, and one with great potential. The first one corresponds to the automobile industry and consists in manufacturing light vehicles, heavy vehicles and auto-parts. Light-vehicle manufacturing plants exist in several states across the country as well as heavy vehicle and auto-part plants. At present, only two states are in red still after setting up clusters: Aguascalientes and Tlaxcala. Possibly the limited development within these states reflects that the integration among specific industries and local production of inputs is low and that the industrialization process is guided by transnational industries geared towards an international market. From a positive angle, we can see that we are also taking a snapshot of a process in which local investment, especially in some sectors such as clothing, has increased, that indirect providers of goods and services have also grown, as well as the demand for local talent, indirectly fostering the educational sector in those states.

Economic development - Zonas metropolitanas



*Valle de Mexico: Estado de Mexico - Distrito Federal

**La Laguna: Durango - Coahuila

Sources: INEGI (2010), Ley de Ingresos de cada Estado (2012), Secretaría de Economía (2011), Comisión Nacional Bancaria y de Valores (2011), INFONAVIT (2011)

The percentage of progress is the weighted sum of performance from metro areas in: Bank Branches per 1,000 inh., Credit cards contracts per 1,000 inh., INFONAVIT credits through a financial intermediary, Industrial Parks, Established Companies, Working Population, Purchase Power.

Throughout the country, we find two clusters that have reached a mature stage, and one with great potential. The first one corresponds to the car industry. The second cluster corresponds to Information Technology, software and hardware. The third qualifying link that the Mexican government has encouraged in the last few years has been the aerospace industry.

The second cluster corresponds to Information Technology, software and hardware. This cluster has created technology parks that have an important number of technology businesses in them. It is worth noticing that technology parks offer more possibilities to businesses, whether this results from their strategic location or their facilities and resources. Hence businesses are able to set up plants and logistics and administrative centers. Technology parks and information technology and software clusters have been settled in several states.

The third qualifying link that the Mexican government has encouraged in the last few years has been the aerospace industry. The most important cluster is in Queretaro. These clusters are meant to strengthen four businesses: a) spaceship manufacturing; b) spaceship and associated services operation; c) spaceship maintenance, repair and modification services and d) parts and spare parts manufacturing. The states that have a qualifying linkage to this sector are: Baja California, Nuevo Leon, Chihuahua, Sonora and Queretaro. Additional clusters are being developed to cater to the processed food industry.

If we join the results on clusters with our own findings, there are intersections corresponding to a promising scenario in several states. For example, in terms of the overall scoring obtained in economic development as measured by us, only Nuevo Leon and Mexico were in an advanced stage, followed by four states, which reached the medium high stage: Chihuahua, Tamaulipas, Queretaro and Veracruz. We found more in an intermediate stage: Tabasco, Zacatecas,

Sinaloa, Quintana Roo, Guanajuato, Baja California Sur, Sonora, Puebla, Nayarit, Baja California, Hidalgo, Jalisco, Yucatan, San Luis Potosi, Michoacan and Coahuila. Nine states are lagging at a planning stage: Colima, Durango, Aguascalientes, Guerrero, Campeche, Oaxaca, Tlaxcala, Morelos and Chiapas, which is the state that shows the lowest economic development in the country.

In short, the potential for setting up industrial parks is immense, as only two *zonas metropolitanas* are in a medium high stage: Guadalajara and Monterrey. Only four have reached an advanced stage in terms of the number of established industries: Guanajuato, Hermosillo, Valle de Mexico and Monterrey. Similarly, there are great opportunities as regards attracting foreign investment, since only two states are in an advanced stage in terms of attracting foreign investment: Chihuahua and Nuevo Leon.

As stated here, clusters and industrial parks bear close connections to the development of educational capacities, as a result of the specialization of production, which furthermore has a territorial correlation in Mexico. Thus, the medium and long-term impact of industrial clusters is yet to be assessed, and a pending issue is how the new professions will generate new identities from which an evolving economy can shape Mexico. Undoubtedly, different senses of belonging, learning processes and urban reconfigurations are emerging from the occupational practices that clusters are generating in the different states.



An analysis of the Mexican economy – especially in terms of wellbeing gained by the population– requires considering the results of public and private plans and actions geared towards not only enhancing productivity and economic performance, but also per capita income, access to credits for houses or opening an account, all of which bear a close correlation with having and keeping a job. According to our own data, what we find is a strong occupational pattern as the economically active population has been increasing in most *zonas metropolitanas* and reaching an advanced stage.

One of the indicators that has been accepted worldwide on a country's goods and services production during a certain period is per capita Gross Domestic Product (per capita GDP); in macroeconomics, GDP is frequently used in measuring material wellbeing in a society and its growth is monitored to check if economic policies have been positive or not. GDP is one of the statistical parameters used in calculating the human development index designed by the United Nations Development Program as this represents the annual measurement of annual production of goods and services.



Hugo Lara

The challenge of building and sustaining world class business

Hugo Lara is a chemical engineer by the Universidad La Salle (La Salle University) in Mexico City; Master in International Affairs, Master in Business Administration by Instituto Tecnológico y de Estudios Superiores de Monterrey (Technological and Graduate Studies Institute of Monterrey) State of Mexico Campus.

He is the Executive Director General of Vitro, a Mexican glass manufacturer, and has also been Director of the Bottling Business; Director of Glass and Crystal Businesses and Director General of Flat Glass (2006-2008).



PwC: Vitro, S.A. de C.V. is an important company, a landmark in its field. How is it addressing the challenge of encouraging glass consumption?

H: We are creating consumer awareness, above all among youth, about glass as a 100% recyclable product that helps take care of the environment. Definitely we may say that glass allows a better preservation of products and the food one consumes. Furthermore, it is part of an ecological and futuristic way of thinking which we are trying to instil in youth, so they think about future sustainability in cities or communities where they live, and glass is a product that should be there to help achieve that goal.

Then, if a well-structured recycling scheme is devised considering the collection of that glass from consumption Centers, there would be two consequences: one, it would contribute to the environment and sustainability; and two, it would reduce piracy in a very important industry, which is the wine and liquor industry.

PwC: Do you agree that glass means mirror, window, perfume bottle, wine bottle, in sum glass is beauty.

H: I always ask women, “When are you going to wear perfume that comes in a plastic bottle?” I do not think they ever will. When are you going to drink wine that comes in a plastic bottle or carton? Definitely, I believe there are products that if they are not in a glass bottle, they lose quality, they lose value.

PwC: Are there opportunities for promoting the use of glass in Mexican cities?

H: Definitely. We started discussing consumer products, but if you consider the construction and car industries, in which we also participate, there are more opportunities for an ecological use of glass. Glass technology has had a significant development in construction. Unfortunately in Mexico we still do not have that kind of culture, but you can have glass whose purpose is to allow more light come through so as to reduce internal power consumption: you stop spending power for lighting up a room, and besides, light comes through but radiation does not; therefore, internal air conditioning required is less.

PwC: Have you experimented with the different uses that glass has in the construction industry in Mexico? Could you give us some examples?

H: In the city of Monterrey, most office buildings that are being constructed today require double glasses, that is to say, glasses with a special cover. Next to the Vitro building there is one under construction that has glass with such special properties. Other examples are found in Torreón in the Tecnológico de Monterrey (Technological of Monterrey) site; also in Tampico in that same institution. In big constructions the use of this type of product is being encouraged, although not as straightforwardly as in other countries.

PwC: When you think about Mexican cities as centers of opportunity, what ideas involving the glass industry arise?

H: The use of glass in constructions can be strengthened. For example, a social interest house; instead of putting transparent glass you can put blue or green glass, which will immediately change the appearance of the house in the first place; and second, it decreases the possibility of heat coming into the house.

PwC: Why use glass in cities and how can glass contribute to recycling?

H: It has been proven that glass is material that preserves food and beverages much better; it gives them a longer shelf life span. For starters, as a quality container for some foods and beverages it is much better than any other container in the market.

Now, about recycling, if we compare glass with plastic and cardboard, glass is the only one that is 100% recyclable. You can recycle a soft drink plastic bottle, but you can not use it 100% as a new bottle for soft drinks. The same thing happens with plastic food packaging and cardboard packaging. There is no way you can adequately recycle cardboard, much less so if you want to use it for food. In the case of glass, if you put a glass bottle in the recycling process you get another glass bottle. It is 100% recyclable.

In the context of container recycling capabilities, glass is better, and for protecting the shelf life span of food, it is also better. It is not because we work in this area; it really has properties that are far superior to the rest of the packaging methods. It might be a bit behind in terms of practicality. For example, in schools children are not allowed to carry glass because it is

dangerous; you are not allowed to handle glass in swimming pools or sports activities; it has certain limitations in daily activities. But talking about quality, recycling possibilities, glass is superior to any other packaging material.

PwC: In Mexico, do we have experience in handling glass as a container?

H: Yes, definitely. The thing is that we have lost it. Twenty years ago all soft drink bottles were made of glass.

PwC: Are we also talking about a conceptual revolution in the way decision-makers think, in realizing the importance of supporting such efforts?

H: I totally agree, but another requirement is infrastructure. Fortunately or unfortunately, in this country recycling depends a lot on scavenging, and scavenging depends on the price per ton of material collected. Substantial efforts have been made regarding plastic, but not all of what is collected is reusable. I think there is a lot to be done in this area, and that is why we are focusing on it.

Another important aspect is that glass recycling helps fight against piracy and alcohol adulteration. In consumption Centers like bars and restaurants it would be possible to have a very good structure for collecting glass

What we want to do is promote glass as construction material. Buildings, facades and interiors (walls, screens) can be made of glass; it is a material that is going to last many years, and it is 100% recyclable.



Blown glass, Tlaquepaque, Jalisco
©Banco de imágenes CPTM / Ricardo Espinosa (REO), Photographer

bottles, thus avoiding piracy. What pirates do is that they buy bottles and reuse them for fake products. The consumption centre wants to get rid of those bottles because they are a nuisance and there are people who buy them and refill them.

Then, if a well-structured recycling scheme is devised considering the collection of that glass from consumption Centers, there would be two consequences: one, it would contribute to the environment and sustainability; and two, it would reduce piracy in a very important industry, which is the wine and liquor industry.

PwC: Have you had support from other sectors or social actors in those efforts?

H: Yes, definitely yes. With the wine and liquor industry we work very much hand in hand, and with the consumption Centers and manufacturers precisely to try to set up agreements. In this sense you have to work on many issues, starting with compensation systems (tips) for waiters and managers because they do business selling such bottles to people who buy them, regardless of what they are going to use them for.

PwC: What is new, a novelty in cities?

H: I believe the great opportunity is in infrastructure, and then again, in glass as construction material. Glass can also be construction material, and we have worked with universities, in particular with the Ibero (Ibero-American University), the Autónoma de Nuevo León (Autonomous University of Nuevo Leon), the Tec de Monterrey in an effort called Catedra Vitro (Vitro Lecture), whose objective is to make architects learn how to work with glass and learn about the benefits; the good things about glass. Because they may want to do many things with glass but they do not know how and in the end those things are not realized. Therefore, what we want to do is to promote glass as construction material. Buildings, facades and interiors (walls, screens) can be made of glass; it is a material that is going to last many years, and it is 100% recyclable.

PwC: Might we think about placing our bets on the glass industry even as a growth booster?

H: Definitely. Today we are employing more than 17 000 people, just in Vitro. There are another two very important flat glass manufacturers in Mexico and another three glass container factories that are also very important. I believe that the glass industry in Mexico directly employs more than 30,000 people.

PwC: In which cities can we see this type of industry?

H: Currently, there are glass plants in Cuautla, Mexicali and Mexico City. In Queretaro there is a glass plant that manufactures glass for construction and cars. For bottling, we have six plants around the country: San Luis, Guadalajara, Monterrey, Queretaro, Toluca (in Toluca we have two); but there are other competing bottle plants in Mexicali, San Luis Potosi, Estado de Mexico. The glass industry –in general, and not only Vitro– is a great employer.

PwC: Are you suggestion that the glass industry is a great employer? As far as I can tell, it has a diversified supply, it is setting consumption patterns and linking itself to energy.

H: Absolutely. We do not envision glass recycling only as a way of removing glass from waste deposits. Every bottle we put into the oven helps reduce the cost of raw material, which at the end of the day is earth, –silica sand that is extracted from mines– since it is easier to melt processed glass than fresh raw material. Therefore, energy consumption used for melting glass is reduced and this is important because melting glass is very energy intensive.

It is actually about a virtuous circle achieved by recycling, which is the difference with plastic bottle manufacturers; you pick up a plastic bottle, and what you are doing is removing garbage from the environment and using it for other things, and that is it. We remove garbage from the environment, but you can use it 100% in manufacturing another bottle, and in the process you are reducing energy consumption versus manufacturing the bottle from fresh raw material. I do not know if I am making myself clear. In this sense, you do complete the circle.

PwC: What might the public and private sectors learn from these virtuous circles you are propitiating?

H: I believe that in construction what we need –and have been trying to encourage at a governmental level– are regulations. You see, construction regulations are at state level; not even that, but at a municipal level. That is to say, there are no construction regulations at a federal level that might really encourage the use of this type of material with long-term benefits regarding sustainability in cities. I believe it is something that we should start working on –how could we really encourage the implementation of such initiatives at a federal level?

PwC: Is there a relationship between science and the glass industry; the development of science?

H: Definitely. Talking above all about construction glass, there has been a very important technological development for adding value to the different types of products. As I was telling you, one can use transparent glass but coated with an invisible layer, which is about nanotechnology and other very important technologies that are going to help you in letting more or less light through, more or less heat; lightening or darkening it or

auto-washing it with the push of a button. But anyway, there has been a lot of research and a lot of applied science and technologies in construction glass.

PwC: How can we support your efforts in making glass uses better known? And by which, we, I mean consumers, the public and private sectors, other sectors.

H: I believe it depends very much on us. I believe it is something the glass industry has stopped doing. Over the last 20 years, the glass industry has been mainly fighting against substitutes. We have focused on keeping our market share, on recovering it instead of going back to basics as regards why that container is better than the rest. I believe that it is something that we, as an industry are lacking. I do not see anyone else furthering the use of glass besides manufacturers themselves.

Ease to do business

Since pre-Columbian times, Mexico has displayed an incredible flair for doing business. As Bernal Díaz del Castillo mentions in his Chronicles, Why spend so many words on what they sold in that great plaza (referring to Tenochtitlan) because they are never-ending... so many different qualities... full of people...⁹

Facilitating possibilities for businesses to open operations in a country is the first key step towards achieving economic development. In the case of Mexico, the good news for people seeking to set up a business is that the country has been experiencing a sustained modernization in its legal procedures. These days in Mexico, out of 31 states and one Federal District, six are in an advanced stage. These are Baja California Sur, Chihuahua, Durango, Hidalgo, Sonora and Zacatecas. The rest are in a medium high stage. If the states interested in making it easy to set up a business are not necessarily the same three which have the strongest economic development (Estado de Mexico, Nuevo Leon and Tamaulipas), we can conclude that different Mexican states are actively seeking to create the conditions for facilitating business activities.¹⁰

Legal procedures are important but not the only factor to take into consideration. Hence, our indicator was constructed looking not only into legal requirements, costs of procedures, waiting periods but also into the payment for the social insurance of employees and cost of energy. If we disaggregate this indicator, we find that the waiting period has been decreasing to the point that 24 states are in an advanced stage: Aguascalientes, Baja California, Baja California Sur, Campeche, Chiapas, Chihuahua, Coahuila, Durango, Guerrero, Hidalgo, Jalisco, Mexico, Michoacan, Morelos, Nayarit, Nuevo Leon, Oaxaca, Puebla, Queretaro, San Luis Potosi, Sinaloa, Sonora, Veracruz and Yucatan. Six states are in a medium high stage: Colima, Guanajuato, Tabasco, Tamaulipas, Tlaxcala and Zacatecas. One still needs to improve in this variable: Quintana Roo.

Similarly, Mexico's commitment to enhancing opportunities for doing business has been accompanied by a decrease in the cost of the documentation: seventeen states are in an advanced stage: Campeche, Chihuahua, Coahuila, Durango, Hidalgo, Jalisco,



Guadalupe Victoria Dam, Durango
©Banco de imágenes CPTM
Ricardo Espinosa (REO), Photographer

⁹ Díaz del Castillo, Bernal, 2011, "Historia verdadera de la conquista de la Nueva España"; Mexico: Editorial Porrúa; 172.

¹⁰ Informador.com.mx (2011), "México, en mejor sitio que BRICs por facilidad de hacer negocios: BM", en Informador.com.mx, 19th October, available at: <http://www.informador.com.mx/economia/2011/330990/6/mexico-en-mejor-sitio-que-brics-por-facilidad-de-hacer-negocios-bm>. Ugalde, V. (2004), "Sobre la digitalización de trámites administrativos en la transición el 'e-gobierno'", *Gestión y Política Pública*, 13 (1): 41-80. González, J.J.S. (2009), "El cambio institucional en la reforma y modernización de la administración pública Mexicana", *Gestión y Política Pública*, 18 (1): 67-105. Gill, I.S., Ozer, C. and Tatuco, R. (2008), "What Can Countries in Other Regions Learn from Social Security Reform in Latin America?", *World Bank Research Observer*, 23(1): 57-76. Murai, T. (2004), "The Foundation of the Mexican Welfare State and Social Security Reform in the 1990s", *Developing Economies*, 42(2): 262-287. Kaplan, D.S. and Novaro, F.P.A. (2006), "El efecto de los salarios mínimos en los ingresos laborales de México", *Trimestre Económico*, 73(1): 139-173.

Michoacan, Morelos, Puebla, Queretaro, Quintana Roo, Sonora, Tabasco, Tlaxcala, Veracruz, Yucatan and Zacatecas. Once again, only one state is in a planning stage: Baja California. Ten more in a medium high stage: Aguascalientes, Baja California Sur, Chiapas, Guanajuato, Guerrero, Mexico, Nuevo Leon, Oaxaca, San Luis Potosi and Tamaulipas. Just a few are in an medium stage: Colima, Nayarit and Sinaloa.

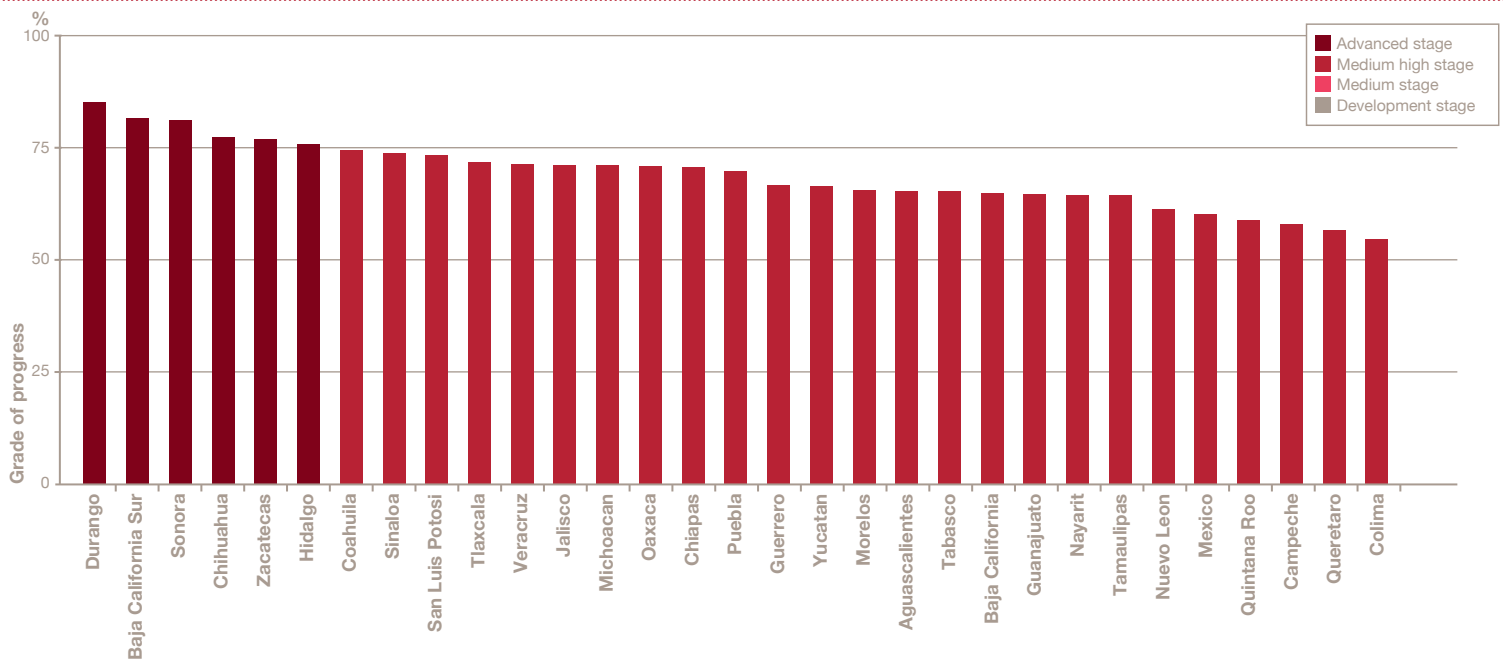
Yet, at present the main obstacle to doing business in Mexico is the cost of energy and not social insurance. In twenty states this cost is estimated considering a planning stage and only Baja California is considered to be in an advanced stage. In the remaining nineteen states cost of energy is in an medium stage. Social security is in an advanced stage in Chiapas, Durango, Guanajuato, Hidalgo, Nayarit, Oaxaca, Quintana Roo, Sinaloa, Sonora, Tlaxcala, Yucatan and Zacatecas. These results show that Mexico will deeply benefit from measures to decrease energy cost, for example

The good news for people seeking to set up a business is that the country has been experiencing a sustained modernization in its legal procedures.



Turtles liberation in Los Cabos, Baja California Sur
© Paulina Gómez

Ease to do business - States



Sources: Doing Business in Mexico – World Bank (2012), ProMéxico – Secretaría de Economía (2010)

The percentage of progress is the weighted sum of performance from states in: Cost of documentation, Days of wait to obtain documentation, Cost of Energy, Wages per worker.

Urban development

In the last ten years, *zonas metropolitanas* have experienced a definite need to improve planning and infrastructure. Citizens and industry have requested this and is being gradually addressed by different state governments. Practical knowledge of the problems and needs of *zonas metropolitanas* meant that our indicator was designed to consider various dimensions. Therefore, *zonas metropolitanas* provide room not only for economic development, but also for houses, health, transport, ideas and technological access.¹¹ Certainly, in the case of Mexico, urban development is moving in that direction, although greater efforts are needed.

The existence of a balance between citizen satisfaction and the needs of urban dwellers is not easy to demonstrate. Therefore, in creating the indicator we have taken into account thirteen variables: housing demand per 1,000 inhabitants; houses with access to drinking water; houses with access to electricity; leisure activity services; public investment in public works and social actions; airports; sustainable transport; public transport per 10,000 inhabitants; water treatment plants; public investment in urbanization, housing and regional development; percentage of urban and rural population, and solid waste treatment (trash).



Metropolitan Cultural Space, Tampico, Tamaulipas.
©Banco de imágenes CPTM
Ricardo Espinosa (REO), Photographer

¹¹ Garza, G. y. Cabrero Mendoza, E. (coord.) (2009), *Competitividad de las ciudades en México: la nueva agenda urbana*. México, CIDE/ Secretaría de Economía; Garza Villarreal, G. *Competitividad de las metrópolis mexicanas en el ámbito nacional, latinoamericano y mundial*. Garza, G. and Cabrero Mendoza, E. (coord.) (2009). *Competitividad de las ciudades en México: la nueva agenda urbana*. México, CIDE/ Secretaría de Economía; Garza Villarreal, G. *Competitividad de las metrópolis mexicanas en el ámbito nacional, latinoamericano y mundial*. / Garza, G. (mimeo). *Competitividad urbana: una perspectiva global y para México* / Sobrino, J. (coord.) 1a ed. Mexico, D.F.: El Colegio de México, Centro de Estudios Demográficos, Urbanos y Ambientales, 2010.
Alvarado López, J.E. (2011). *Aprovechamiento integral de recursos naturales y manejo comunitario de servicios ambientales: caso de ecoturismo en Cuetzalan, Puebla*. Angoa, I. (2009) *Dinámica espacial del empleo en la industria y los servicios superiores en México: desconcentración, difusión y bifurcación* Isabel Angoa, Mario Polese. In: *Evolución del sector servicios en ciudades y regiones de México*.



Mexico cities have been developing throughout the centuries, since some of them were founded more than a thousand years ago.

In a medium high stage a combination of ports and historical cities are to be found struggling to establish themselves on the urban map.

The first seven are for measures in the *zonas metropolitanas*, and the rest for the states. Regarding total indicators per *zona metropolitana*, we have found that six of them are in an advanced stage, twenty-three in a medium high stage and four in an medium stage. None of the zones is in the development stage. Results in the variables analyzed show that at least in Mexico cities have been developing throughout the centuries, since some of them were founded more than a thousand years ago. The six most advanced *zonas metropolitanas* are Guadalajara, Guanajuato, Valle de Mexico, Monterrey, Puebla and Tijuana. In a medium high stage a

combination of ports and historical cities are to be found struggling to establish themselves on the urban map. Among these are: Acapulco, Aguascalientes, Campeche, Cancun, Chihuahua, Colima, Cuernavaca, Culiacan, Hermosillo, La Laguna, La Paz, Merida, Oaxaca, Queretaro, Reynosa, Saltillo, San Luis Potosi, Tepic, Toluca, Veracruz, Villahermosa and Zacatecas.

Under the first variable, which is Houses with Access to Drinking Water, twenty five *zonas metropolitanas* are in an advanced stage, eight in a medium high stage, one in an medium stage and two in the development stage.

Mexico, D.F.: El Colegio de México, Centro de Estudios Demográfico, Urbanos y Ambientales, 2009; Chias Becerril, L., El sistema carretero como articulador de las ciudades / Chias Becerril, L., Reséndiz López, H. D. and García Palomares, J. C. en: Desarrollo urbano y regional. México, D.F.: El Colegio de México, 2010 Los grandes problemas de México; v. 2. 305-34; 1Megaciudades y cambio climático: ciudades sostenibles en un mundo cambiante / Boris Graizbord, F. M. (eds) ; [translator, Susan Beth Kipilian], Mexico, D.F.: El Colegio de México (ed.), Centro de Estudios Demográficos, Urbanos y Ambientales Año 2011. Staley, S. Mobility first: a new vision for transportation in a globally competitive twenty-first century / Staley, S. and Moore, A. Lanham, Md.: Rowman [and] Littlefield, c2009.

11 Chias Becerril, L., El sistema carretero como articulador de las ciudades / Chias Becerril, L., Reséndiz López, H. D. y García Palomares, J. C. en: Desarrollo urbano y regional. México, D.F.: El Colegio de México, 2010, Los grandes problemas de México : v. 2. 305-341; Megaciudades y cambio climático: ciudades sostenibles en un mundo cambiante / editado por Graizbord, B., Monteiro, F.; [traducción, Susan Beth Kipilian], México, D.F.: El Colegio de México, Centro de Estudios Demográficos, Urbanos y Ambientales Año, 2011; Staley, S. Mobility first: a new vision for transportation in a globally competitive twenty-first century / Staley, S. and Moore, A. Lanham, Md.: Rowman [and] Littlefield, 2009. Construir ciudad: un análisis multidimensional para los corredores de transporte en la Ciudad de México / Salazar, C. E., Lezama, J. L. (coords.) 1ª ed. Mexico, D.F.: El Colegio de México, Centro de Estudios Demográficos, Urbanos y Ambientales, 2008.

Under the variable Houses with Access to Electricity, results are even more favourable: only one *zona metropolitana* is in a medium high stage; one in a development stage and the remaining thirty are in an advanced stage. Queretaro is in a medium high stage, with 88%. Tlaxcala, with 76% is the *zona metropolitana* that is in the development stage.

Under Housing Demand per 1,000 Inhabitants, four *zonas metropolitanas* are in an advanced stage, eight in a medium high stage, thirteen in a medium stage and seven in the development stage. This indicator refers to the number of houses per 1,000 inhabitants. The zones in an advanced stage are Chihuahua and Valle de Mexico, with 70 houses each; Monterrey, 77 and Queretaro with 80 houses per 1,000 inhabitants.

The *zonas metropolitanas* in an medium stage are Aguascalientes, with 53 houses; Cancun, 54; Cuernavaca, 52; Culiacan, 48; Guanajuato, 44; Hermosillo, 47; La Laguna, 44; La Paz, 48; Morelia and Oaxaca, with 45 houses each; Reynosa, 54; Tuxtla Gutierrez, 42 and Villahermosa, with 46 houses per 1,000 inhabitants.

Last, the *zonas metropolitanas* of Acapulco, with 37; Colima, 32; Pachuca, 41; Puebla, 42; Tepic, 38; Tlaxcala, 30 and Veracruz, with 40 are in the development stage. The efforts undertaken during the last decade by the Instituto del Fondo para la Vivienda de los Trabajadores Infonavit (Institute of the Fund for Houses for Workers), which is a public agency to grant housing loans to workers, have started to yield results, and as can be seen, the number of *zonas metropolitanas* in the development stage is decreasing daily.

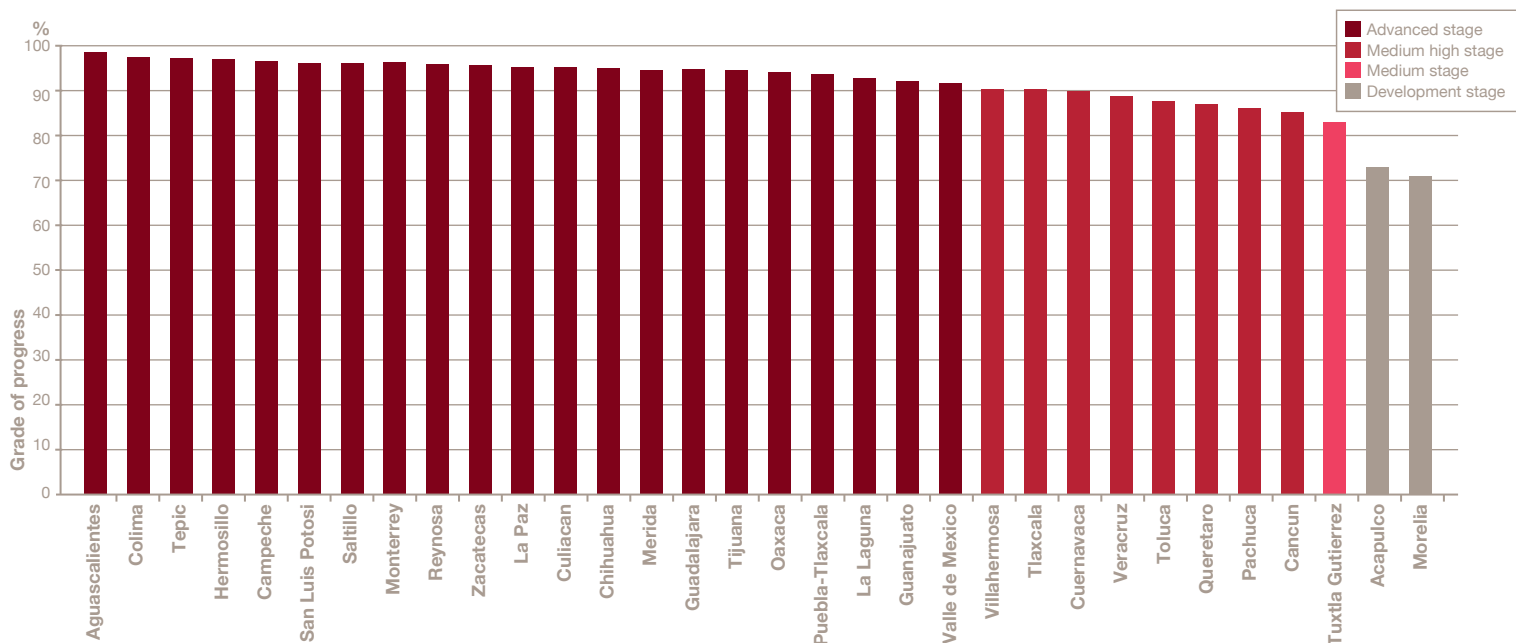
Recreational Facilities show only three zones in the advanced stage, one at the medium high stage, four in the medium stage and the rest in the development stage. In the advanced stage we find Acapulco, with 5,864 leisure sites; Valle de Mexico, 6,242 and Morelia with 3,712; the *zona metropolitana* of Villahermosa, with 2,403 sites, is in the medium high stage. On the other hand, Guadalajara that has 1,686; Guanajuato, 1,146; Monterrey, 1,146; Oaxaca, 1,020 and Puebla, with 1,192 recreational sites are in the medium stage.

The variable *Public Investment and Investment in Private Works and Social Actions (public works in municipalities)* refers to the total amount invested in public works, according to municipal expenditure, which encompasses all types of infrastructure and social action programs. Under this item, there are three *zonas metropolitanas* located in states that have made the most substantial investments. The first one is Queretaro, with 2'459,814 million pesos, followed by Monterrey, with 6'527,032 million pesos and Morelia, with 2'428,360 million pesos.

Another variable for measuring urban development in *zonas metropolitanas* is the number and type of *airports* in each state; this variable includes both national and international airports, and passenger and freight services.

Under this variable there are four *zonas metropolitanas* in the development stage, two in an medium stage and the remaining twenty six in an advanced stage. These stages were determined by the type of airport in the *zona metropolitana*. If there was both an international airport and national airport, it was considered to be in an advanced stage. If

Access to drinking water



*Valle de Mexico: Estado de Mexico - Distrito Federal

**La Laguna: Durango - Coahuila

*The stage of the variable was calculated according to the established methodology

Source: INEGI

In relation to Sustainable Transport, we find a window of opportunity since metrobuses are being developed in several cities and are an example of energy efficiency and mobility.

there was only a national airport, then it was in the medium stage. If it did not have any airport, then it was considered to be in the development stage.

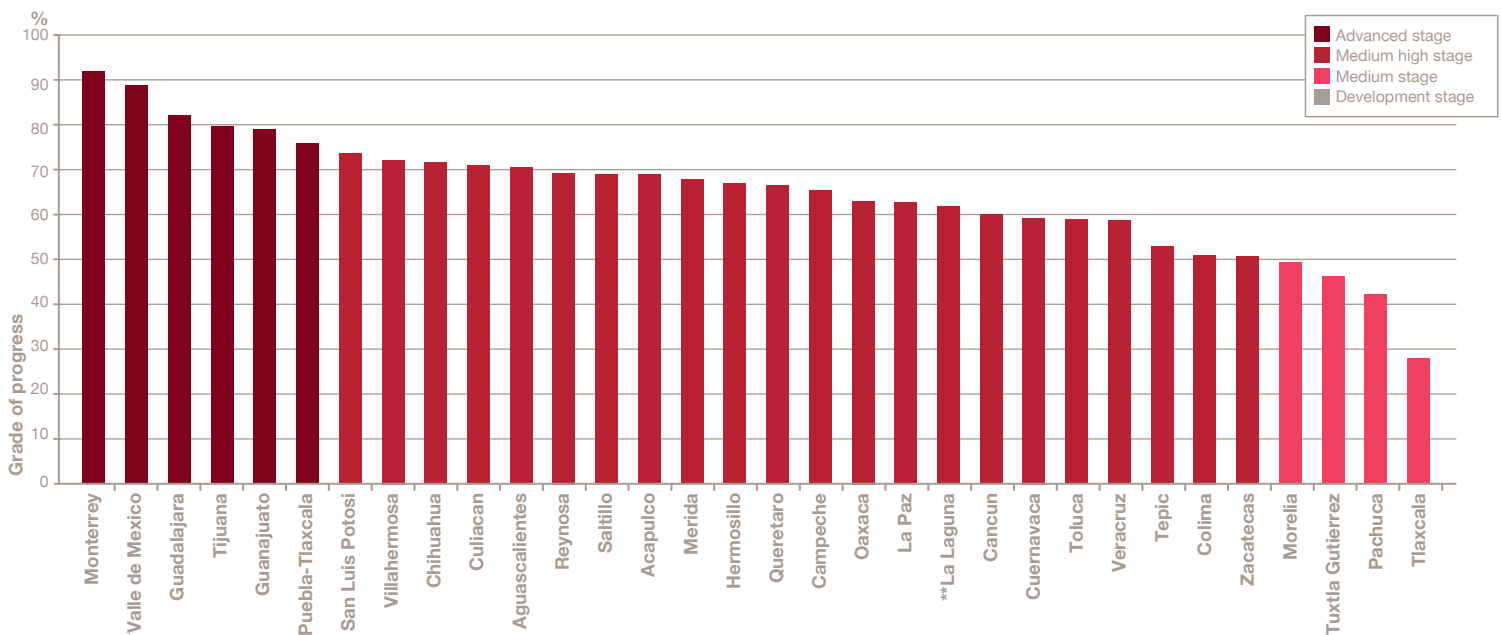
In relation to *Sustainable Transport*, we find a window of opportunity since metro-buses are being developed in several cities and are an example of energy efficiency and mobility. For Mexico, the performance in this variable depends on the status of the project, if there is one. We classify them as follows: *zonas metropolitanas* that do not have a sustainable transport project and did not require such a project were assigned 2.5 out of four possible points; *zonas metropolitanas* that in spite of requiring a transport project lacked one were assigned 0 under the same four points, and *zonas metropolitanas* ranging from 0 to 4 are in an intermediate or medium high stage.

There are three *zonas metropolitanas* in an advanced stage, one in a medium high stage, fifteen in a medium stage and nine in the development stage.

The *zonas metropolitanas* in an advanced stage are Guadalajara, Valle de Mexico and Monterrey. Chihuahua is in a medium high stage. Acapulco, Campeche, Colima, Guadalajara, Hermosillo, La Laguna, La Paz, Merida, Puebla, Queretaro, Tepic, Tijuana, Tlaxcala, Villahermosa and Zacatecas are all in an intermediate stage.

Mexican urban development shows uneven results in the states. Overall progress is not as significant and, according to our indicators to date, none of the states has reached an advanced urban development. However, there are two in a medium high stage, 26 in a medium stage and three in the development stage. The states with the highest progress percentages are Coahuila and Mexico while states like Chiapas, Chihuahua and Nayarit could have a promising development with better planning since this is a stage they are only just starting.

Urban development - Zonas metropolitanas



*Valle de Mexico: Estado de Mexico - Distrito Federal

**La Laguna: Durango - Coahuila

Sources: INEGI (2010), CONAGUA (2009), Quinto Informe de Gobierno (2011), Banobras (2012)

The percentage of progress is the weighted sum of performance from the metro areas in: Public Transportation per 1,000 inh., Water cleaning plants, Physical investment on urbanization, housing and regional development, Urban Population, Number of water treatment plants, Residual management of waste projects.

Mexican urban development shows uneven results in the states. Overall progress is not as significant and, according to our indicators to date, none of the states has reached an advanced urban development.

The first variable we used for measuring urban development in states was *Public Transport per 100,000 Inhabitants*. It measures the total number of vehicles registered for public use in each state. There are three states in an advanced stage, two in the medium high stage, nine in the medium stage and 17 in the development stage. In the advanced stage are Guerrero, with 146 vehicles per 100,000 inhabitants, Morelos with 118 and Quintana Roo, with 224.

Another variable is the number of *Water Purification Plants* operating in each state. There are four states in an advanced stage, three in a medium high stage, six in an medium stage and 18 in the development stage. The advanced stage includes Sinaloa, with 142; Tabasco, with 44; Tamaulipas and Zacatecas, with 54 each. Colima and Durango, with 33 plants are at the medium high stage, as well as Guanajuato, with 28.

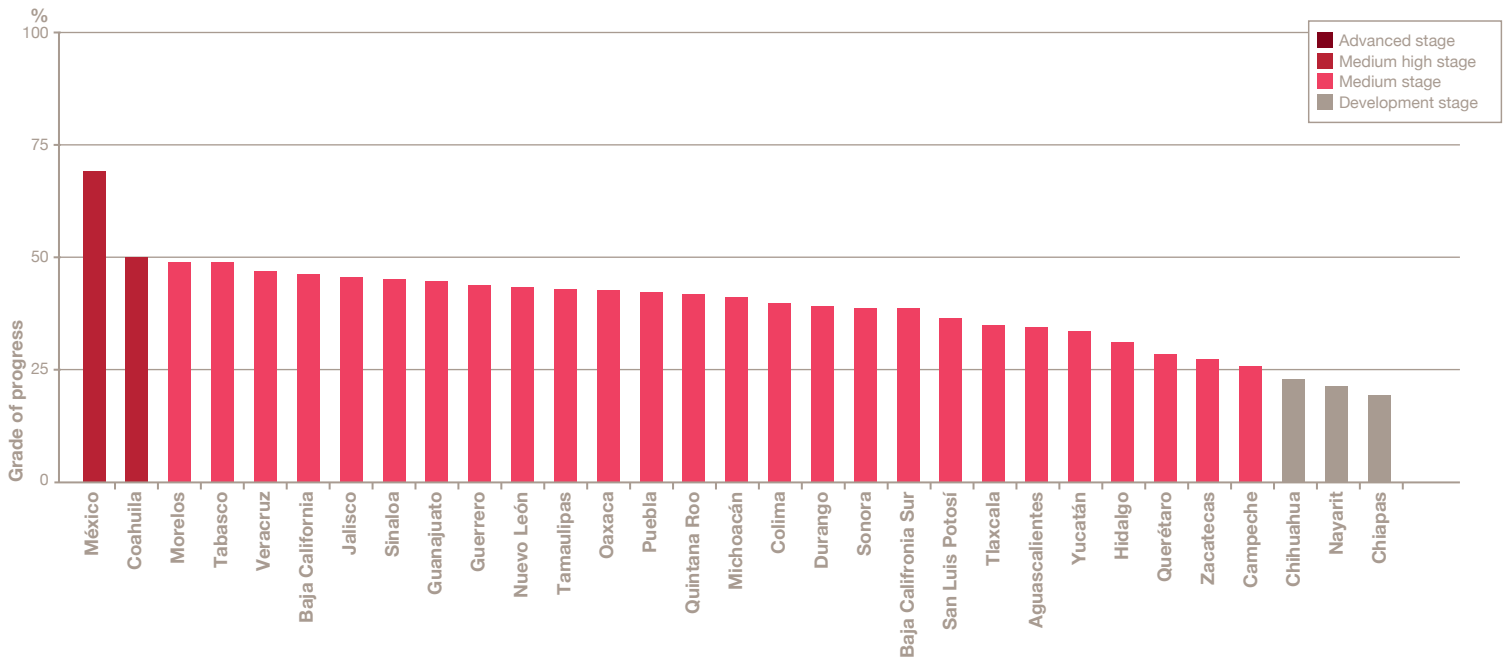
Public Investment in Urbanization, Housing and Regional Development refers to the total amount, in millions of Mexican pesos, of physical investment. Under this category, there is one state in an advanced stage, three in a medium high stage, five in an medium stage and 22 in the development stage. The state that is in the advanced stage is Mexico, with 12'407,641 million pesos. In a medium

high stage are Coahuila, with 7'655,152 million pesos; Puebla, with 6'532,154 mp and Veracruz, with 8'633,829 million pesos.

The states in an medium stage are Guanajuato, with 4'924,599 million pesos; Guerrero, 5'267,020 mp; Jalisco, 5'666,593 mp; Michoacan, 4'352,814 mp and Oaxaca, with 6'162,078 million pesos.

Last, the states of Aguascalientes, with 769,661 million pesos; Baja California, 2'097,628 mp; Baja California Sur, 354,647 mp; Campeche, 837,152 mp; Chiapas, 1'796,096 mp; Chihuahua, 485,397 mp; Colima, 2'691,990 mp; Durango, 1'741,728 mp; Hidalgo, 2'775,379 mp; Morelos, 1'310,909 mp; Nayarit, 963,680 mp; Nuevo Leon, 3'164,121 mp; Queretaro, 1'553,100 mp; Quintana Roo, 938,362 mp; San Luis Potosi, 2'778,638 mp; Sinaloa, 2'063,685 mp; Sonora, 1'742,964 mp; Tabasco, 2'270,249 mp; Tamaulipas with 2'222,031 mp; Tlaxcala, 967,519 mp; Yucatan, 2'002,334 mp and Zacatecas, with 1'629,003 million pesos are all in the development stage.

Urban development - States



Sources: INEGI (2010), INFONAVIT (2011), Insituto Nacional para el Federalismo and Desarrollo Municipal (2010), Banobras (2012)

The percentage of progress is the weighted sum of performance from States in: Houess with acces to clean water, Houses with access to electricity, Housing demand per 1,000 inh., recreational spaces, Public Investment on municipalisites, Airport (National or International), Sustainable Transportation.

The Project for the Integral Management of Residues is the last variable for assessing states and refers to the Municipal Solid Residues program that includes the official collection, transportation, transference, use and disposal of residues, i.e. trash management.

Percentage of Urban and Rural Population is the next variable. The higher the percentage of urban population in a *zona metropolitana*, the higher it will score. Thus, we have 13 states in the advanced stage, five in the medium high stage, eight in the medium stage and five in the development stage.

The Number of Industrial Wastewater Treatment Plants in Operation is the variable that shows the number of plants. There are two states in an advanced stage, two in the medium high stage; 11 in the medium stage and 13 in the development stage. The State of Mexico has 315 plants and Veracruz, 166 placing them in the advanced stage. In the medium high stage are the states of Puebla, with 116 plants; Queretaro, 120; Sinaloa, 89; Tabasco, 124 and Tlaxcala, with 108 treatment plants.

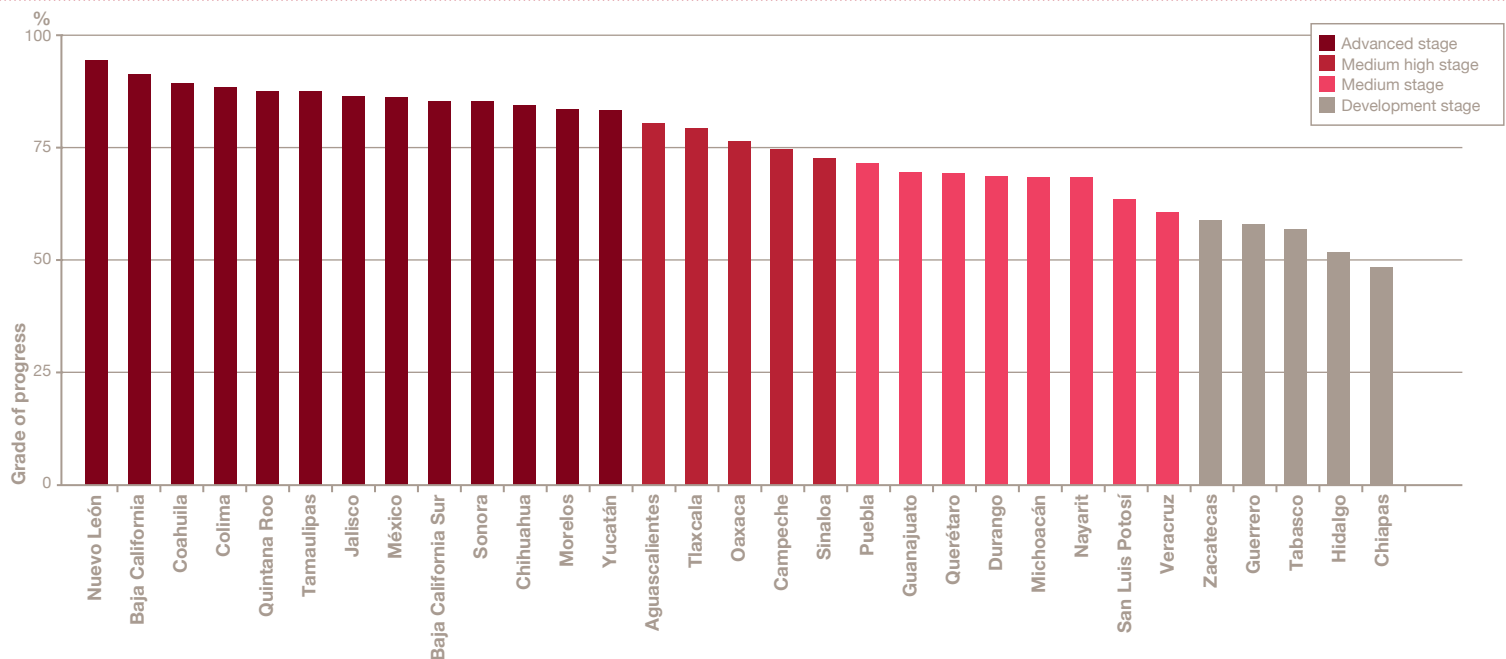
The Project for the Integral Management of Residues is the last variable for assessing states and refers to the Municipal Solid Residues program that includes the official collection, transportation, transference, use and disposal of residues, i.e. trash management.

For the time being, measurements under this variable refer to projects already developed by each state. Hidalgo is the leading state with 21 projects in the advanced stage. Next comes Oaxaca, with nine projects.

In a medium high stage there are two states: Guerrero and Tabasco, both with six projects. In the medium stage there are eight states: Guanajuato, Michoacan, Morelos and Yucatan, with four projects each. Also in this stage are Jalisco, Quintana Roo, San Luis Potosi and Sonora, with 3 projects each.

Last, in the development stage there are 19 states: Baja California, Coahuila, Mexico, Nayarit and Zacatecas, with two projects each; Aguascalientes, Baja California Sur, Campeche, Chiapas, Chihuahua, Colima, Durango, Nuevo Leon, Puebla and Tlaxcala with one project each. The states with no project at all are Queretaro, Sinaloa, Tamaulipas and Veracruz.

Urban and rural population

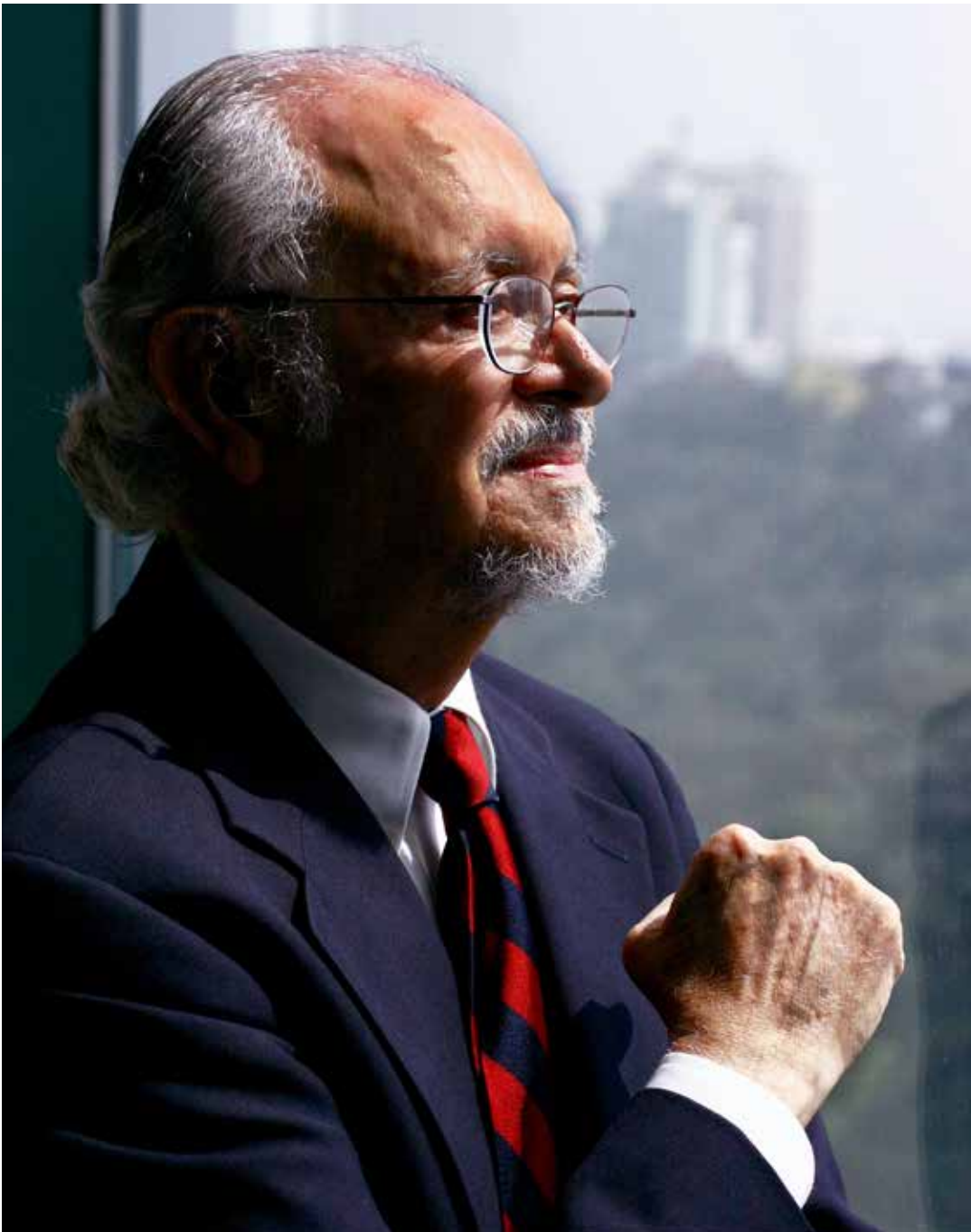


**The stage of the variable was calculated according to the established methodology
Source: INEGI

Mario Molina

Reconciling urban development with sustainability

Mario Molina is a chemical engineer by the Universidad Nacional Autónoma de México (UNAM) (National Autonomous University of Mexico), with graduate studies at the University of California, Berkeley and University of Friburg. Co-author with F.S. Rowland of the original article (1974) predicting the ozone layer thinning as a consequence of the emission of certain industrial gases: chlorofluorocarbons (CFCs), for which they were awarded the Nobel Prize in Chemistry. Also, his research and publications on that subject lead the Montreal Protocol of the United Nations in drawing up the first international treatise that has effectively addressed the environmental issue at a global scale and anthropogenic origin. Dr. Molina has researched the chemistry of atmospheric pollution in the lower atmosphere especially in groups of air pollutants in urban zones, thus contributing to the knowledge of pollution in the atmosphere and to its solution in the zona metropolitana of the Valle de México.



PwC: If we think about Mexican cities, may we say that modern science shapes them? If so, in what sense?

M: What can be very clearly stated is that science should shape cities. Currently, its influence has only been partial inasmuch as urban growth in Mexico and in other parts of the world has been persistently chaotic. However, we can see that growth has been more organized, more planned. Hence, we would like to insist that decisions on cities should be thought out more carefully and the scientific component should be more relevant.

PwC: Is it a requirement to have a committed government, a committed business sector and citizens involved to unleash a major and better planning for cities?

M: Yes, government commitment is very important, but also civil society and private sector commitment. All of this requires the collaboration of all sectors involved. For example, the government's challenge is having well-developed plans that do not change with each administration. That is one of the things that must be done. Hence, professionals are required, people dedicated to understanding cities and to making proposals on how they should grow. Further requirements include politicians for the promotion of such visions, entrepreneurs that support them and citizens that demand them.

What I understand is that protecting the environment must be taken into account (we refer to the ecology in that very broad sense) and it is a transcendental action for society because it consequently brings an improved quality of life and an improved economic system. The difficulty is that these implications are not necessarily very clear to society and they are not easy to explain.

PwC: Which Mexican cities are being constructed or might be constructed or consolidated based on the knowledge of climate change?

M: In the case of metropolises, taking the necessary measures to counterbalance climate change is a very great challenge, but there is great potential to do so. Mexico City has committed itself to implementing measures to face this issue, but what must be clear is that such measures must be seen from an integral viewpoint.

For example, in Mexico City public transport solutions are developing, and to the extent that transport is more efficient, people spend less time commuting, pollutant gas emissions are diminished. If these solutions develop to a major extent, we will see that the environmental goal will adapt to the efficiency and quality of life goals. In the medium term, implementing these measures is less expensive and is convenient investment for society.

There are other examples: houses, buildings can be constructed to be more efficient, and eventually it will entail savings for society because less money will be spent on power and the quality of life will increase.

PwC: Do we have the technology to face climate change?

M: What is very clear is that we must implement measures to save resources (human, economic, environmental) instead of having to face the impacts of climate change. The challenge is climate change and the implicit cost is the transformation of power consumption patterns. Renewable power is still more expensive than power from fossil fuels. However, it is important that cities invest for the future and start using that kind of power.

PwC: You have mentioned a very important issue: economic benefit derived from becoming aware of ecological measures. We believe this relationship is not well understood. Please could you expand on this? Could you give us examples so our audience might understand better?

M: The clearest example is at a country level, but we can adapt it to metropolises as well. An economic development plan can be drawn up to include low pollutant gas emissions. However, such a plan implies the simultaneous implementation of multiple measures and some of them have a cost. Society needs to invest knowing that it will be profitable, because if not, the problem will not be solved (for example external events, floods, draughts, etc. will be more costly for society).

There are other measures that are what we call win-win, such as using power more efficiently, building houses intelligently so that they are affordable, well communicated and have utilities.

There are other important investments, but they are expensive and require a long-term vision. For example, buying a house or constructing office buildings that are power efficient and heat water and rooms with solar energy. These buildings require special insulation which makes them more expensive at the beginning, but their additional cost is quickly recovered. What is a must is education, and government can help by offering incentives or precise regulations.

PwC: Can you give us an example of committed Mexican cities?

M: Yes. Fortunately there are cities like Leon or Monterrey where there is a willingness to do the right thing. On the one hand, we can improve Mexico City. On the other, there are cities that are growing and thus the time is right for them to implement those measures. If you plan well, even if the number of inhabitants increases a lot, if there is good planning, traffic jams as the ones we are trying to eliminate in Mexico City should not be a problem. But of course, this is a challenge in many other cities; even in European cities that have very good public transport. So, fortunately, I believe that in many Mexican cities awareness

exists, and we are going to try to profit from that good will, to work with those metropolises and with the private sector, with the government (in this case state governments), to promote a more rational development, more sustainable, because in the long run all of us will win.

PwC: You greatly promote the study of the ozone layer, of climate change, but you are also a great leader in making global society aware of the need to take action. You had been participating in the Montreal Protocol, with the United States government in the promotion of actions, even beyond their approval, showing that overcoming those barriers is possible. Could you comment on this international experience of addressing legislators, the civil society, international agencies?

M: Yes. The problem that led me to these activities was the challenge of protecting the ozone layer because we found out that, since the 70's certain industrial products could affect it. At the beginning, it was only a hypothesis based on scientific knowledge. Then we had to perform two tasks: one of them was to continue working with the scientific community to establish as clearly as possible the science of the phenomenon and convince ourselves that it had a solution; but alongside we had to convince society and governments as well as decision-makers.

A new aspect that has just started to gain momentum is what we call green development. It is a type of development that takes into account all these characteristics. A green construction is a house, a building that works and is agreeable to live in. It is simply one that does not spend power unnecessarily.

In the case of the ozone layer, fortunately we were successful. We were able to reach, together with the scientific, economic experts and diplomatic communities, an international agreement called the Montreal Protocol, which has worked quite well. That problem has been practically resolved. We still have the issue about industrial gases remaining more than a century in the atmosphere. That is to say, what we have in the atmosphere is what was issued in the last century, but the problem is already in the process of being resolved.

Unfortunately, this is the only example of a global issue that has been integrally and internationally resolved. It is clearly global because no matter where these industrial components are issued they impact the whole planet. In contrast, the issue of climate change—a global problem as well—is much more difficult to resolve because it involves the use of fossil fuel that must be substituted and that is basic for economic development in many countries. Developed countries used it for many years and now developing countries want to do the same thing.

However, we trust that the climate change issue will be resolved, in spite of its much greater complexity, because alternative power is not necessarily less expensive. This is one of the major difficulties. The implementation of technological solutions or other sources of renewable power must

be encouraged, and they will undoubtedly compete against fossil fuel (oil and carbon).

Hence, one of my activities is benefiting from what we learned with the ozone issue, the Montreal Protocol, and promoting an international solution for climate change.

Another difference worth mentioning is that the issue of climate change has polarized and become a political issue. For example, in the United States scepticism was identified with the Republican Party, which is a bit absurd because scientific facts are neither left nor right wing. Evidently, there are government actions—as the Montreal Protocol shows—in all countries that are clearly beneficial to all; so denying the existence of climate change is an exaggeration.

In order to counterbalance this stance we need to keep on explaining basic science that is well established, in spite of uncertainties, and continue collaborating and working with decision-makers and government officials. In the United States, President Obama poses no problems. The problem is Congress, which has an important Republican component. In other countries there is always a component—not as important as in the United States—against the acceptance of the idea that humanity can change climate. The evidence is quite clear.

PwC: You have given us a great example on how local and global aspects articulate in climate change. Would you like to tell us a bit about how you want to work on this in Mexico? What can this work contribute to Mexico?

M: It so happens that there is a very important interaction among public health, air quality and climate change. In these last few years we have been trying to emphasize that aspect of global climate change because it is not only about fossil fuel use affecting climate, there are other activities: one that is very important in cities is the emission of small particles, of soot.

We have known that for a long time. People in cities breathe in those particles and that is a most important public health problem. It has a very serious impact on children's lung development and induces mortality. Among other issues, this one is most severe.

There are other ones such as ozone formation through transport vehicle emissions, but soot is an interesting example because it is also important for global climate change, both because being black particles it absorbs solar energy and because at high latitudes (North, Arctic) it soils snow, making it melt more easily. This phenomenon is not a major problem here in Mexico but it is threatening to public health, and we had already started to address it. Fortunately emissions have decreased, but there is still room for improvement.

One of our efforts focuses on removing buses with diesel engines, which are the ones that produce that black smoke which is so damaging both for public health and for the climate. There are other similar examples.

Coming back to the topic of efficient operation in cities, fortunately it goes together with environmental protection and with the economy. Cost-benefit studies show that having such effects in children and the population is very expensive for society.

The economic aspect is very important, but undoubtedly life quality is even more and can not be measured in money. Well-informed people do not want their children to get ill because of air pollution, regardless of the cost, it is life quality. That is an example. There are others: methane emissions, ozone-generating emissions in cities which affect climate regionally and that is why we have started a movement called "Clean Air and Climate Coalition" in which more than 12 countries are participating: the United States, Mexico, France, Jordan, the United Kingdom and Sweden among others. The idea is that, even before there is an international climate change agreement, with the regulations we already have on air quality we can start to address global warming more efficiently than we are today.

PwC: You have been known as a promoter of the ecological revolution because your ideas on the environment have been highly valued. For Mexican cities, what sense would it make to say ‘ecological revolution’?

M: What I understand is that protecting the environment must be taken into account (we refer to the ecology in that very broad sense) and it is a transcendental action for society because it consequently brings an improved quality of life and an improved economic system. The difficulty is that these implications are not necessarily very clear to society and they are not easy to explain. Another example on climate change is that people perceive that it is something that is going to happen towards the end of the 21st century, but in fact it is already happening, there is extreme weather and heat waves that are clearly connected and have been caused by human activity.

It is no longer an end-of-the-century matter, it is something linked to what we are doing today and so we are speaking about the so-called ecological revolution; it is simply taking into account the importance, the benefit of having a protected and healthy environment for an appropriate quality of life that will also ensure that we give our children and future generations an inheritance to continue enjoying a high quality of life.

PwC: We believe that the core of your proposals is realizing the fact that human beings have an impact on climate and not only climate on us. How do you think we could construct cities of the future that harmonize environment and society in Mexico? What vision of the future could you help us construct?

M: A vision of the future for cities is to encourage the implementation of measures that guarantee a high quality of life for inhabitants. Three important aspects need to be integrated: an economy that works efficiently so that resources are made available to all; an environment that fosters sustainable development (something that must be continuous, that does not end in the short term), and also the social aspect but here there is an interesting combination: we know that cities in which life is more agreeable, where the quality of life is high, there are also parks, green areas –public space is well-acknowledged. Enjoying the environment is inherent to humans, we are much happier if we are surrounded by forests with trees, life, animals, birds.

Here in Mexico we have partially achieved that, but we can always set a goal for further improvement; but good planning is required.

PwC: If we think about Mexico’s history, cities like Colima, Guadalajara, Mexico City, Cancun, Puerto Vallarta, many cities, we will find examples of tree-lined avenues, town squares where people can take a walk surrounded by nature, by trees. In Mexico, parks are a place for gatherings, and we may also say that it is one of the countries with the greatest biological diversity. With that historical background, what other win-win formulas come to mind, today, reconciling modernity and tradition?

M: Talking about Mexican cities, parks are a part of their history. Ecological parks are something important for most of the population as well as being able to enjoy nature, to watch animals in their natural habitat as a complement to living in a city. Actually having these options is formidable. Mexico City has Chapultepec Park. On the other hand, we realize that the evolution of life, other than human life, is valuable, and that it is not necessary to lose biological diversity to be better positioned on Earth. Another sign, maybe clearer of human commitment to nature, is that we are able to feel the suffering of animals. Not only do we have very important ethical principles regarding other people’s suffering, but also regarding animals that are suffering. This is a component of ethics and values that complements economic values.

PwC: If we discuss Mexican cities in a positive sense, what might we say?

M: What I would say is that I am optimistic. I do see that there is an important movement that must be acknowledged; I do believe we have a very important potential in Mexico regarding many of our cities, and furthermore what we clearly see is that many of them do have organized plans for such growth. That is, we are not starting from scratch, we must simply offer our support.

Ideally, we should organize ourselves better still, which is something we are trying to help with from the Molina Center. We are trying to learn from experiments that have been successful in other parts of the planet, mainly in Latin America and in other cities around the world. We must take advantage of those experiences and also learn from our mistakes, our own mistakes here in Mexico as well as from those in other cities. I do see enormous potential and very good will to move in that direction.

PwC: What is new, a novelty in Mexican cities ecologically speaking?

M: A new aspect that has just started to gain momentum is what we call green development. It is a type of development that takes into account all these characteristics. A green construction is a house, a building that works and is agreeable to live in. It is simply one that does not spend power unnecessarily. Green means that in addition to having gardens, it offers a kind of development that implies an improved economic level for all the society; it is something that in Mexico in particular is a very important challenge. But we do need to implement this because there is still a sector of the population that is very poor and we must help it reach economic and social development.

Cities are extremely important for the economy. That is why all components must work jointly, they must be well-organized.

PwC: In your role as a scientist and social innovator, how much does it contribute that you are not only a prominent Mexican but also a citizen of the world that looks for options? How is this useful for your work?

M: Being a citizen of the world is a very interesting concept, since many of our objectives, our goals can be seen from a global perspective, things we can learn from other countries, on what is working for them and collaborate. We do not have to consider it as competition. Of course there is economic competition and we must educate people for working to export, etc. At the same time, we can be part of humanity. Part of that civilized progress, which is not in one country or another it is a matter involving the whole planet.

A very clear example is science, fundamental science which is researched in many countries, and results are open to everyone. Regardless of where a basic, important discovery is made, it is disclosed to all the scientific community. There are discoveries pertaining to more applied science or technology that may be patented and need to have resources for their development. But the other extreme is the international scientific community: fortunately it has developed under such values of not owning any knowledge for the

benefit of one country alone or of a social sector, but the whole planet is the owner. In this regard we are all citizens of the world and we all benefit from that collaboration.

PwC: Doctor Molina, perhaps we should end this interview not only quoting Borges, as you did when you received the Nobel Prize, but referring to García Lorca, by saying *green, I want you green, green wind, green branches*. Dr. Molina, is a lifetime enough to put together commitment to science, art and ecology?

M: It is a very interesting question. We always want to reach for more than we can actually achieve and what is quite clear is that for a for a life of fulfilment we do need to enjoy the arts, enjoy painting, literature, music, which to me is so important to be a fulfilled person, not just partially a person. At the same time what is extremely satisfactory is having contributed to improve society. In my case, it will be perhaps through science where I can contribute the most; in general, through this collaboration which we have emphasized so much and which is so important. But, we will never be utterly satisfied with what we have done as opposed to what we should have done; but I believe that if we have tried and have achieved something, that is highly satisfactory.

In what follows, we have included a brief description of the activities that the Centro Molina performs.

Assessment of “Social Interest” Housing Sustainability in Mexico.

This assessment entailed the development of an index that integrates and balances environmental, economic and social indicators associated with housing and its surroundings. The field work was carried out in the *zonas metropolitanas* of Cancun, Monterrey, Tijuana and Valle de Mexico, and involved the application of a Life Cycle Analysis on constructive systems of social interest housing in Mexico. The purpose of this study is the implementation of improved practices in the construction industry and the alignment of public policies for encouraging the construction of more sustainable social interest housing complexes.

Analysis of Water Resource Management in Mexico City.

Based on this analysis, the energy intensity of the water cycle in this city was determined, and recommendations were made to increase energy efficiency of the current system. Also, a proposal was outlined for an alternative and sustainable water management system in the Valle de Mexico, including measures to collect and benefit from rain water, increase residual water treatment and promote the preservation of permeable ground.

Proposal for More Sustainable and Resilient Urban Schemes.

The proposal is for the cities of Chihuahua and Guadalajara. These are projects that seek to establish a series of strategies for urban resilience, land use, mobility, green infrastructure, urban ecosystemic services, buildings, social development, economic competitiveness and institutional framework encompassing these sub-systems.

An Analysis of the Life Cycle of Commercial Buildings in Mexico.

The objective of this analysis is to assess cost-benefits of various efficiency solutions for commercial buildings in Mexico. The project is developed through a set of case studies. The information obtained will identify environmental and economic trends and opportunities for future commercial buildings. Thus, challenges in the compact city model will be anticipated and new opportunities will be identified to improve construction processes.

Garden of Santo Domingo's Temple, Oaxaca
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Judicial reforms implementation and security

In June 2008, a constitutional reform became effective so as to provide a foundation for the new judicial reform in Mexico, which must be completed by 2016 and aims at transforming the Mexican accusatory system into a system based on verbal trials that promotes a balanced arbitrage in the accusatory process. So as to pave the way for reform, some laws and regulations that impact directly and indirectly the practice and security of the new system, were modified. Some of those laws are: Public Security System, Code of Criminal Proceedings, state constitutions and the Law on Execution of Criminal Sanctions. If states are going to be able to bring themselves into line with the New System, they must modify and adjust their previous laws.

The purpose of this reform is multiple. Hence, Mexico is expected to receive different benefits. Among them are an institutional reorganization that allows all instances to generate quality standards, and police commanders to be certified at a professional level. The creation of scientific police, massive change in technological infrastructure and oral proceedings are also considered. For example, thanks to this change, criminals and victims that incur minor crimes may agree to resolve the problem without having to go to court, thus resolving their differences and compensating the victim for the damage. This is a significant step for Mexico as it would make room for the development of a more equitable justice system favouring the rich



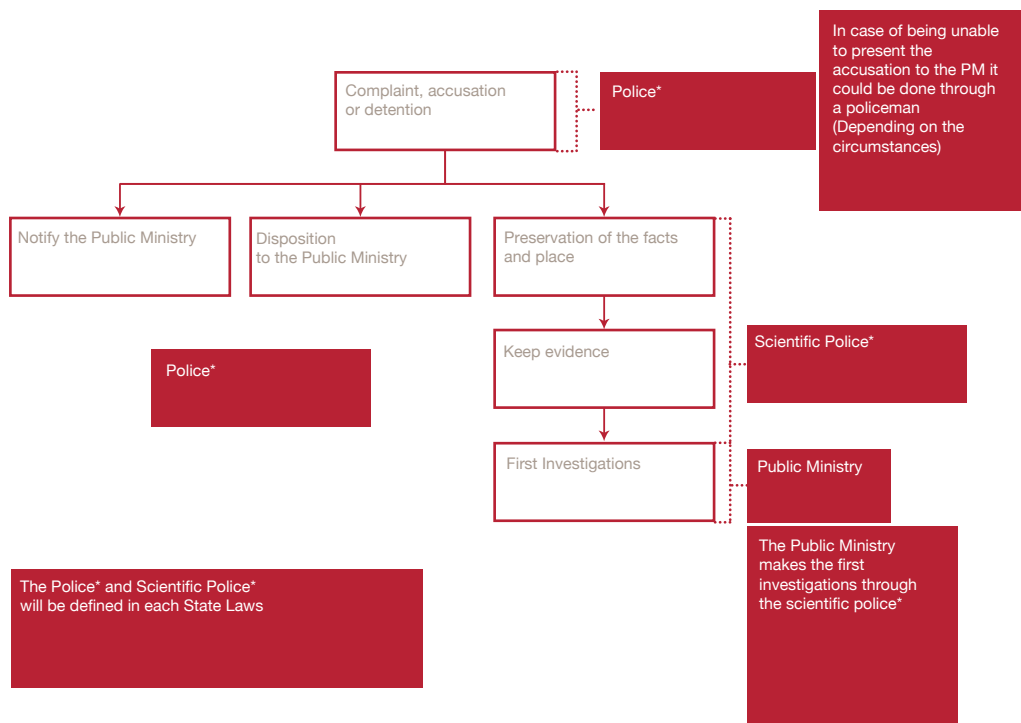
Building Alternative Justice opens the door to a higher degree of tolerance and social justice in Mexico, and it also allows to track criminals down effectively.

and the poor alike while also grounding social stability in urban Centers. Although we do not have the precise figure, there is an important number of people that spend months and even years in prison for committing robberies *out of necessity* (stealing a piece of bread, shoplifting a minor piece of merchandise) and for not having a barrister as well.

Building Alternative Justice opens the door to a higher degree of tolerance and social justice in Mexico, and it also allows to track criminals down effectively. A key element in this reform is to pursue that victims who have all the necessary information on the implications of committing a crime are able to act responsibly, going before a judge without needing to go to the Attorney General. This is a very important step since Attorney Generals are quite often unavailable and are not in charge of resolving cases. Thus, people usually

prefer not to denounce crimes and not to go to court. Offering brief trials and public oral hearings has been questioned because it has been argued that not everyone has the same capabilities to submit their cases. However, the barrister and the Attorney General may submit the case before the Judge, and hence be closer to or in contact with the judge. It is striking that in special cases the judge will have the power to suspend the trial obligating the alleged offender to perform community work or another activity instead of going to prison. If the alleged offender admits guilt, there may be shorter proceedings and an agreement on the amount of the penalty. Another important characteristic of the New System is that the judge has to explain the sentence in an open hearing, when the parties are present. The following image illustrates the process:

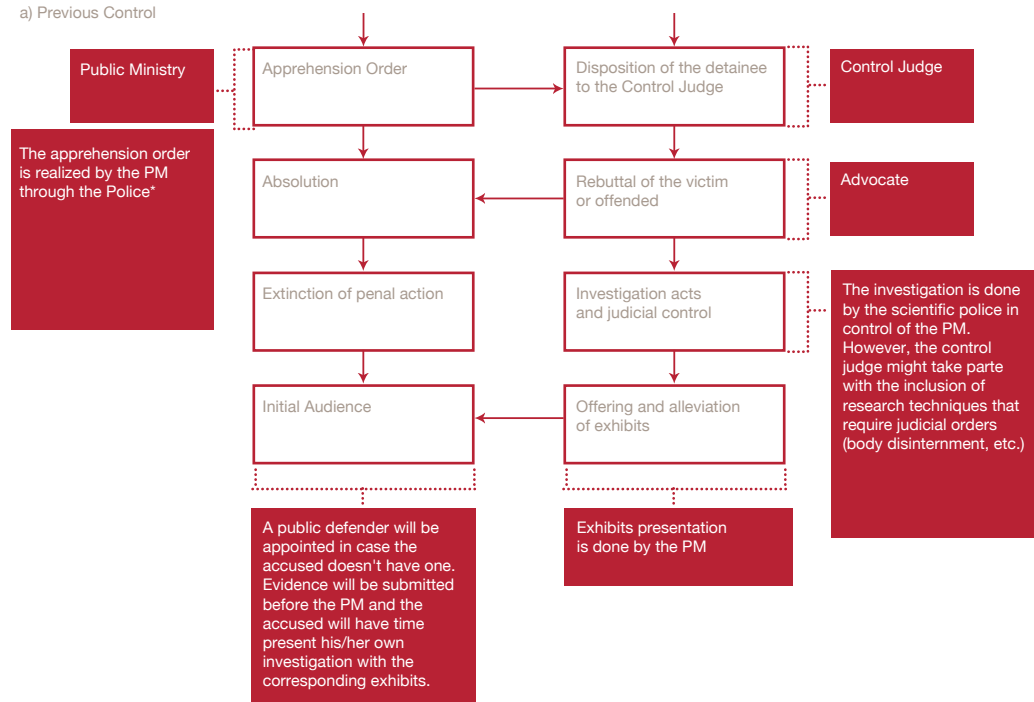
First Investigation



Town Hall, Chihuahua
 ©Banco de imágenes CPTM
 Ricardo Espinosa (REO), Photographer

Penal process

a) Previous Control



Difference from the auto formal prison, the previous control stage doesn't mean preventive prison of the detainee, although it might be ordered by the control judge.

An item worth noticing is that under the new system, the roles of police and Attorney General will be transformed, and police will be able to investigate under the guidance of the Attorney General. Creating scientific police for investigation is a great step that involves police members becoming professionals and consequently, today there is a Bachelor's Degree in Police Investigation. Another outstanding aspect is the creation of a Supervisory Judge who promptly resolves requests by the Attorney General. Thus, it is less probable that the defendant escapes or proof is lost, ensuring that the rights of victims and defendants are not violated. The Judge for the Enforcement of Sentences will be in charge of reviewing penalties so as to protect the human rights of those sentenced. The judge will decide if pre-release is granted or not, which will be according to behaviour and re-adaptation.

One of the most important features of the reform is the creation of laws to track down and punish specifically organized crime or major crimes that entail high social costs. Thus, property and money from those activities may be confiscated. The Safety and Security National System is also transformed to include Reliable Supervisory Centers to purge police forces.¹²

In order to comply with constitutional reforms, the Coordination Council was created. This Council has a Technical Secretary that is in charge of granting subsidies through projects, besides classifying and stratifying the degree of progress regarding the compliance with the Reform. In order to classify States, eight strategic assessment axes were set up to know the following:

1. If the state has started planning;
2. If it has adequate laws and regulations;
3. If institutional management and reorganization is being performed;
4. If training is provided at different levels;
5. If process diffusion and transparency is being promoted;
6. If there are available resources and the creation of infrastructure has started,
7. If information technology and equipment are available.

¹² Shirk, D.A. (2010), "Criminal Justice Reform in Mexico: An Overview", *Mexican Law Review*, 3(2): 189-227.

Barreda Solórzano, L. de la (2011), "Debate sobre el juicio oral acusatorio", *Este país*, September, 245:26.

Benavente Chorrés, H. and Pastrana Berdejo, J. D. (2011), "Seguridad pública, proceso penal acusatorio y juicio oral", *Argumentos*, 24(66): 277-313, available at: http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0187-57952011000200011&lng=pt&lng=es

Chorrés, H.B. (2012), "El juez de control como garante de la convencionalidad de las normas en el nuevo proceso penal Mexicano", *Estudios Constitucionales*, 10(1): 145-200.

Chorrés, H.B. (2010), "La prueba documentada en el nuevo sistema de justicia penal Mexicano", *Ius et Praxis*, 16(1) 197-218.

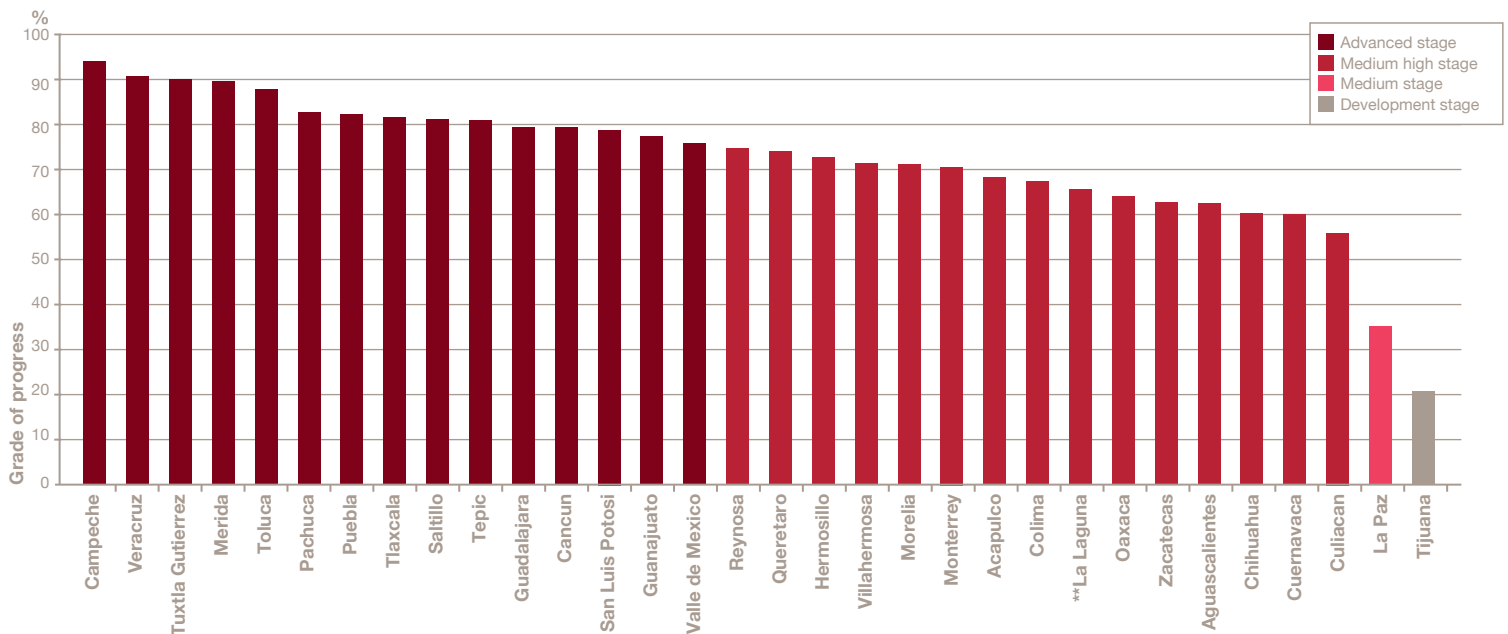
In order to comply with constitutional reforms, the Coordination Council was created. This Council has a Technical Secretary that is in charge of granting subsidies through projects, besides classifying and stratifying the degree of progress regarding the compliance with the Reform.

For all the above-mentioned reasons, the interpretation of judicial reforms requires more than any other indicator to be interpreted considering that we are facing a process where the degree of enforcement concerning laws, reforms and justice is being measured. That is to say, data obtained, as in all the other cases for 2009-2012 and according to their availability, are unable to capture the profound change that the country is experiencing in terms of democratization.

Our indicator is composed of five variables: *Percentage of Judicial Reform; Police per 100,000 Inhabitants and Criminality,*

which correspond to the states. Sentences per 100,000 Inhabitants and Robberies per 100,000 Inhabitants correspond to zonas metropolitanas. The indicator is designed to measure the degree of law, reform and institutional justice enforcement which influence citizens' perception of safety and security. The corresponding total indicator for *zonas metropolitanas* shows that fifteen zones are in an advanced stage, fifteen in a medium high stage, one in a medium stage and one in the development stage.

Judicial reforms implementation and security - Zonas Metropolitanas



*Valle de Mexico: Estado de Mexico - Distrito Federal

**La Laguna: Durango - Coahuila

Sources: Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública (2012)

The percentage of progress is the weighted sum of performance from metro areas in: Judgement per 100,000 inh., robbery per 100,000 inh.

There are 11 states in an advanced stage, i.e. with the lowest figures for criminality. Those states are as follows: Campeche, 18%; Chiapas, 12%; Colima, 20%; Guanajuato, 16%; Hidalgo, 17%; Nayarit, 8%; Nuevo Leon, 21%; Queretaro, 13%; San Luis Potosi, 17%; Veracruz, 21% and Zacatecas, 19%.

The *zonas metropolitanas* in an advanced stage are Campeche, with 94, Veracruz with 90, Tuxtla Gutierrez and Merida with 89, Toluca with 88, Pachuca and Puebla with 82, Tlaxcala and Saltillo with 81, Tepic with 80, Guadalajara and Cancun with 79, San Luis Potosi with 79, Guanajuato with 77 and Valle de Mexico with 75. These total indicator figures represent the average of sentences per 100,000 inhabitants and robberies per 100,000 inhabitants.

The *Sentences per 100,000 Inhabitants* variable shows that the highest figures correspond to Campeche and Veracruz, with 12.3 and 11.6 sentences, respectively.

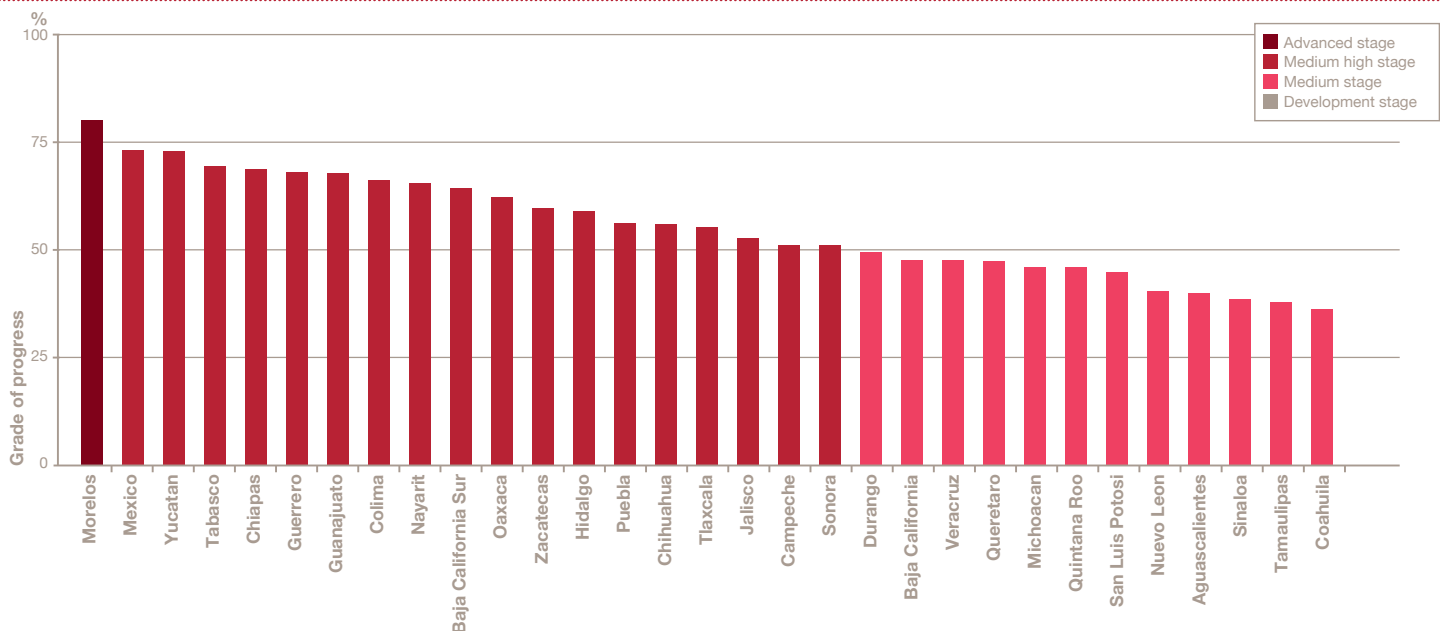
The *Robberies per 100,000 Inhabitants* variable includes common robberies: armed robbery, car theft and burglary, for each *zona metropolitana*. The ones with the lowest number of robberies per 100,000 inhabitants are Campeche with 85; Veracruz with 123, Tepic with 333, Tuxtla Gutierrez with 435, Tlaxcala, 441 and Merida with 459.

The two *zonas metropolitanas* that have the highest number of robberies are Cuernavaca and Tijuana, with 1,864 and 1,753 robberies, respectively. It is striking to find these figures in two very different cities: Tijuana is a border zone and Cuernavaca, which is in expansion, is near Mexico City.

The total indicator for each state shows that, in general, the stages are medium high and intermediate. There are no states in the development stage and one is in an advanced stage: Morelos, with a total of 80% for this indicator.

The *Percentage of Enforcement of Judicial Reforms* is the first indicator for states and, depending on their percentage, *zonas* were classified in one of the following stages: planning, initial, partial operation, recent enforcement or in operation.

Judicial reforms implementation and security - States



Sources: Secretaría Técnica para la implementación del Sistema de Justicia Penal (2012), Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública (2012), CIDAC (2011)

The percentage of progress is the weighted sum of performance from the states in: Percentage of Judicial Reform implementation, Policeman per 100,000 inh., Delictive Incidence

Under *Police per 100,000 Inhabitants*, there are three states in an advanced stage, four in a medium high stage, 12 in an medium stage and 12 in the development stage.

The states in an advanced stage are Quintana Roo with 521; Tabasco, with 481 and Baja California Sur, with 444 police officers per 100,000 inhabitants.

Criminality is the third and last variable in this indicator. There are 11 states in an advanced stage, i.e. with the lowest figures for criminality. Those states are as follows: Campeche, 18%; Chiapas, 12%; Colima, 20%; Guanajuato, 16%; Hidalgo, 17%; Nayarit, 8%; Nuevo Leon, 21%; Queretaro, 13%; San Luis Potosi, 17%; Veracruz, 21% and Zacatecas, 19%. The next states are those in a medium high stage: Aguascalientes, 24%; Baja California Sur, 28%; Coahuila, 33%; Jalisco, 28%; Michoacan, 30%; Morelos, 28%; Oaxaca, 35%; Puebla, 26%; Sonora, 36%; Tabasco, 24%; Tamaulipas, 29%; Tlaxcala and Yucatan, with 25% each.

There are four states in an medium stage: Durango, 39%; Guerrero, 44%; the State of Mexico, 47% and Quintana Roo, 48%.

Last, there are three states in the development stage, with the highest criminality rates: Baja California, 65%, Chihuahua, 63% and Sinaloa, with 59%. These percentages show that the highest criminality rates concentrate in the northeast and north, which are regions in which decisive action must be taken through judicial, penal, safety and security reforms to offset such trends.



Legislative Palace, Aguascalientes
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Mario Álvarez Ledesma

The relevance of implementing a judicial reform in Mexico

Álvarez Ledesma graduated from the Universidad Anáhuac (Anahuac University, a private university in Mexico City) and holds a PhD from the Facultad de Derecho de la Universidad Complutense de Madrid (Law Faculty of the Complutense University of Madrid). He has been Assistant Attorney for Human Rights, Attention to Victims and Community Services of the Attorney General of the Republic; Director General of Protection of Human Rights at the Attorney General of the Republic from December 2000 to July 2003. At present he is Director of Juridical and Social Sciences at the Instituto Tecnológico y de Estudios Superiores de Monterrey (Technological and Graduate Studies Institute of Monterrey) Mexico City campus.



PwC: Why is it important for Mexico to implement a security and penal reform?

M: We have major challenges regarding security and law enforcement because unfortunately Mexico has very high levels of impunity. Studies performed in the last ten years show that the “unrecorded” crime rate is, approximately, 85%. This means that out of every 100 crimes, 85 are not attended to by the authorities or are not denounced by citizens. The authorities only attend to 15% of the crimes, more or less successfully. Only one percent of such criminal cases are taken to court and sentenced –whether the verdict is of guilty or not. We are facing an issue that cannot be avoided because impunity has negative effects, hence it must be addressed. One way of addressing impunity is not only through reforms to the law but doing it integrally and multi-dimensionally using a specific methodology.

There are two reasons for carrying out a reform in security and justice: the first one has to do with the urgency of the problem, and the second to offer an answer to the following question: How do we want Mexican society to work in the years to come?

The second reason for intervening responds to prospective and future considerations: a reform is necessary because Mexico is a country that demands peace; people need peace for their development; conditions must be favourable for attracting investment.

Hence, there are two reasons for carrying out a reform in security and justice: the first one has to do with the urgency of the problem, and the second to offer an answer to the following question: How do we want Mexican society to work in the years to come?

PwC: What have Mexico's achievements been in security?

M: Mexico's greatest success has been the implementation of a Penal Constitutional Reform in 2008, and thus we are seeking to change our penal justice system, going from a 19th century inquisitorial system to a proposed modern institutional reform that implies oral proceedings, offers early resolutions of penal proceedings and a series of parallel paths in alternative matters.

The other important element is that one may say that there is some kind of basic consensus on the need to implement this penal and security reform. Expectations are that in fifteen, twenty years, maybe –twenty five at the most– Mexico will have been able to move from one system to a different one, and overcome

difficulties in its implementation process, obtaining important benefits.

PwC: What benefits can be mentioned?

M: First, a substantial reduction in impunity; second, modern justice, i.e. democratic and easily accessed. This would be justice that would provide people with certainty and transparency, allowing public access to the Internet so people may see what is happening in court or attend hearings.

PwC: Why is it that citizenship must participate in the implementation of the reform?

M: The implementation of a justice system –or in general, of security– requires a multi-factorial and multidimensional approach. It would be a mistake to think that reality will automatically change by changing the Constitution or the law. It does not work like that. You must modify other elements. For instance you must generate development, encourage access to social well-being and you must have a state that is concerned about people.

So I would say that legal reforms must be made with citizens, together with them, not at their back. Sometimes some people think that modifying the security system, penal issues, prisons, are not their concern. They say, “No, I will never be involved in criminal acts.” However, even a

car accident involving injuries may end up in court. Therefore, it is necessary for people to perceive legal reforms and changes in pursuit of justice and security as part of an effort performed not only by the government, but by citizens as well. This is crucial, and one of the most effective ways of doing it is that all justice programs involve the general public, that allow them to perceive the importance of such programs and the impact on their daily lives.

Another issue to be mentioned is that citizens need to be involved and do not feel that you are imposing results on them. I remember that when in the Tecnológico de Monterrey we embarked on the task of creating a methodology for the implementation of a new penal justice system in Mexico and we started performing studies, business people from Chihuahua invited me and told me, “Doctor, what is the matter? This new system has been implemented in Chihuahua, but we have not seen any changes, we have seen very few trials.” Then I realized that in a juridical and legal sense the reform had been successful and positive, but we had not been able to communicate it to the people. In other words, people did not know what the reform was about, what they could expect, what benefits there would be in their daily lives.

PwC: Since this a study on cities, could you mention *zonas metropolitanas* where we may see if not a thorough reform, progress in its implementation?

M: My answer might seem contradictory because when we discuss a city in particular, some people who read this interview might say, “Well, how is it that you are referring to a certain city as an example of success when in the newspapers we read that there is a lot of violence, precisely in that location?” However, I would say that a state like Nuevo Leon made a substantial change regarding law enforcement because it has a very good system of alternative justice that was able to assemble in the local Attorney General all the institutions that would have to deal with criminality regardless of who is involved, whether it is a child, wife, husband, concerning health or any other concern. That is to say, law enforcement Centers were created for people to resort to and so they do not have to go to ten or twenty windows. I consider this was achieved quite successfully by Governor Natividad Gonzalez Paras and has been continued by Rodrigo Medina.

However, in cities like Monterrey there is another problem, and it is the presence of organized crime. Law enforcement has made progress; that state offers access to e-government, so that different procedures can be performed via the Internet. For example, if

A state like Nuevo Leon made a substantial change regarding law enforcement because it has a very good system of alternative justice that was able to assemble in the local Attorney General all the institutions that would have to deal with criminality.

unfortunately your car is stolen or your mobile phone, you can denounce it via an electronic page and pick up the document or have it stamped and start with the corresponding procedure with your insurance agent. Unfortunately organized crime causes insecurity and people do not realize changes that seem minor.

Another city that can be mentioned is Mexico City because it has made progress regarding security and e-government. The Federal District Attorney General's Office has a good e-page that allows you to solve this type of issue. Further, the feeling of safety, the perception that this is a safe city has increased among its residents and among those who come from other country cities or from abroad. There are other states, like Oaxaca, that were the first ones to implement criminal justice. Oaxaca was able to do it with very few resources and a lot of imagination. Other examples of states that are doing well are Baja California, where a serious program for the implementation of the new penal justice system has been carried out. Zacatecas, with a new governor and a team of young jurists is correcting the penal justice system that had been implemented during the previous administration in a very precipitated manner.

PwC: May we say that the implementation of the reform requires a change in mentalities, a generational change?

M. Yes; absolutely and definitely. It is almost impossible to go ahead with these types of changes in such short periods of time if they are not accompanied by a transformation in the mentality of the actors in the system. Further, these transformations are not attractive politically due to the huge investment they require and the difficulty of seeing concrete results in the short run. It has been said that a good politician, a real politician is not one who thinks about the next elections, but about the next generation, and these are generational changes that take a long time to implement, but are going to generate successful events, undoubtedly. I would say we are making progress, but so as to make a total justice and security transformation we need two very important factors: one, being aware of the substantial investment required (and I did not say expenditure, I said investment), and second, involvement of the best people in the country.

PwC: Can you tell us about the challenges in implementing such a reform? As you have already mentioned, there is a transformation within government, citizen involvement, but challenges persist.

M: Your approach is very appropriate because I do not see a problem here; I see a great challenge and there is substantial difference between discussing challenges and discussing problems. If you address something as a problem, your attitude will certainly be different to addressing it as a challenge. For Mexico, the first great challenge is financial. Perhaps one of the problems faced by the reform is that not enough resources have flowed, not that they are non-existent. The strange thing is that such resources do exist but there was not an adequate planning of their gradual flow into the states and the federation, agreeing to make a timely planning of changes in the systems as regards justice and the practice of law.

The other element is strictly methodological. Discussing law enforcement or criminal law reforms does not mean that we must have an exclusively legal approach. This is a serious mistake. It is a topic that moves in different dimensions or several axes: it is a financial problem, or an information systems problem or rather a communication challenge, a juridical challenge, a human change regarding the transformation of mentalities.

If the approach is not holistic, there will be problems because the states that have been successful have had the best specialists possible: jurists, excellent trainers in judicial matters, renowned experts in prison systems. Likewise, groups of good economists, financiers, planners, experts in communication systems, psychologists, social workers, all of whom have created a system that is moving shoulder to shoulder.

And the last factor—which I believe is a key element—is having political will: the authorities must be decisive, i.e. governors, the President of the Republic or the Mexico City Mayor, in heading the change that without their leadership makes it almost impossible to overcome resistance that all changes imply. We must not forget that any change involves circumstances and situations that are advantageous for the majority, although they are “negative” for some groups. You must break with inertia and defeat those interest groups, and to do so you need political will.

PwC: So then, is security changing in Mexico?

M: Sometimes being aware of the good things is not easy. I think that part of the difficulties in changing penal justice lies in thinking that changing it will automatically impact crime levels. But that is not so. You change a law enforcement system so as to have better law enforcement to avoid impunity, to have transparency and accountability, to have such a system offers citizenship more trust and guarantees to denounce their case before the authorities to submit their cases, but this does not necessarily resolve crime. You may have a very good justice system and have a high crime rate.

If you promote changes in the criminal justice or security systems as if they would necessarily yield a reduction in criminality, you are promoting a fallacy. Criminality responds to other stimuli, other problems evidently linked to impunity, though, because if a criminal knows that the chances are that you will not have to go to prison, he will probable continue committing crimes. Evidently, not incarcerating criminals encourages criminality, but it is not the only or main reason to commit them. Crime has a complex and multi-factor nature.

PwC: What can be done in this regard?

M: This is a question that has several answers. From my point of view, and under no circumstances claiming that it is the right answer or the only answer. When analyzing, it is evident why some states in the world have higher crime rates than others, you will find some common factors. In countries where economic development and education levels are higher, criminality is lower, which is a fact that has been perfectly well demonstrated. When there is substantial economic development and people have access to education, it is possible to develop a civic, legality culture which reduces crime rates. Canada, Denmark, Sweden, Switzerland and Finland are some concrete examples.

PwC: Can Mexican cities be considered as spaces of opportunity for the performance of this judicial, law enforcement, security reform?

M: It seems to me that there is a clear economic and social strategy by different governments that has been concerned with facilitating business, and the social environment surrounding them. I refer to the creation of societies and cities based on knowledge. This strategy has the purpose of going, simply put, from manufacture to mind-facture, one of whose most evident outcomes is the creation of patents.

Ideas sell and knowledge is the most valuable asset. Hence it is what can be sold with the highest productivity index. Societies must gradually move in that direction and gradually create spaces of knowledge and products based on such knowledge. This is already happening in Monterrey (Nuevo Leon) and soon, if things go well, in Cuernavaca (Morelos), where there are many research centers. Michoacan is about to announce a program for turning Morelia into an important cultural and knowledge city. I know that in La Laguna there is a very important project including the states where that city is located.

PwC: What is new, a novelty in Mexican cities?

M: Nowadays there are citizens with organizational skills who are aware of their rights and obligations in cities. This sounds very easy but there is nothing more complicated than constituting citizens that are able to exercise their rights and comply with their duties. Moreover, you can have citizens that are aware of their rights and obligations but very individualistic and incapable of organizing themselves. I think that when citizens organize themselves they multiply their capabilities exponentially and hence their probabilities to succeed. Thus I think that one of the relatively novel aspects in Mexican societies, in some cities in particular, is that citizens have increased their organizational abilities substantially. For example, you see a very important

Thus I think that one of the relatively novel aspects in Mexican societies, in some cities in particular, is that citizens have increased their organizational abilities substantially.

Mexico can become a developed country if in the first 25 years of the 21st century it changes mentality and structures adequately.

organizational level in cities like Tijuana, Mexicali, Mexico City, among others.

When citizens organize themselves they become incredibly powerful, even more so if their objective is to be constructive. Today there are organized citizens who are willing to present their doubts, complaints, criticisms and concerns in a respectful but above all intelligent, constructive way to the authorities. The discourse and attitude change. It surpasses confrontation, going from a Hey, authorities, you must do this and you are not! to Why don't you explore this way? Why don't you look at this other possibility? Why don't you try to see the problem from our angle of from an outsider's angle?

When I say respectfully, I am fully aware and do not mean subordination. Respect for the authorities is very important because they are acknowledged for their influence and responsibility. Discrediting the authorities damages citizenship because it diminishes their moral authority and legal action. Modern citizens must also make an effort to develop reliable authorities.

PwC: What might the private and public sector learn about how to improve their collaboration in implementing a judicial and penal reform?

M: First, if we take this matter seriously, we will be able to envision reforms to penal and security systems as a state reform and not only as a reform to certain services offered by the government. The approach is substantially different. Second, private initiative and governmental authorities must realize they are both involved, although in different ways, in these reforms. Having good public ministries, good judges and trusting in attorney generals in court is important for everyone. Even beyond mere law enforcement; it would create a different social environment, prone to a better life style. When you have justice and security systems that work, social violence indices decrease because issues are not dealt with privately, nor fighting, nor shooting each other; the new scenario where social violence is channelled are courts; disputes and controversies are dealt with according to law and not with gun in hand.

And an additional element I consider as a key element in both public and private sectors is the ability to enter into a

dialogue, listening to each other respectfully. It seems to me that a permanent discrediting attitude by citizenship towards the authorities and vice-versa is absolutely destructive. A democratic dialogue implies a respectful dialogue, realizing that the other party may somehow be right. If we ask ourselves why absolute monarchies, authoritarian or autocratic systems are so questionable, the reason is very simple: they are based on the erroneous idea of possessing a monopoly over truth, which creates intolerant behaviour and the impossibility of a dialogue which you can believe and grow and build together with your counterpart.

PwC: So then we see progress, also a need to work, and in this effort, organizational abilities within cities may be an outstanding factor. Are there outstanding cities?

M: Yes. I would say that there are cities with a well-organized civil society that are particularly critical but with positive attitudes, for instance Guadalajara and Monterrey. Aguascalientes is a city that has always surprised me quite favourably since when I have visited I have seen many groups operating on many different topics, being quite active and purposeful, for example. Queretaro has started to make progress in this regard.

PwC: Is consistent discussion of the topic of judicial and criminal justice reform going to help Mexico in furthering its international projection?

M: Yes, definitely. If you study competitiveness indices that are being handled not only by OECD but by the World Bank as well, it is easy to identify that one of the criteria or one of the key indices for determining a country's position in terms of international competitiveness is what is called Rule of Law, which implies justice, security in general and judicial security in particular. This indicator then accounts for the levels of effectiveness of law enforcement and justice in a country. If Mexico were able to have a decisive impact on this indicator, it would undoubtedly be able to improve its competitive standing.

Mexico's economy is eleventh in the world, and we sometimes forget that. Being economy number eleven is quite important, but we do not hold that position regarding the ability to generate business, and we still have third-world red tape, just as our fiscal system. In addition we have a very incipient Rule of Law. In other words, the size of our economy is not in harmony with our public and social institutions. We are potentially rich but organically poor.

Mexico can become a developed country if in the first 25 years of the 21st century it changes mentality and structures adequately. Otherwise, it will continue having the same problems it has had since the 16th century. For all the above I think that it is perfectly possible to catapult Mexico as a prosperous nation, offering conditions to realize the ideal that humanity has and will continue pursuing: happiness.

Mexico is also known for hosting international events, such as the Festival Internacional Cervantino, where the best and most innovative artists of different fields perform.

Cultural and recreational activities

Mexican cities are real treasures in terms of their cultural heritage. This means that in various parts of the country there are remarkable archaeological sites, such as Palenque, Teotihuacan and Chichen-Itza, which co-exist together with urban growth and development. As anthropologist Lourdes Arizpe comments,

Today, in Mexico 364 Mesoamerican language variations are still spoken. There are also a few other ethnic groups which include people of African origin on the coast. Not many speak Galician, Andalucian, Basque and Valencian. In some coastal areas there are people of African origin who speak Bantu and Wolof and Mandinga, and are the third ethnic group that settled in Mexico. Since the 19th century, other European, Lebanese and Chinese immigrants, among others, have arrived in Mexico.

So it is not surprising that such diversity has marked Mexican history. Mexicans are known for their great hospitality and generosity, which has equally taken in invaders, expatriates and exiles. And it should be remembered that Mexican music, its people, its vibrant colors and its exciting cuisine made it attractive to a variety of immigrants who, in turn have been assimilated into the cultural mix of Mexico today. This was possible because throughout the 20th century the creation of new cultures and artistic currents, handcrafts and intangible cultural heritage was encouraged. Such creativity did not necessarily come from the State, but it did establish a national development project, defended and sponsored it, allowing Mexicans the freedom to make it flourish.



Juárez Theater, Guanajuato
©Banco de imágenes CPTM / Ricardo Espinosa (REO), Photographer

In the area of culture, Mexico is also known for hosting international events, such as the Festival Internacional Cervantino, where the best and most innovative artists of different fields perform. In this context, our measurements indicate recreation and entertainment, including cultural activities and sports available in states and *zonas metropolitanas*.

The importance of this indicator is that it can measure the degree of satisfaction of the inhabitants and those visiting the cities and *zonas metropolitanas* on business. Leisure, recreation and culture are recognized as worldwide educational and personality integrators, which together with the time spent in managing these experiences present a renewed importance for these activities.

This indicator is composed of six variables in a *zona metropolitana*: leisure facilities, green areas, golf courses, national and international tourism and sports Centers. Museums, hotel rooms, theatres and cultural Centers were considered in evaluating the states.

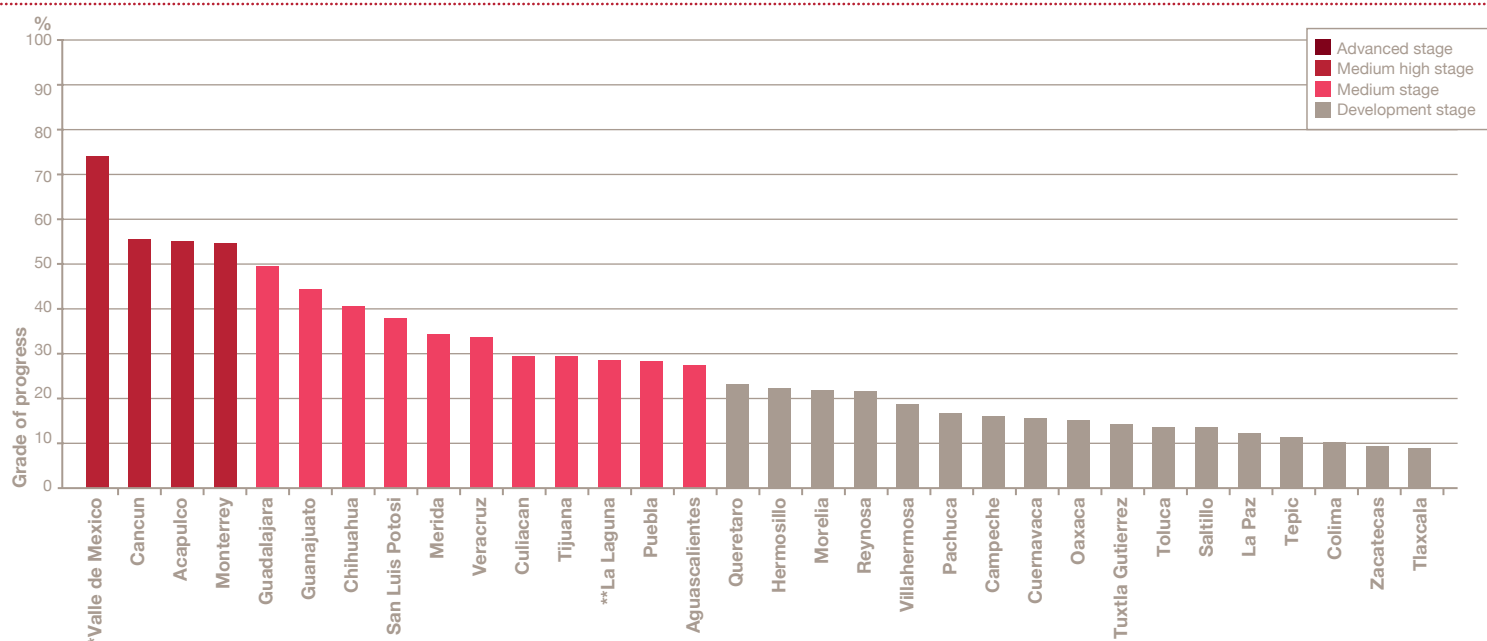
In the *zonas metropolitanas*, four zones are in a medium high stage, 11 in an medium stage and 17 in the development stage. Unfortunately, Mexico does not have even one advanced stage in a *zona metropolitana*. How should such data be interpreted?

First, there has been a growing understanding as to the importance of these activities, which traditionally have been mainly concentrated in the Federal District, known to Mexicans as “the capital”. However, today we find that local attractions are found in other regions. This is particularly evident in two seaside resorts, Acapulco and Cancun. Both cities show 55% progress, and host local and foreign tourism. The state has not yet considered the development of recreational and cultural activities a priority, which is why these activities are concentrated only in these two cities.

It may be argued that in the cases of the Valle de Mexico and Monterrey, which are in a medium high stage and whose progress scores 73% and 54% respectively, a similar pattern is found, since they are located in states that make no substantial investment in this area. However, these are emerging metropolises that are trying to combine economic development with cultural and leisure activities, since they are urban Centers whose name has traditionally been associated with economic growth but not with cultural or tourism development.

There are *zonas metropolitanas* with important local tourist activity, including art festivals, handicrafts fares and a number of parks used for different sports. Aguascalientes, Chihuahua, Culiacan, Guadalajara, Guanajuato, La Laguna, Merida, Puebla, San Luis Potosi, Tijuana and Veracruz are in this category.

Recreational and cultural activities - Zonas metropolitanas



*Valle de Mexico: Estado de Mexico - Distrito Federal
 **La Laguna: Durango - Coahuila

Sources: CONACULTA (2012), INEGI (2010), Secretaría de Turismo (2011)

The percentage of progress is the weighted sum of performance from metro areas in: Number of museums, Hotel rooms, Number of theatres, Number of cultural centres.

In Mexico there are a number of well-known tourist destinations that would greatly benefit if they were to consolidate their cultural, sports, recreational and leisure activities.

Finally, there are a number of well-known tourist destinations that would greatly benefit if they were to consolidate their cultural, sports, recreational and leisure activities. These are *zonas metropolitanas* in the development stage and include Campeche, with 16%; Colima, 10%; Cuernavaca, 16%; Hermosillo, 22%; La Paz, 12%; Morelia, 22%; Oaxaca, 15%; Pachuca, 16%; Queretaro, 23%; Reynosa, 21%; Saltillo, 13%; Tepic, 11%; Tlaxcala, 9%; Toluca, 14%; Tuxtla Gutierrez, 14%; Villahermosa, 19% and Zacatecas, with 19% of total progress.

The *Recreational and Cultural Activities* indicator includes diverse variables that are worth analysing. For example, the unit of measurement for *Leisure Facilities*, is the number of available leisure sites per *zona metropolitana*. Under this variable there are four *zonas metropolitanas* in an advanced

stage. The first one is Acapulco, with 5,864 available sites; next come Merida, with 6,242, followed by Monterrey, with 3,712, and last Veracruz, with 2,403 sites. These results are worth noticing because Merida, Veracruz and Acapulco are consolidated tourist destinations that have been intensely promoted. However, they also reflect the considerable effort that these traditionally industrial *zonas metropolitanas* have carried out to become recreational Centers. Hence, the results illustrate a shift to the services industry as a source of income.

Green Areas as a Percentage of Urban Areas is the second variable in the indicator, and is measured in square kilometres. Under this variable we find other consolidation possibilities in cities that have not been mentioned as tourist destinations or in the first brackets of the indicator. The zones in



an advanced stage are Hermosillo, with 102; La Laguna, 266 and San Luis Potosi, with 130 km². Chihuahua, with 84 km² is the only *zona metropolitana* in a medium high stage. The two zones in an medium stage are Campeche, with 47 km² and Villahermosa, with 54 km². The idea of sustainability and green areas as central to urban development is relatively new. Some *zonas metropolitanas* have not necessarily put this concept in practice as effectively as would be required, and this explains why they are in the development stage under this variable but in an advanced stage regarding other components.

Under the variable Golf Courses there are five *zonas metropolitanas* in an advanced stage: Cancun, Guadalajara, Guanajuato and Monterey, with 9 golf courses each; Valle de Mexico has 14. Queretaro, with 7 golf courses is in a medium high stage.

The *National Tourists* variable refers to tourists lodged in *zonas metropolitanas*. Seven zones are in an advanced stage, two in a medium high stage, eight in an medium stage and fifteen in the development stage.

The *zonas* in an advanced stage are Acapulco, with 4'756,745 national tourists; Cancun, 1'834,731; Guadalajara, 2'283,328; Guanajuato, 2'028,721 and Valle de Mexico, with 9'244,133 national tourists. The difference between prices, safety and security show that cities such as Acapulco are in an advanced stage as far as attracting national tourists is concerned, but regarding international tourism they are still in the development stage. If they are to be world-class tourist Centers, they need to make progress in several different directions. For example, cities such as Campeche and Cancun, both international tourist attractions, show different strategies; while Campeche is considered to be in an advanced stage for national tourism, there is room for improvement in national tourism in Cancun.

The *zonas* in a medium high stage are Monterrey, with 1'264,048 and Puebla, with 1'348,070 national tourists.

The *zonas metropolitanas* in an medium stage are Chihuahua, with 755,024; Merida, 802,977; Morelia, 795,092; Oaxaca, 827,418; Queretaro, 881,646; San Luis Potosi, 794,398; Tijuana, 649,402 and Tuxtla Gutierrez, with 642,538 national tourists.

The *zonas metropolitanas* that received fewer national tourists in 2010 are as follows: Aguascalientes, with 440,701; Campeche, 208,816; Colima, 123,728; Cuernavaca, 526,212; Culiacan, 406,957; Hermosillo, 407,585; La Paz, 48,955; La Laguna, 190,378; Pachuca, 267,351; Saltillo, 197,598; Tepic, 322,780; Tlaxcala, 202,489; Toluca, 422,083; Villahermosa, 455,405 and Zacatecas, with 467,638 national tourists in 2010. Some cases, such as Aguascalientes, Campeche, Colima, Cuernavaca, Hermosillo, Villahermosa, Zacatecas, Tepic and La Paz are regional and local tourist Centers, even this has decreased recently. Is it due to higher transport prices? Has there been a greater inflow of international tourism? Was it because Mexicans decided not to travel or rather could they not afford to go away on vacation?

Under the variable *International Tourists* there are three *zonas metropolitanas* in an advanced stage, one in a medium high stage, two in an medium stage and 26 in the development stage. It refers to tourists whose place of origin is outside Mexico. Figures are for 2010.

The first located at an advanced stage are: Cancun, with 2'365,398; Chihuahua, 755,024 and Valle de Mexico, with 1'830,557 international tourists in 2010.

Tijuana is in the medium high stage, with 452,881 international tourists in 2010. Guadalajara and Monterrey are in an medium stage with 228,924 and 207,788 international tourists, respectively.

The *Sports Centers* variable shows the number of places for sports activities.

Mexicans have always been fond of sports, especially the precolumbian Mesoamerican ball game called *ullamalitzli*, in which “two squads vied to drive a ball through hoops on the opposite ends of a field, never allowing it to touch the ground. Players could hit it only with their hips, chests and thighs with so much dexterity it was marvellous to see, sometimes throwing themselves completely on the ground to return the ball, and all of this done with great speed”¹³, reported Andrea Navagero, the Venetian ambassador to Spain in 1526. After years of training it was encouraging to see Mexicans win the gold medal in soccer during the 2012 London Olympics.

Data is not available for the two *zonas metropolitanas* of Acapulco and Culiacan in the Statistics Annual of each State –Instituto Nacional de Estadística y Geografía (National Statistics and Geography Institute National Statistics and Geography Institute). Valle de Mexico is the only *zona metropolitana* that is in an advanced stage, with 1,485 sites where sports activities are available. Aguascalientes, with 1,033 and Guanajuato, with 1,046 sites are in a medium high stage. Cancun and San Luis Potosi are in an medium stage with 412 and 467 sites, respectively.



Bacalar, Quintana Roo
©Berta Rendón

¹³ Mann, Charles C., 2011; “1493”, New York: Random House, p. 241.

Fortunately, Mexico is still a country with a proud cultural contribution. Jalisco is considered to be in the advanced stage.

Given that we wished to know the development in cultural and sports activities per state, their progress was assessed. In the national indicators greater importance was given to variables that measured the commitment to cultural development, as well as the number of people taking advantage of these facilities. Hence, museums, theatres, cultural Centers and hotel rooms are included in the survey. While designing the indicator, we were reminded of the powerful voice of Mario Vargas Llosa who expressed in his book “La civilización del espectáculo” (*The Civilization of Show Business*) that we should avoid reducing culture to entertainment and amusement as the sole purpose of any cultural pursuit. Vargas Llosa suggests that even though certain sectors of the population may be included in what previously was considered an elite monopoly, it should always be uplifting and liberating to each individual. However, a civilization involved in show business alone suggests confusion and a prevalence of trivial artistic production to such a degree that it is indistinguishable from true culture and merely becomes banal.

Fortunately, Mexico is still a country with a proud cultural contribution. Jalisco is considered to be in the advanced stage, with 83%. There are six states in a medium high stage, 12 in a medium stage and 12 in the development stage.



Streets of Mazamitla, Jalisco
©Banco de imágenes CPTM / Ricardo Espinosa (REO), Photographer

The *Museums* variable includes two states in an advanced stage, one in a medium high stage, 13 in an medium stage and 15 in the development stage.

The states that are in an advanced stage are Jalisco, with 104 museums and the State of Mexico, with 83 museums. Puebla is in a medium high stage, with 63 museums.

Hotel Rooms is the variable that refers to the total number of hotel rooms registered in the Secretary of Tourism in each state in 2010. It is not surprising to find Quintana Roo, where Cancun is located, at the head of the list in an advanced stage with 82,983 hotel rooms. Jalisco comes second, in the medium high stage, with 60,094 rooms. Guerrero is also in the medium high stage, with 28,239 rooms. There are four states in an medium stage: Nayarit, with 27,285 rooms; Oaxaca, 24,151 rooms and Veracruz, with 37,745 hotel rooms and there are 25 states in the development stage.

It is clear that Jalisco has developed recreational and cultural activities since it combines industrial and tourist development to consolidate its economic position. This makes it an example for other states since

it has had a positive impact on national and international tourism. This has also been the case in Valle de Mexico and Estado de Mexico.

The proximity of Mexico City to Valle de Mexico probably accounts for its low number of hotel rooms and theatres.

Under *Theatres*, there are three states in an advanced stage; eight in a medium high stage; ten in an medium stage and ten states are still in the development stage.

The states that are in an advanced stage are Nuevo Leon, with 32 theatres, San Luis Potosi, with 25 and Veracruz, with 26 theatres.

The following states are in a medium high stage: Baja California, with 19; Coahuila, 20; Guanajuato, 21; Guerrero and Jalisco, with 23 each; Michoacan, 22; Sonora, 18 and Tamaulipas, with 23 theatres.

The last variable is *Cultural Centers* and refers to the total number of Centers in each state, according to the Cultural Information System of CONACULTA (*National Council of Arts and Culture*).

There are three states in an advanced stage, two in a medium high stage, eight in an medium stage and 18 in the development stage. The State of Mexico, with 154 cultural centers, Jalisco, with 150 and Puebla, with 129 are in an advanced stage; in a medium high stage are San Luis Potosi, with 90 cultural Centers and Chiapas, with 86.

In an medium stage are the states of Michoacan with 85; Veracruz, 78; Yucatan, 59; Guanajuato and Sonora, 56; Zacatecas, 55; Nuevo Leon, 50 and Oaxaca with 49 Centers.

It can be seen that the total number of indicators and variables are to be found in the development stage for most states and *zonas metropolitanas*. Therefore it is evident that most states need to emphasize recreational and cultural aspects and to make greater efforts in their *zonas metropolitanas*.

Recreational and cultural activities - States



Sources: INEGI (2010), Golf Magazine (2012), Secretaría de Turismo (2011)

The percentage of progress is the weighted sum of performance from States in: Leisure activities, Green areas as percentage of urban areas, Golf camps, International Tourists, Sport Centres.

There are places... even in remote villages of Oaxaca or Veracruz, where there is an extraordinary musical tradition. For example, there is the area of the Huasteca which is a zone of 'huapangos'.

Carlos Miguel Prieto

Music as a Mexican Ambassador

Carlos Miguel Prieto is a graduate from the University of Princeton and received a Masters from Harvard. At present he is the Conductor of the National Symphony Orchestra but has also worked with guest artists such as Lang-Lang, Yo-Yo Ma, Isaac Perlman, Plácido Domingo and Joshua Bell. He is often invited as the guest conductor in orchestras around the world and was recently invited to Carnegie Hall in New York and the Teatro Colon in Buenos Aires.



PwC: How is classical music financed in Mexico?

C: It is important to understand that in Mexico City and in our country in general, orchestras are financed either by the Federal government, by the local government – either city or state – or by universities. It is a privilege to have orchestras and musical events financed by the State. I have always said that one should take advantage of such a situation and appreciate it.

PwC: Could you identify the particular moment in which music and urban space forged a relationship.

C: Generally speaking, the offer of classical music in Mexico City coincided with moments of world conflict. For example, while Europe was immersed in the Second World with all its social and economic difficulties, it left little time for expressions of classical music. Therefore, cities such as Buenos Aires, Sao Paulo, Rio de Janeiro and a few American cities benefitted greatly from visiting soloists such as Anton Rubenstein or Jascha Heifetz, or renowned conductors and great composers who came for seasons. This fomented interest in classical music and opera in these cities. However, the National Symphony was founded prior to this in Mexico by Carlos Chavez in 1928

PwC: What other Mexican cities provide a similar offer of classical music?

C: I would say that after Mexico City, Jalapa would be the next most important city in this area because of the student interest in its orchestra. We should also consider Toluca, Monterrey and Guadalajara. There is also an orchestra in Merida that is gaining fame in recent years, besides those of Culiacan, Aguascalientes, Chihuahua and San Luis Potosi. However, these latter orchestras have had to really fight to survive.

PwC: So, would you say that there is a relationship to the urban environment for musical composition?

C: There is a relationship to music supply, but also to a musical tradition. The point is, that it is difficult to define exactly what is classical music; I would be the first person not to be definitive about it. So, if I were to say that Guadalajara is not a musical city, I would be ignoring the fact that Guadalajara is the capital of Mariachi music and mariachi music is as valid as any other kind of music. One also has to remember that every region of the country has its different popular musical traditions which are extremely important and demonstrate who and where we come from, - that is to say, that the origin of Mexican classical music lies in its popular music

There are places... even in remote villages of Oaxaca or Veracruz, where there is an extraordinary musical tradition. For example, there is the area of the Huasteca

which is a zone of 'huapangos'. What happens is that these areas are not considered to be places where classical music is composed or performed. Nevertheless, it is these places that have inspired great composers to produce highly relevant music in urban spaces, as a reaction to European music. Musicians such as Manuel M. Ponce, Pablo Moncayo, Carlos Chavez, Silvestre Revueltas who although receiving much of their training abroad, were essentially residents of Mexico City.

PwC: Do you think other orchestras might be developed in cities such as Oaxaca?

C: It would make a lot of sense in a place like Oaxaca that the government and private enterprise should come to an agreement to finance a fantastic orchestra using local and outside talent, with a clear social cultural objective. Besides, one has to say that classical music has a huge impact on young people and on the quality of education for youth.

PwC: Do you believe there is a connection between social development and music?

C: Certainly, and I would even say that it has an economic impact and above all on the quality of life. Not going much further, there are interesting examples of Latin American cities where the steps taken to support classical music have resulted in social improvements such as safety, and have attracted new businesses. An extremely interesting case is in Medellín, Colombia, where areas formerly dominated by drug dealing now show a wonderfully productive drive for classical music which has been an axis for social development.

PwC: How would you envisage an idea of the future from the music composed or performed in Mexican cities?

C: You are asking the person who most firmly believes in the power of classical music played by orchestras or groups of people, as an incredibly powerful form of communicating harmony and beauty. From a child's point of view - and I have just finished a series of concerts for young people and children in the Nezahualcoyotl Concert Hall with the Minería Symphony orchestra that was tremendously successful – he receives an amazing combination of teaching and fun in a concert, if it is well organized. But at the same time he is receiving very powerful messages from the hundred people around him searching for beauty, searching for an unachievable perfection of a human group in search of harmony and constant improvement.

PwC: What can an orchestra communicate to boys and girls?

C: It is a group of people who can not only communicate an idea of success, but also how to achieve it. The orchestra embodies symbolically what a group of people may achieve by working and practicing together in search of a perfection that does not necessarily have a material or economic aim. There are many messages to be found there, and it would take a lot of time to analyze them. Suffice it to say, that we should just be aware of them for now.

PwC: How can an orchestra combine recreation with culture?

C: I have come to the conclusion that there are many motivating factors, good examples, even fun examples, that result in awakening a child. These are going to be experiences that will make him to say ‘wow, this is interesting!’ However, a child does not necessarily need to become a cellist, a trombonist or a flautist; it just means that a child may use the process of learning an instrument in order to find himself and to find something in himself that he never knew was there. This process may occur with poetry, theatre, or other artistic expressions but if a child experiments with music there will be an immediate response. If one were to take a hundred children and read them a beautiful poem and then take another hundred children and play them a piece of music, a greater number of children will have an instinctive reaction to the music rather than the poetry.

We think that children are born singing, and while listening they don’t need much concentration and effort to receive the message of music. This is why music is vehicle that could lead to poetry, to medicine or engineering. There are a remarkable number of doctors and engineers who began playing an instrument, therefore, the answer to your question is: music – or the teaching of music – is very good for any child, even if he leaves the instrument, it serves to fix his attention on personal development through concentration and effort while having fun.

PwC: What is the difference between producing music and practicing sports?

C: I would say that a symphonic orchestra has the same potential as an excellent football team. The difference is that in football there are many economic factors which allow a team such as Barcelona to earn millions. Even though an orchestra may sell all the tickets in the theatre, it never profits. There is not a single orchestra in the world, even the most famous, that really earns money and those that hope to make money will be disappointed.

Sports are more viable economically and from a purely financial aspect, it would make more sense to invest in sports. In contrast, an orchestra is expensive. Funds are needed to pay salaries, buy musical scores and pay rents.

PwC: In your opinion, what do you consider to be innovative in the way of musical composition or interpretation in Mexican cities?

C: We have always had a group of leading composers, not just a handful of composers who have written what we could call nationalistic works such as the Huapango or the Sones de Mariachi by Pablo Moncayo or the Sinfonía India by Carlos Chavez. In every generation there have been composers who have written music that has nothing to do with Mexico; likewise you could say that a researcher from the Mexican National University does not conduct his research any differently from a researcher in a Swedish university. Unfortunately, some of these

composers leave Mexico because they receive more interest from American or European universities.

PwC: How would you reinforce and back the musical careers of the musicians so essential to orchestras?

C: In Mexico we have an enormous lack of support for our composers who, at the end of the day, are the creators of who we are. We should not only support them by playing their music, but also give them work as researchers and teachers. There is much more talent and more interest in composing than there is possibility to maintain them.

It is important to be aware of these composers out there and just as our writers in a generation who called themselves “Crack”, rejecting all the ‘isms’ like nationalism and who refused to write as was expected of a Mexican writer, we find the same phenomenon occurs in the music world. An attempt has been made in recent years by the Consejo Nacional para la Cultura y las Artes (Conaculta) to support composers who have achieved a certain standard in their work, but it is never enough.

PwC: What does it mean to be a Mexican musician who has such an international standing?

C: My interpretation of Dimitri Shostakovich, one of my passions, or Haydn is no different because I am Mexican; I simply try to do it the best I can based on a profound understanding of the score and on my commitment to work.

PwC: How does a Mexican conductor named Carlos Miguel Prieto contribute to the international music stage?

C: I don’t like talking about myself much because I seem to be bragging, but honestly I think I am a very lucky person and I see where it all comes from and therein lies another unattended issue: we spend so much time talking about trivial things when I think the most essential is education. We can talk about social inequalities as much as we like and that is good, but to not connect them with education is a grave mistake. What one has to talk about is how to inject enthusiasm into hospitals, schools, teachers, football teams, orchestras, music teachers, literature teachers in childhood to break the vicious circle of lack of stimulus. It is at this point where our orchestras become important, because orchestras mean teachers and a hundred musicians. It is here that one can observe what they call in English the “trickle-down effect” – a phenomenon that has been well studied in New Orleans where we have to search for funding all the time to assure the survival of the orchestra. This pyramid effect of sixty or seventy professional musicians living in a city where each one has twenty or thirty students, perhaps even teaching in schools, makes a huge educational pyramid structure. This is what makes an orchestra so important and is why it is vital to finance musical education.

In Mexico we have an enormous lack of support for our composers who, at the end of the day, are the creators of who we are. We should not only support them by playing their music, but also give them work as researchers and teachers. There is much more talent and more interest in composing than there is possibility to maintain them.

PwC: When we talk about you, we are talking about possibilities, building bridges, of accessing experiences that can help others recreate themselves. This is why we are asking you “What does it mean for you to be a Mexican who has arrived at the international stage center?”

C: I think that being Mexican has given me an opportunity – and I always try to perform Mexican music wherever I go, both because I love it and people ask me for it; there is always interest in Mexican music. In my case, what helped was that from childhood I had wonderful opportunities, such as learning five languages. This is something that opened many doors and was why I was able to work with orchestras throughout the world. If I couldn’t speak English, if I couldn’t speak French or if I couldn’t make myself more or less understood in German, it would be very difficult for me to work with all these orchestras.

PwC: What would your message be to children to reach their goals?

C: My parents, grandparents taught me values and a work ethic in an environment in which I found it relatively easy to learn, grow and fulfill the activity that I now practice. That is why I believe in the importance of the education we give our children and that our young people understand that their world is not blocked by frontiers. That is also why I can work so much. This second term in 2012 is the longest time I have been in Mexico in seven years. I have been six weeks in Mexico City; I am leaving now but will return in December. I

am going to conduct concerts in Spain, France, Germany, the United States and I have a concert every week of the year. Next week is my last free week in the year.

PwC: How could Mexican cities include more musical activities? What should be done to create more world-class orchestras and music?

C: We have to change our publicity policies and to make them more practical and more modern by using social networks. We need to really modernize our system, since it is more important to have a good web page than advertisements in the metro for example – even though advertising in the metro does help. Secondly, we have to tackle the prejudices that people have about what we do. People think that a classical music concert is inaccessible from the cultural point of view; “you need to know to appreciate”. That is false, completely false, proved time and time again. You don’t have “to know”, you need to enjoy music.

One can enjoy a Beethoven symphony at the first hearing but when it has been heard the tenth, eleventh or twentieth time, the learning experience and enjoyment is unexpectedly profound. What we have to do over and over again is what Leonard Bernstein did in the United States and Herbert von Karajan in Germany and what they continue to do in Germany for various generations, where they made sure that the word “Beethoven” does not signify a dog to a small German child, but means one of his basic values from childhood, not just because they are German. Just

as for a Russian child the word “Shostakovich” or “Tchaikovski” is immediately recognizable as something that inspires admiration and pride.

PwC: Is there anything else you would like to add?

C: Concerts should be something that is uplifting for people, something that makes them dream. It doesn’t matter how tired they are, or how many problems they have at home, or any other kind of problems. The two hours we have in front of the public are two hours in which one has the opportunity to give people joy, sadness, forgetfulness, to journey in the imagination. We must take advantage of those two hours – they are magical. There is a huge message to transmit and that is why we practice so much.

That is why it is essential to convince people, business men and governors to invest in music. We can observe the results in places like Venezuela where there are thousands of children playing in orchestras - more than playing football. As a result, the children are successfully traveling around the world and have been distanced from drugs. We see this beginning to happen in Columbia, Costa Rica and Brazil. Finland has been doing it for years. Then people, business men and governors will begin to understand the value in music and why music needs to be part of the curriculum in a school or at home. I want to be part of a generation that witnesses a Mexican miracle in socializing musical education, conceived as a motor of social development.

Education performance and entrepreneurial capabilities of young people

Throughout the centuries, education in Mexico has been a historic milestone that has favored the appearance of outstanding people in culture, science and the arts. Great Mexican intellectuals have been able to grow and project themselves from their indigenous or mestizo origins; let us mention two: Malinalli Tenepatl, an Aztec woman considered the first and most important translator, diplomat and adviser in the Americas during the first stage of Mexico's conquest by the Spanish, and Sor Juana Inés de la Cruz, a Creole nun who is considered the most important XVII Century literary figure in Hispanic America.¹⁴

Over the years, many other important figures have appeared, some of them in urban Mexican areas; we find two Nobel Prize winners: Mario Molina, engineer, and Octavio Paz, poet and literary figure, both graduates of the country's most important national university: the Universidad Nacional Autónoma de México (UNAM). The issue here is how public and private systems may contribute in order to ensure that many more figures like these appear in Mexico, overcoming social barriers and taking full advantage of their talents.



Students of Nichnamtic Elementary School in Chamula, Chiapas
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¹⁴ Beuchot Puente, M. (2001). *Sor Juana: una filosofía barroca*. México: Universidad Autónoma del Estado de México, Centro de Investigación en Ciencias Sociales y Humanidades; Soriano Vallés, Alejandro. *Sor Juana Inés de la Cruz, Doncella del Verbo*. México: Garabatos, 2010; Pérez Walker, María Luisa. *Antología de Sor Juana Inés de la Cruz*. México: Editorial Universitaria, 1993; Arenal, Electa. «Where Woman is Creator of Work». Or, *Sor Juana's Discourses on Method*, *Feminist Perspectives on Sor Juana Inés de la Cruz*. Detroit: Wayne State University Press, 1991, pp. 124-141. Alatorre, Antonio. «Lectura del Primero Sueño», *Y diversa de mí misma entre vuestras plumas ando*. México: El Colegio de México, 1993, págs. 101-126. ALATORRE, Antonio, *Sor Juana a través de los siglos*, México, El Colegio de México, 2007. BUXÓ, José Pascual. *Sor Juana Inés de la Cruz: Lectura barroca de la poesía*, México, Renacimiento, 2006. XIRAU, Ramón. *Genio y figura de Sor Juana Inés de la Cruz*, México, El Colegio Nacional, 1997. Paz, Octavio *Sor Juana Inés de la Cruz, o las trampas de la fe* Fondo de Cultura Económica.

Mexico's challenge today is entering into the tertiary and postgraduate educational processes so as to produce the scientists, qualified technicians, artists and professionals it needs.

Thus, we analyzed educational achievements in Mexico referring to our indicator for measuring the quality of the educational system in Mexico and student performance in elementary and secondary grades, as well as young entrepreneurship as proxy in measuring innovation.

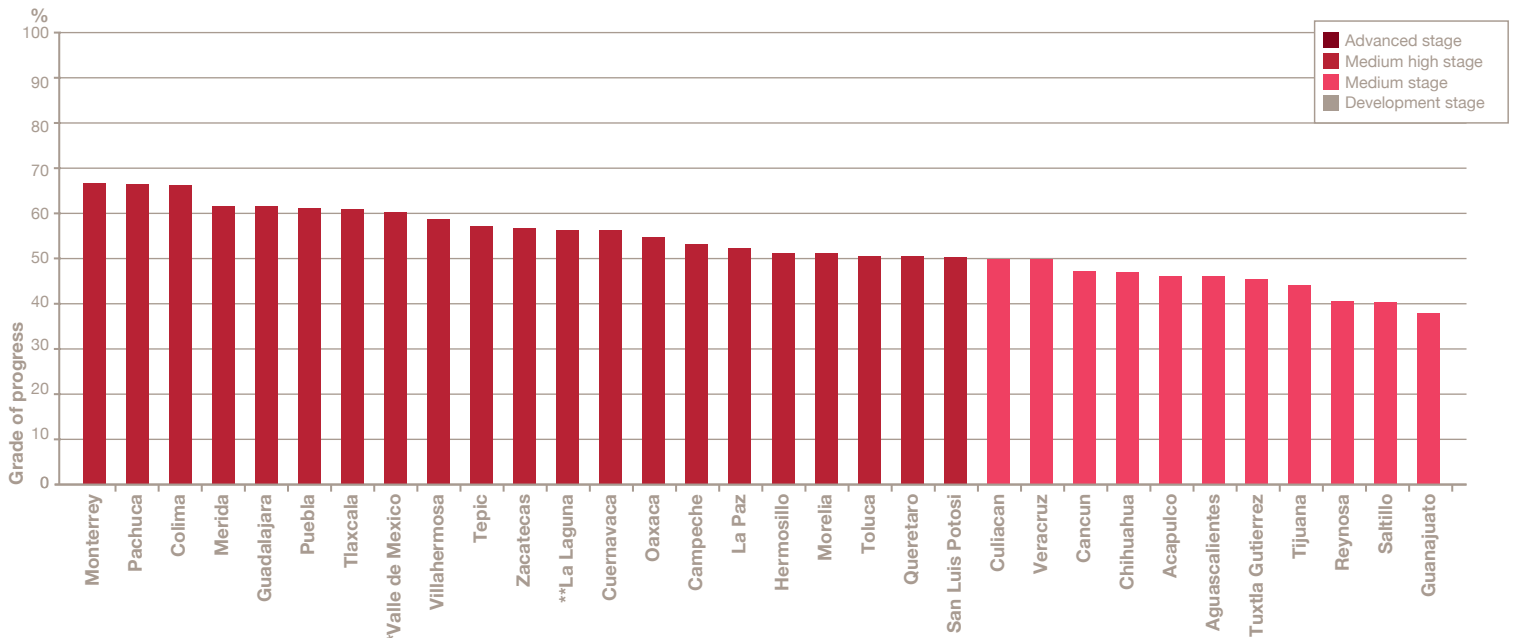
For educational performance and young entrepreneurship we find that there is a complex picture behind a nation whose *zonas metropolitanas* fall in the advanced and medium high stages.

For example, we find that Mexican *zonas metropolitanas* excel in the small size of classrooms: across the country there is a maximum of 30 students per group and a minimum of twenty one. Yet size is but one factor in defining innovation and educational

performance. Teacher training courses must be improved.¹⁵ Assigning staff and family support are both important so as to compensate for deficiencies. The State could also provide support through scholarships and other types of encouragement to minors so that they can continue studying in spite of the poverty they might experience.¹⁶

In terms of years completed by Mexican students, the corresponding figure is around eight and ten years of schooling. The number of schools in *zonas metropolitanas* shows that the State of Mexico attends to the demand at both primary and secondary levels, although greater gaps persist in other states, such as Zacatecas, Campeche, Oaxaca, Chiapas and Guerrero, which are still at a planning stage.

Education performance and entrepreneurial capabilities of young people - *Zonas metropolitanas*



*Valle de Mexico: Estado de Mexico - Distrito Federal

**La Laguna: Durango - Coahuila

Sources: SEP (2009), INEGI (2010), Sistema Nacional de Información de Escuelas – SEP (2012), CONACULTA (2012), SEP – ENLACE (2011)

The percentage of progress is the weighted sum of performance from metro areas in: Number of students per class, Number of schools per 100,000 inhab., Public libraries per 100,000 inh., % of private schools, Performance of primary and secondary schools on ENLACE test, % of population with higher education, number of incubators.

¹⁵ Schmelkes, Sylvia (1997) La calidad de la educación primaria: un estudio de caso. México: Fondo de Cultura Económica.; Ponce Rodríguez, Ernesto A. (1998). La formación inicial y la formación continua de profesores de educación básica: el caso de México, pp. 165-193, Revista Latinoamericana de Innovaciones Educativas - n. 29 - año 10. Margarita Zorrilla Fierro 2002. "Diez años después del Acuerdo Nacional para la Modernización de la Educación Básica en México: Retos, tensiones y perspectivas", REDIE: Revista Electrónica de Investigación Educativa, ISSN-e 1607-4041, Vol. 4, N°. 2; Ornelas, Carlos (1995). El sistema educativo mexicano. Mexico: CIDE, Nacional Financiera. Carlos, Ornelas (2008), Política, poder y pupitres: crítica al federalismo educativo. Mexico: Siglo XXI.

¹⁶ Reimers, Fernando (coord.) (2006). Aprender más y mejor. Políticas, programas y oportunidades de aprendizaje en educación básica en México, 2000-2006. Mexico, FCE, SEP, Escuela de Posgrado en Educación de la Universidad de Harvard, ILCE. Parker, Susan W. (2003) Evaluación del impacto de Oportunidades sobre la inscripción escolar: primaria, secundaria y media superior. Mexico: Secretaría de Desarrollo Social.;Ordaz, Juan Luis (2007) México: capital humano e ingresos. Retornos a la educación 1994 – 2005. Mexico: United Nations, CEPAL; Serie Estudios y peréctovas – Mexico, 90.

Efforts have to be applauded when we find that programs like Oportunidades (Opportunities) are allowing many boys and girls to finish their schooling.

If we put together the information on the number of schools, classroom size and years of schooling, we can say that Mexico as a country is overcoming illiteracy. Therefore, families and individuals are making substantial efforts to breach gaps. In addition, considering the growing number of publicly funded technical universities and institutes that were opened in the last decade –which add up to more than one hundred– we can say that substantial efforts are being made to generate a more professional workforce. And many of these universities and schools are promoting better performance. Outstanding examples are the Instituto Tecnológico y de Estudios Superiores de Monterrey and the Instituto Politécnico Nacional, private and public institutions, respectively, whose models of incubation were acknowledged by the Secretary of the Economy in 2011, granting credits for company incubators.¹⁷

In this context, Mexico's challenge today is entering into the tertiary and postgraduate educational processes so as to produce the scientists, qualified technicians, artists and professionals it needs. Currently, the challenge in reaching such goals is investing at least 1% GDP in science and technology, instead of the annual investment that is not more than 0.5%. And the academic and scientific community of the country is discussing the issue in a political framework that considers the new administration.

According to our data, as the gap between finishing high school and finishing university narrows, the country would benefit if the State created more public libraries and students improved their performance in public tests. According to our findings, there is less than one library per 1,000 inhabitants. Student performance was analyzed using ENLACE test¹⁸ and in all *zonas metropolitanas* –except Hermosillo– students scored less than 20% correct answers. As specialists in education argue, what is needed here is a curricular reform that pays greater attention to reading and critical thinking in public schools. Reading campaigns have been successful but more decisive public policies are required, inspiring teachers who encourage students to go to libraries and more financing for public libraries in the different regions.

Again, according to our findings, it would seem that the supply of private schools at different levels is helping to balance educational needs. Private school students achieved more than 20% correct answers in the Enlace exam in all *zonas metropolitanas*. In terms of supply, private schooling represents up to 51% in Cuernavaca, 46% in Puebla, 45% in Merida, 40% in Cancun, 41% in Valle de Mexico and 39% in Queretaro. It is worth noticing that these *zonas metropolitanas* are among those that show the highest levels of urban growth. Significantly, in most of the rest of the *zonas metropolitanas* (except Acapulco, Colima, Culiacan, La Paz Tepic, Toluca and Villahermosa) private schooling is still more than 20%, ranging between 25 and 37%. This suggests that families living in *zonas metropolitanas* located in the center, north or south of the country are making an effort to send their boys and girls to schools that are perceived as delivering a better education for the number of teaching hours and access to books and reading material they offer. Thus, parents suppose their children will be better equipped. In this context, perhaps private education is no panacea in Mexico, but in all states students coming from private schools had better results in standard Mathematics and Spanish tests. Considering *zonas metropolitanas*, this means that students attending private schools score between five and fifteen points higher in national tests than public school students do. For example, if students in public schools in Acapulco score almost 8 points, students in private schools score 12; if students in public schools in Cancun score almost 5 points, their counterparts score almost 16.

The issue here is not if Mexico will have enough students to be qualified as a knowledgeable society, but rather how to accelerate reforms within the public system to resolve specific problems associated with different levels of education. Among these reforms are an adequate assessment of teachers, called “perfecting the assessment system”, whose focus should be student results so as to use statistics on academic performance to configure joint school evaluations and improve such performance according to OECD. This organization also recommends not only increasing finance for higher education but also evaluating

¹⁷ CNN Expansión, Empujón a Emprendedores del IPN y Tec, 29th March 2012. Available at <http://www.cnnexpansion.com/economia/2011/03/29/empujon-a-emprendedores-del-ipn-y-tec> Consulted 28th October 2012.

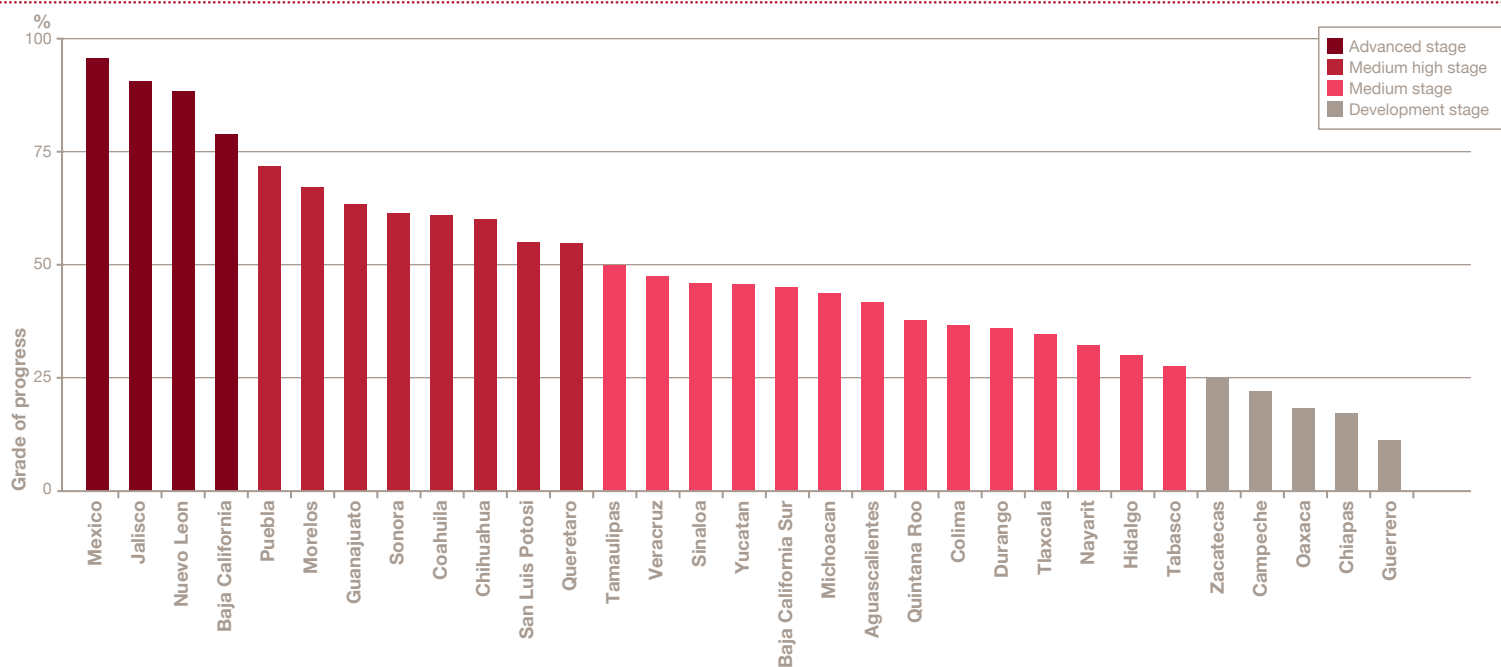
¹⁸ National evaluation of academic achievement in schools (ENLACE) is a test that will be performed every year in Mexico by SEP in all elementary public and private schools (primary and secondary levels) to know the level of performance in Spanish and Mathematics.

the balance between public costs and social benefits, making fund assignment to institutions transparent.¹⁹ In other words, efforts have to be applauded when we find that programs like Oportunidades (Opportunities) are allowing many boys and girls to finish their schooling. In almost one third of Mexican *zonas metropolitanas*, more than 30% and up to 54% (Chiapas) of children rely on this type of scholarship to attend school. We must acknowledge that at the end of the spectrum we find states like Baja California Sur, Baja California, Chihuahua, Coahuila, Colima, Jalisco, Mexico, Nuevo Leon, Sonora, Tamaulipas and Aguascalientes, where less than 15% of children need this type of scholarship, showing that the socio-economic level in Mexican states is not equal, and thus educational progress will be more difficult to reach, while in others having scholarships allows families to keep their boys and girls in school, showing that their socioeconomic level is making progress.

However, Mexico will need to learn to build and rebuild the educational system so as to include specific needs, while improving performance. In some places specific examples also show that the problem is neither the amount of scholarships required nor classroom size. For example, Aguascalientes requires fewer Oportunidades scholarships, and it has one of the *zonas metropolitanas* with high numbers of students per group. However, what is required in those cases is better performance in national and international tests.

A pending challenge is that the location of public schools is decided according to the housing needs of the less privileged, yet that does not mean that they have access to the best schools. Similarly, private schools have more to offer in terms of quality, but they tend to be located in specific areas. If additionally we consider that commuting to private schools tends to be by car, we have observed that the middle sectors invest more time to access a type of education which is different from what they could get near their homes.²⁰

Education performance and entrepreneurial capabilities of young people - States



Sources: INEGI (2010), SEDESOL-Oportunidades (2011), CONACYT-Sistema Integrado de Información sobre investigación científica, desarrollo tecnológico e innovación (2011), Secretaría de Economía (2012)

The percentage of progress is the weighted sum of performance from states in: Sholarity Index, No Need of Opportunities Scholarships, CONACYT Scholarships, Number of researchers in science and technology, number of quality graduate programs.

20 Salazar Cruz, C. E. (1999), Espacio y vida cotidiana en la ciudad de México. México: Centro de Estudios Demográficos y de Desarrollo Urbano, El Colegio de México.

19 Perspectivas OCDE: México, reformas para el cambio.

Today improved quality at the secondary and high school levels and more students at the postgraduate level are issues that deserve to be addressed through public policies in zonas metropolitanas

With a clear vision that the country needs not only to increase access and quality regarding elementary and secondary years, efforts have also been made to ensure that publicly-run postgraduate programs are implemented. Results show that in more than one third of Mexican states there are literally thousands of students who hold a scholarship to engage in postgraduate education across the country: Baja California, Chihuahua, Guanajuato, Jalisco, Mexico, Nuevo Leon, Puebla and Veracruz are the states which are receiving the highest number of scholarships, followed closely by Yucatan, San Luis Potosi, Michoacan and Coahuila. Yet the percentage of the population with higher education in *zonas metropolitanas* ranges between 18 and 13% in

most states. In other words, it is encouraging to see that in Mexico today we find that Campeche, Cancun, Chihuahua, Colima, Guadalajara, Monterrey, Morelia, Oaxaca, Pachuca, Tepic, Tijuana, Toluca, Villahermosa and Zacatecas are all in that stage. With these actions, government authorities are pushing to make sure the country turns into a society of knowledge. Certainly, efforts include technical training, but according to classifications available, postgraduates are classified as researchers and it has become necessary to produce more researchers who can design solutions to problems in all regions. Currently, researchers tend to concentrate in the Estado de Mexico, Jalisco, Morelos, Nuevo Leon and Puebla, in that order. Many of



the postgraduate programs are being offered in those states and in others such as Baja California, Guanajuato, Michoacan, Veracruz and Queretaro. The existence of the Consejo Nacional de Ciencia y Tecnología, Conacyt (National Council of Science and Technology), which is a decentralized public institution of the Federal Government and which since 1971 has promoted and encouraged the development of science and technology in the country, is greatly responsible for these results. Important news is that in the last five years at least two cities of knowledge have been opened in the states of Morelos and Nuevo Leon, and there are plans to develop others in Morelia.

In brief, improved quality at the secondary and high school levels and more students at the postgraduate level are issues that deserve to be addressed through public policies in *zonas metropolitanas*, without implying that demand for education in a public university will be met: today, only one out of ten young adults go to university and only two out of eight to high school.²¹ However, in February 2012, President Felipe Calderón decreed the constitutional obligation of high-school education, and so for 2022 universal coverage is expected in high-school. Mexico would thus reach an average of 15 educational years.²²

It is important to realize, however, that efforts by the government go beyond borders. Realizing that Mexican immigrants in general join the lowest paid jobs in the United States, the Secretaría de Educación Pública (Secretary of Public Education) is implementing the project “Educación básica sin fronteras” (Basic Education Beyond Borders), through which it provides elementary education to almost 36,000 students in more than 433 US locations.²³ It is important to mention examples like this or like those having to do with generating cities of knowledge so as to have an idea of the steps taken to overcome gaps in elementary education and realize that education is being invigorated by the examples of individuals living in the country or abroad.



21 SEP (2003), Informe nacional sobre la educación superior en México. México: SEP, ANUIES.

22 Presidencia de la República (2012) “La educación media superior ya es obligatoria”. Available at <http://www.presidencia.gob.mx/2012/02/la-educacion-media-superior-ya-es-obligatoria/>

23 The Project *Educación Básica sin Fronteras* is part of the technical secretariat of the Programa Binacional de Educación Migrante, which is constituted by the Dirección General de Relaciones Internacionales de la SEP, the Instituto de los Mexicanos en el Exterior and the Subsecretaría de Educación Básica (http://notas.basica.sep.gob.mx/SEB/blogseb/DGDGIE/documentos/reportaje_ninos_binacionales260809.pdf); “SEP reconoce a impulsores de educación de migrantes”, *El Economista*, 23rd August 2012. Available at <http://eleconomista.com.mx/sociedad/2012/08/23/sep-reconoce-impulsores-educacion-migrantes>

Public Library in Independence Square, Campeche
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Health access and coverage

Today the key issue in health systems in Mexico is how to increase quality and expand coverage.

To address these issues, as of 1995 the federal government started to decentralize the process for health services.²⁴ The aim of this process was to provide greater operational efficiency to the sector in charge of attending to the population that did not have insurance and the population that did. Through decentralization, the federal government finances the development of state health systems through transferences to state governments. At the same time, it promotes financial contributions by the states as well as budgetary autonomy. Another important topic in the decentralization of health services is the distribution of federal contributions,

whose aim is to distribute resources as equitably as possible. However, according to OECD information, public expenditure in Mexico is below the Latin American average, and the problem will not be solved by simply increasing expenditure. It needs to be more effectively done and in accordance with efficiency and effectiveness criteria.²⁵ An area of great interest is ensuring financial mechanisms for transferring resources from the richest states to the poorest ones in order to reduce differences in the availability and quality of services throughout the country.



Regional General Hospital 1, IMSS, Charo, Michoacán
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²⁴ "Perspectivas OCDE: México Reformas para el cambio 2012".

²⁵ OCDE. Perspectiva OCDE: México reformas para el cambio, p.54

Before the implementation of the Seguro Popular only half of the population had health insurance. In Mexico a significant part of healthcare spending comes from the private sector, even much higher than the average in OECD member countries, which is around 29 %.



The main challenge that the Mexican health system faces is caring for the pre- and post-epidemiological transitional diseases: malnutrition, infections, reproductive system conditions persist along with non-contagious diseases and injuries as causes of death.²⁶

To better understand how Mexico deals with its health issues, we should recall that the health system in Mexico consists of public and private sector services.

The private sector includes insurance companies and service providers working in private offices, clinics and hospitals (some are quite specialized), including alternative medicine. The insured segment of the population is at most 15% of the total, but many more people visit doctors in private clinics, although they will follow a general treatment elsewhere. Consequently, it is estimated that 93% of spending on private hospitals comes from people's own income.²⁷ Certainly before the implementation of the Seguro Popular only half of the population had health insurance. In Mexico a significant part of healthcare spending comes from the private sector, even much higher than the average in OECD member countries, which is around 29 %. Of all OECD countries, only the United States of America has equally low levels of public finance. In other words, Mexico has a wide private sector that needs to be financed with their own funds and which would benefit from regulations not only regarding fees, but above all regarding service quality, which varies among doctors and hospitals.

In contrast, the public sector is fragmented into several sectors vertically integrated which provide financing or insurance for health services to different sectors of the population. Its main challenge is to guarantee the necessary funding to meet demand.

Recently, the most positive change in the health sector has been the constitution of the Seguro Popular de Salud (SPS) (Popular Health Insurance) which since 2004 is catering to the needs of millions of people who lack medical affiliation. This segment of the population is nearly half of the Mexican population. The number of affiliates grew considerably in the last years: by 2008, SPS had more than 27 million affiliates and it is estimated that another 30 million do not

have any health protection system. SPS is allowing Mexico to fulfill its constitutional duties in terms of entitling all Mexicans to health services. Article 4th of the Constitution²⁸ establishes that all people are entitled to health protection according to the foundations and modalities set forth by the Federation and in accordance with Federal Entity Legislation on general health.

As can be seen, the greatest challenges are to expand coverage and improve the quality of health services. Mexico's public spending on health is estimated at more than 5% of its GNP. The one-point increase since 2000 is expected to contribute to breach the gap in per capita GNP spending among different segments of the population affiliated to the public system, as well as among the different states of the Mexican Republic. Currently, increased spending has also yielded new hospitals, hiring a growing number of medical personnel and the possibility to buy and offer more medicines.²⁹ Just between 2001 and 2006, the public sector built 1,054 new clinics, 124 general hospitals and ten high-specialty hospitals.³⁰

26 Frenk, J., Bobadilla, J.L., Stern, C., Frejka, T. and Lozano, R., "Elementos para una teoría de la transición", *Salud Pública, México* 1991; Vol. 33(5):448-462.

27 Kumate, J. and Giedion, U., Villar, M. and Ávila, A., (2010). *Los sistemas de salud en Latinoamérica y el papel del seguro privado*. Madrid: Fundación Mapfre, Instituto de Ciencias del Seguro.

28 Constitución Política de los Estados Unidos Mexicanos, 1917, First Title, First Chapter, Article 4. Consulted 1st October 2012

29 OCDE. *Perspectiva OCDE: México reformas para el cambio*.

30 Ángel Morales García, Cuauhtémoc González Gutiérrez, Jorge Alberto Castañón Narváez y Julio César Vega Carranza "Investigación del Sector Salud en México", <http://sectores-economicos-mexico.wikispaces.com/salud>

OECD has been emphasizing the fact that public spending on health is 915 US dollars per capita (OECD, “Health Data for 2012”). In this Organization, Mexico is still the second country with the lowest spending. Among the most important OECD recommendations are the following:

- Encourage efficiency in hospitals and institutional service providers through clearly distinguishing between providers and users, besides the implementation of payment mechanisms based on services.
- Encourage productivity of health professionals, linking remuneration to efficiency and quality, trying to make sure that private medical practice does not decrease public service availability;
- Encourage quality and efficiency according to costs, enhancing disease prevention coverage and health initiatives;

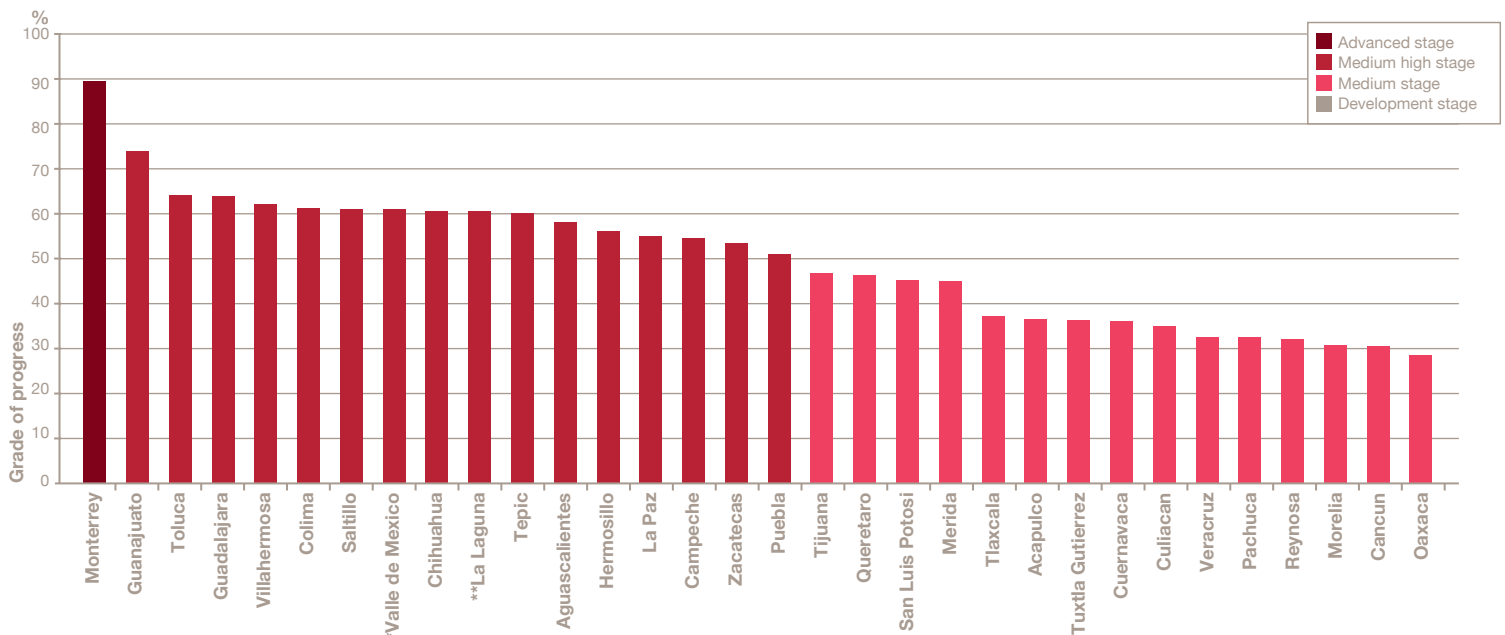
- Implement wide-scope measures against obesity and diabetes, as for example the national media campaign for promoting healthy habits, a compulsory programme for labelling food products, regulating publicity on child food and fiscal measures that combine taxes and subsidies according to food quality.

When we consider spatial distribution of health, we find that Monterrey is the *zona metropolitana* where public and private health services concentrate. This is why this is the only *zona metropolitana* considered to be in an advanced stage, while the rest of the Zones are in a medium high or medium stage: for example, Guanajuato, Toluca and Guadalajara but also Villahermosa, Colima, Saltillo and Valle de Mexico, La Laguna, Aguascalientes, Hermosillo, La Paz, Campeche, Zacatecas, Puebla and Toluca have had a similar degree of progress. All of them are located in an intermediate level in terms of coverage and access.

When information is disaggregated according to variable performance by each state, the picture changes: Sonora takes the lead, followed by Baja California, Nuevo Leon, Jalisco, Sinaloa, Michoacan, Coahuila and Tamaulipas, among others.

Some features to bear in mind regarding Mexico’s progress in terms of constructing medical infrastructure are as follows: regarding the high specialty public hospital variable per 100,000 inhabitants, the states of Campeche and Baja California Sur are in the advanced stage as compared to the rest of the states. This suggests that federal investment is seeking an impact in different regions of the country. To better understand the amount of public investment necessary to build three hospitals in Baja California Sur and two in Campeche, we should consider that there are no private high specialty hospitals in any other of the Mexican states considered. However, the states that require more efforts regarding their high specialty public hospitals are Aguascalientes, Baja California, Chiapas, Chihuahua, Durango, Guerrero, Hidalgo,

Health access and coverage - Zonas metropolitanas



*Valle de Mexico: Estado de Mexico - Distrito Federal
 **La Laguna: Durango - Coahuila

Sources: INEGI (2010), Instituto Nacional para el Federalismo y el Desarrollo Municipal (2010).

The percentage of progress is the weighted sum of performance from states in: Coverage of healthcare system, Total Hospitals.

New Windows of Opportunity open every day for the health system, proving that this is a highly dynamic sector whose operation depends on its connection to the central administration of the state.

Jalisco, Mexico, Michoacan, Morelos, Nuevo Leon, Queretaro, San Luis Potosi and Yucatan, all of which are in the development stage with figures ranging from 0.5 to 1 high specialty public hospital for every 100,000 of their inhabitants.

The states of Guanajuato, Morelos and Sonora are leaders regarding high specialty private hospitals per 100,000 inhabitants. The first two states have 0.7 hospitals and the third one two. Five states are in the medium high stage: Baja California, Michoacan, Quintana Roo, Sinaloa and Veracruz, with 0.5 high specialty private hospitals per 100,000 inhabitants, except Sinaloa, which has 0.4 hospitals. All the other states are at the two lowest stages, with figures lower than the latter.

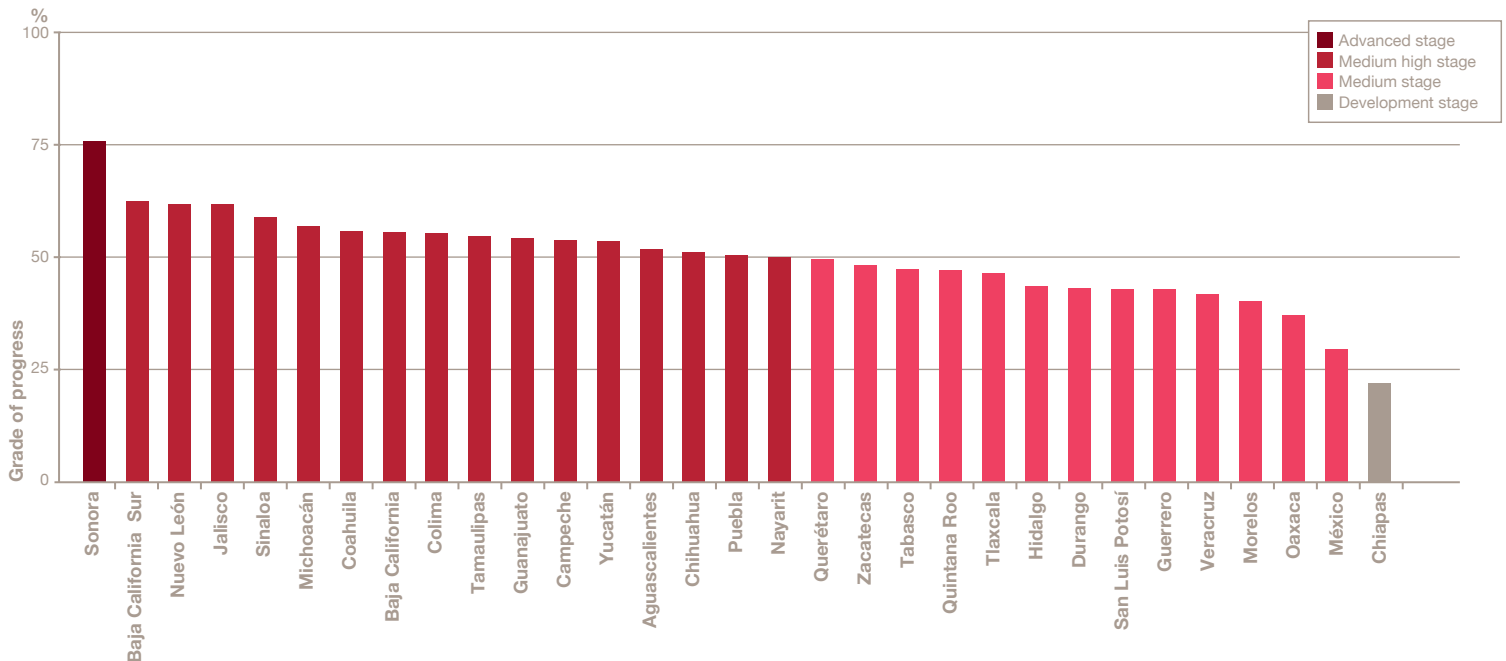
We find a more encouraging picture when we analyze *public hospitals* since there is a high number of them for every 100,000 inhabitants in *zonas metropolitanas*. For example, Toluca has 246 public hospitals per 100,000 inhabitants, Monterrey 312 and Guadalajara 255.

Regarding the variable *Physicians in Contact with the Patient in Hospital per 100,000 Inhabitants*, in both private and public hospitals, the following was found:

1. In public hospitals, there are five states that are in an advanced stage: Baja California Sur, 194; Campeche, 223; Colima, 210; Nayarit, 195 and Tabasco, 203 physicians. This implies great effort in these states to keep public hospital physicians in touch with patients. In the private sector, four states are in this stage: Chihuahua, 93; Jalisco, 94; Nuevo Leon, 222 and Sonora, 103 physicians.
2. The number of states in the development stage is lower in public hospitals than in private ones. In the former category, there are eight states with 95 to 126 physicians; there are ten states with 16 to 33 physicians.

The number of beds in public and private hospitals is equitable: in each sector there are seven states that are in a green stage. The states for the public sector are Campeche, Coahuila, Colima, Durango, Sonora, Tamaulipas and Yucatan. The states with a private sector excelling in number of beds are Baja California, Guanajuato, Jalisco, Michoacan, Nuevo Leon, Puebla and Queretaro. In this item, we find that public hospitals are still in the development stage in

Health access and coverage - States



Sources: INEGI (2010), INEGI-Perspectivas estadísticas para cada Estado (2011).

The percentage of progress is the weighted sum of performance from states in: Public Specialty Hospitales per 100,000 inh., Private Specialty Hospitals per 100,000 inh., Doctors in touch with patients per 100,000 inh., hospital beds per 100,00 inh.

the following eight states: Chiapas, Guerrero, Hidalgo, Mexico, Morelos, Oaxaca, Queretaro and Tlaxcala. As for private hospitals, the states in the red or development stage are: Baja California Sur, Campeche, Chiapas, Durango, Nayarit, Tabasco and Veracruz.

New Windows of Opportunity open every day for the health system, proving that this is a highly dynamic sector whose operation depends on its connection to the central administration of the state. Analysts of the public health system stated the need to reengineer institutions such as the Instituto Mexicano del Seguro Social (IMSS) (Social Insurance Mexican Institute) and Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (ISSTE) (Social Insurance and Services Institute for State Workers) as these require reforms due to the aging population and the lack of new employee and employer fees to renovate the system, but not until 31st May was this

initiative signed as federal law.³¹ Similarly, the need to decentralize public spending in the health sector remains a priority in order to allow states to consolidate their medical infrastructure and human resources.

Summarizing, Mexican urbanization and human health have been closely linked to each other for centuries. However, in the last fifty years significant changes in the health system have occurred as urbanization has accelerated. Moving to a *zona metropolitana* has meant a decrease in the death index and an increase in life expectancy, which has gone from 34 years in 1930 to 75 years in 2008 for millions of people. Living in cities also implies smaller families: women would bear up to

³¹ Morales Ruiz, M.A. (2007), "Nueva Ley del ISSSTE y pensiones de retiro", *Revista latinoamericana de Derecho Social*, July-December, 5: 263-268; for the new ISSSTE law visit: <http://www.issste.gob.mx/www/issste/nuevaley/leydelissste.html>



Private Hospital, Estado de México

Urbanization also implies that the Mexican demographic transition has been accompanied by a change in nutritional and recreational habits. At the core of this transformation we find an epidemiological transition where new health risks due to overweight and stress have appeared.



Regional General Hospital 200, IMSS, Tecámac, Estado de México
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seven children in 1960 and only two in 2008. But an increase in life expectancy implies greater health needs as the life span of people increases: the growth rate of the elderly exceeds 4% and it is estimated that by 2050 one fourth of the Mexican population will be elderly.

Urbanization also implies that the Mexican demographic transition has been accompanied by a change in nutritional and recreational habits. At the core of this transformation we find an epidemiological transition where new health risks due to overweight and stress have appeared. People die more as a result of non-contagious diseases or injuries: if in 1950 people died from infection, reproductive system conditions –women in particular– and

malnutrition, today nearly 75% of deaths are due to Diabetes Mellitus. In Mexico, the three main causes of death are Diabetes Mellitus, ischaemic heart disease and cardiovascular diseases. And overweight continues to cast a shadow upon Mexican health, surpassed only by the United States.³² However, we must realize that when we refer to child obesity, Mexico is in first place.

Mexico requires additional reforms to make services more efficient. This could be achieved for example through compensation mechanisms to reward high performance and improve effectiveness among service buyers and providers. Another option might be the creation of a general health system through a single insurance applicable to all those entitled.

³² Sassi, F. (2010), Obesity and the Economics of Prevention. Fit not Fat. Paris: OECD.

Federico Ortiz Quesada

Health systems in Mexico's past, present and future

Federico Ortiz Quesada, writer and physician, trained at the National School of Medicine at Universidad Nacional Autónoma de México, (National Autonomous University of Mexico), and specialized at Cornell University. Ortiz Quesada performed the first kidney transplant in Mexico and has held the positions of Chief Director of the Urology Practice at Centro Médico Nacional (National Medical Center), Advisor-Coordinator for the Ministry of Health; Member of the Committee of Former Professors of the Hospital de Especialidades del Centro Médico Nacional Siglo XXI (21st Century National Medical Center Specialties Hospital), among many others. The transplants operating theatre of the latter Hospital was named after him. He was awarded the Medical Excellence Prize by the Government of the Mexican Republic in October 2000, and is author of many books. He has published more than 1,500 scientific and journalistic articles, as well as 32 books, among which the following are outstanding: Código A(H1N1) (2009), Amor y desamor (2007), and Muerte, morir, inmortalidad (2005).



PwC: Could you tell us about the relationship between cities and health in Mexico?

F: Mexico City was considered a sacred city by the Aztecs, who founded it on 18th June 1325. According to its mythology, they were guided by Huitzilopochtli very much like Moses made the Jewish people cross the desert and sea. Huitzilopochtli brought the ancient Mexicans to found the city at a place where there was a cactus and an eagle devouring a serpent. The concept of nation would start in Europe in the XIV or XV Century, but we had it since the VIII or IX Century. That great culture had great physicians, ideas about the body, the mind, and a very peculiar philosophy that was lead by the tlaminime, who were the wise men, owners of the red ink and the black ink which was knowledge rendered in codices. Mexican physicians were so good that when Hernan Cortes was injured and taken to the “Sad Night Tree”, where he was dying, he asked to be treated by Aztec surgeons.

Even if the percentage of GDP invested in this item is not one of the highest ones in the world, I can assure you that Mexican physicians are true heroes doing their job, even more so those who live in the country and those who work for institutions too, because they do a lot out of nothing.

PwC: Were there any hospitals? Did the concept of a hospital exist in Middle American cultures? How did it change or articulate in colonial society?

F: Moctezuma had a hospital that was for soldiers and later for the destitute. That hospital was near Cuernavaca and people went there. It was a very famous hospital because herbal medicine was used; that is why herbal medicine still predominates in our country. When the Spanish arrived, Hernan Cortes decides to set up a hospital which is called Hospital de la Purísima Concepción (Hospital of The Immaculate Virgin), as an action of thanksgiving for having conquered these lands. This hospital is in the Center of Mexico City. An indigenous woman, Petronila Jerónima, brought a miraculous image of Jesus of Nazareth to the Hospital and offered it as a gift, in 1521. Thus, the first hospital in all America was born.

The image was so miraculous that everyone went to the hospital to ask favors from the Christ, and so the hospital began to be called Hospital de Jesús (Hospital of Jesus), and it is located on 20 de Noviembre Avenue, which is where the Hospital of Jesus appears. Next to the hospital there is a plaque commemorating the founding of Mexico City

because it says, “On 18th November 1521, Hernan Cortes and Moctezuma Xocoyotzin met here”. Thus, in the origins of Mexican nationality, there are hospitals.

The Spaniards realized the need to have hospitals, physicians. Spanish physicians arrived, certified in Spain by something called the protomedicato. They came to Mexico, started teaching and the merge started as well. A very interesting merge because one of the first Mexican books – truly noteworthy – was the Códice de la Cruz Badiano (1543), which is equivalent to Andreas Vesalius’s Treaty of Anatomy of 1543.

PwC: So then, may we say that there is a history of Mexican medicine?

F: The great physicians would meet in the Hospital of Jesus, and the first dissections were performed there, and medicine evolved so much that physicians became remarkable. There are books like the ones by Nicolás Bautista Monarves, a quite remarkable physician from Seville, that narrate the vicissitudes and pharmacological practice in New Spain. By the way, the first medical journal, the first gazette – published in 1700, in the 18th century – was made by a certain Bartolache. It was entitled El Mercurio Volante (The

Flying Mercury) and it is the first medical journal in all America. Here, in the city centre, the first pontifical university was founded.

PwC: What happened in the 20th century when the scientific method started to hold its ground and the creation of a network of hospitals began in Mexico?

F: There have been two extraordinary epochs in Mexican medicine: the 16th century and the 20th century. In those two epochs in Mexico, most hospitals were set up. Towards the end of the 19th century, physicians would go to France, via Alabama, to study. Later on, thanks to our contact with the United States, we acquired a truly avant-garde medical practice. We have made substantial progress in medicine; we may say that we have the best physicians in the world. Public health is another matter, as is attending to the population as a whole, which progresses slowly.

PwC: Tell us a bit about great hospitals that were set up here in Mexico. We are interested in urban examples. What is the significance of the Juarez Hospital, the Hospital General, as medical concepts and as urban expressions linked to the emergence of social insurance?

F: In 1943, 20th century, there were two very important movements fostered by President

Porfirio Díaz: one was the creation of the Hospital General de la Ciudad de México (Mexico City Hospital General) in 1905, which was designed after the Virchow Hospital in Germany. Rudolph Virchow was one of the great physicians, pathologists... extraordinary. The Hospital General was set up – it was my honour to work there for many years. It was founded by Porfirio Díaz, the inaugural address was delivered by the Mexican poet Amado Nervo; the second hospital inaugurated by Porfirio Díaz was the Hospital de La Castañeda (La Castaneda Hospital) for the criminally insane, and I also worked there. There was a third research instance, quite noticeable, that Porfirio Díaz inaugurated and was named Instituto Nacional (National Institute), which was destroyed and removed. Afterwards, social health arose under President Lázaro Cárdenas.

Lázaro Cárdenas wanted to create medical insurance for workers, but the one who actually starts it is President Manuel Ávila Camacho. That is to say, as Mexico grew, social insurance developed. In 1959, the Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (ISSSTE) (Social Insurance and Services Institute for State Workers) emerged and later the

Of course, there have been many failures; we lack many things, but not as before. What we have done has been quite surprising and I marvel myself at finding everything in small towns; it is truly amazing.

Instituto Mexicano del Seguro Social (IMSS) (Social Insurance Mexican Institute). Later on, the institutes that have been noticeable as well emerged: Instituto de Neurología (Institute of Neurology), Instituto de Pediatría (Institute of Pediatrics), Instituto de Psiquiatría (Institute of Psychiatry), Instituto de Ginecología (Institute of Gynecology), de Perinatología (Institute of Perinatology). Frequently, there have been rumours that they will remove IMSS, that they will modify it...

PwC: Currently, how has the pattern of diseases changed? How does it express itself in cities? Is there a relationship between both?

F: Nowadays, we still have diseases that come with poverty, and we have incorporated new ones that result from living in urban settings. We now have a mix of both. Mexico has invested substantially in medical care; the matter is we need more money. Medicines are becoming more and more expensive; machines and hospitals are terribly expensive. There are some machines –such as magnetic resonance machines– that are worth three million US dollars, and there are machines that destroy kidney stones that are worth a million US dollars, and so on and so forth. Intensive care is very expensive, medication as well, but little by little, we will

succeed. Even if the percentage of GDP invested in this item is not one of the highest ones in the world, I can assure you that Mexican physicians are true heroes doing their job, even more so those who live in the countryside and those who work for institutions too, because they do a lot out of nothing.

PwC: In a way you have spoken about how changes in Mexico's history have led to changes in the hospital network, but we would like you to tell us a bit more about this process.

F: The Mexican Social Insurance Institute has created the western medical Centers in Guadalajara, Puebla, all around, and people who are ill do not have to come to Mexico City. When I was Head of the Urology Service at the National Medical Centre, during the sixties, I was sent to visit people from everywhere in Mexico for surgery. So people from Jalapa, Veracruz, Puebla, Sonora came because there was no capacity to assist them elsewhere. When I started doing transplants, it was a different time. First they were only performed in the Hospital General, but later on several institutions performed them. The second institution that started doing transplants was the Instituto Nacional de la Nutrición (National Nutrition Institute), but then transplants started in

other institutions; the Hospital General was second and the Hospital 20 de Noviembre (20th November Hospital) third. It has all happened little by little, and so Mexican health has grown, developing all over the place. Today one can have transplant surgery performed in Veracruz or Guadalajara or Monterrey.

PwC: You have travelled throughout Mexican territory, could you tell us a bit more about the evolution of health systems? What health achievements do you identify in Mexican cities?

F: It has grown everywhere, wonderfully. It is a bit like what Jesús Kumate mentioned about the substantial progress we have made in medical care. Of course, there have been many failures; we lack many things, but not as before. What we have done has been quite surprising and I marvel myself at finding everything in Coatepec, Veracruz, Cerralvo, Nuevo Leon, in small towns; it is truly amazing.

PwC: And, what does the Seguro Popular (Popular Insurance) contribute to health schemes?

F: Julio Frenk designed the Popular Insurance without increasing infrastructure at the beginning, which causes a crisis that today is being addressed.

PwC: What modifications in the health system would you like to see?

F: More investment; investment that can be seen. Workers are very good; nurses and physicians are true heroes. Nurses are angels dressed in white. They should be taken more into account, like physicians. In our institutions, directors are economists, lawyers... everyone except physicians.

PwC: What does private health contribute to Mexican medicine?

F: What we can learn has to do with how they treat their patients, because physicians in public institutions do not have time to take better care of their patients. However, medical practice is in no way a cold discipline; we are not dealing with machines, we are dealing with human beings and that human aspect, which has very often been deemed as necessary, is learnt in private medical practice.

PwC: From your point of view, what is new, a novelty happening in Mexican cities regarding medicine?

F: Research is a novelty. Research is always most important, because medicine is a mix of research, teaching and medical assistance. There is constant feedback and physicians in hospitals are constantly being taught and teach in turn.

PwC: Is there a relationship among medicine, science, technology and love?

F: Basically. That is why Hippocrates, who emphasized love, said that the physician who is also a philosopher, resembles the gods. That is why physicians must be loving, very much so. Where there is love for mankind, said Hippocrates, there is love for the art of healing.

PwC: What relationship is there between love and lack of love as regards public health?

F: That is a very interesting question. However, it would take me a long time to answer. Look, I have data, and I published the book *Amor y desamor* (Love and Lack of Love). People who love or are loved do not get ill or rarely do. The lack of love does cause disease, and for several reasons: people feel lonely, depressed, abandoned, not loved, and feeling that way does cause illness.

PwC: So then, there is love and lack of love in urban environments, and public health is concerned to the extent that they materialize in disease, right?

F: Yes, but the interesting thing, the idea behind your question is that physicians are not prepared in that sense; there are not enough physicians who are humanists as well, neither are they prepared to treat people

who have love and who do not. Further, they do not even know what I am talking about!

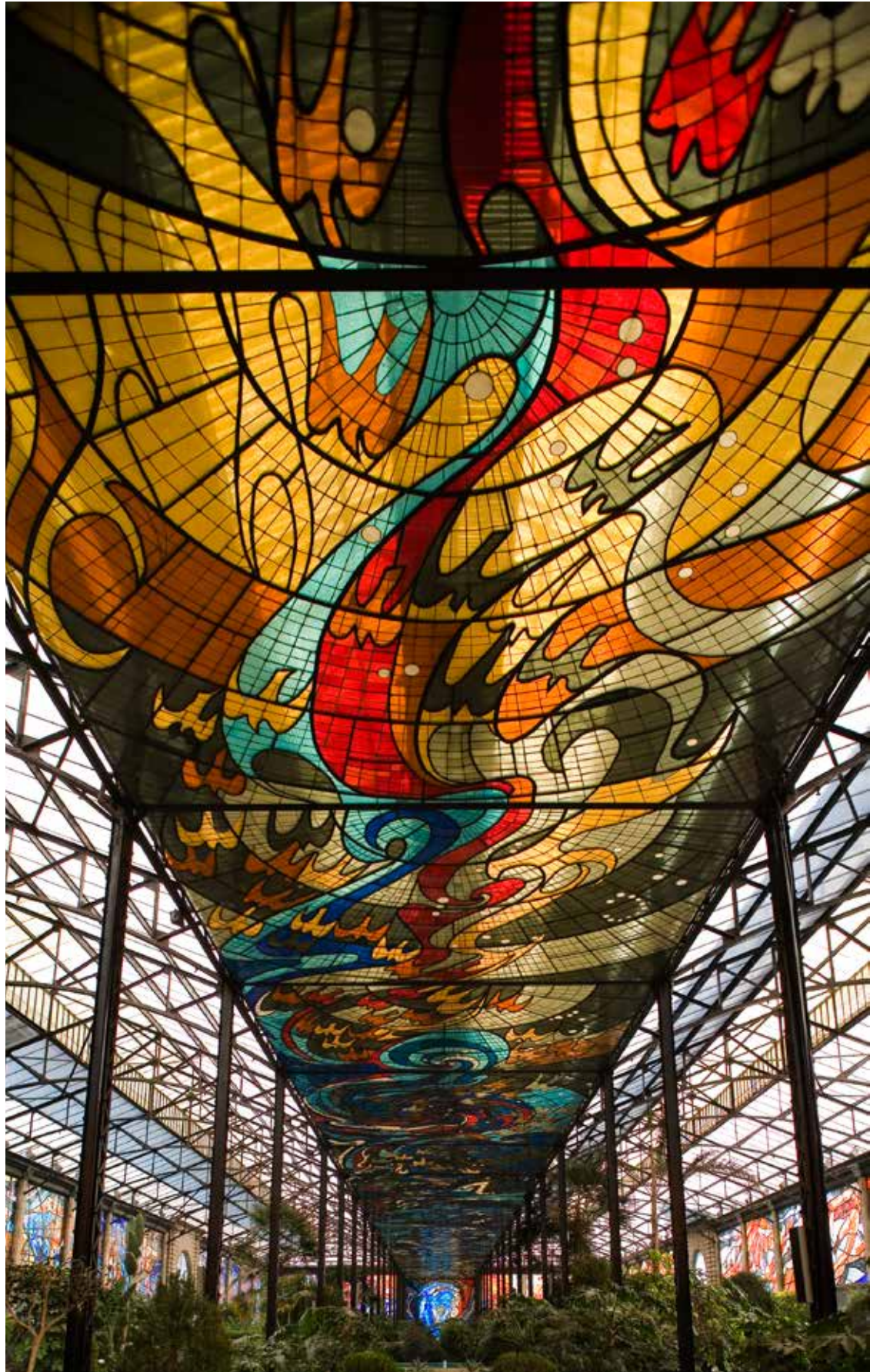
PwC: Why did you come back to Mexico if you had the opportunity to stay in the United States after finishing your studies at Cornell?

F: Mexico is my country, and as such, I am deeply fond of it, especially Mexico City. My feelings are similar to those of the renowned Chavela Vargas: this is the most beautiful country in the world! That is why my family lives here, above all my four children: Adriana, the eldest, then come Martha, Laura and Federico, the youngest.

They are convinced nationalists; they are Mexicans not only by birth but by conviction, and I say this now because with the economic crisis in a country like ours, which goes from one to another, there are people who look abroad but we should also look at Mexico because we have one of the most important cultures in the world. Mexican culture is one of the five first autonomous cultures in the world; the other ones are the Egyptian, Hindu, Chinese and Mesopotamian.

Transparency

The relevance of transparency in public affairs cannot be stressed enough, and as Octavio Paz, Mexican Nobel Prize in Literature would argue, “Only in an atmosphere that is truly free and open to criticism will it be possible to state and discuss Mexico’s true problems”³³



³³ Paz, Octavio, 1999 (Tercera ed.), "Postdata", México: Fondo de Cultura Económica; p. 273.

Cosmovital, (Stained Glass), Botanical Garden of Toluca, Estado de México
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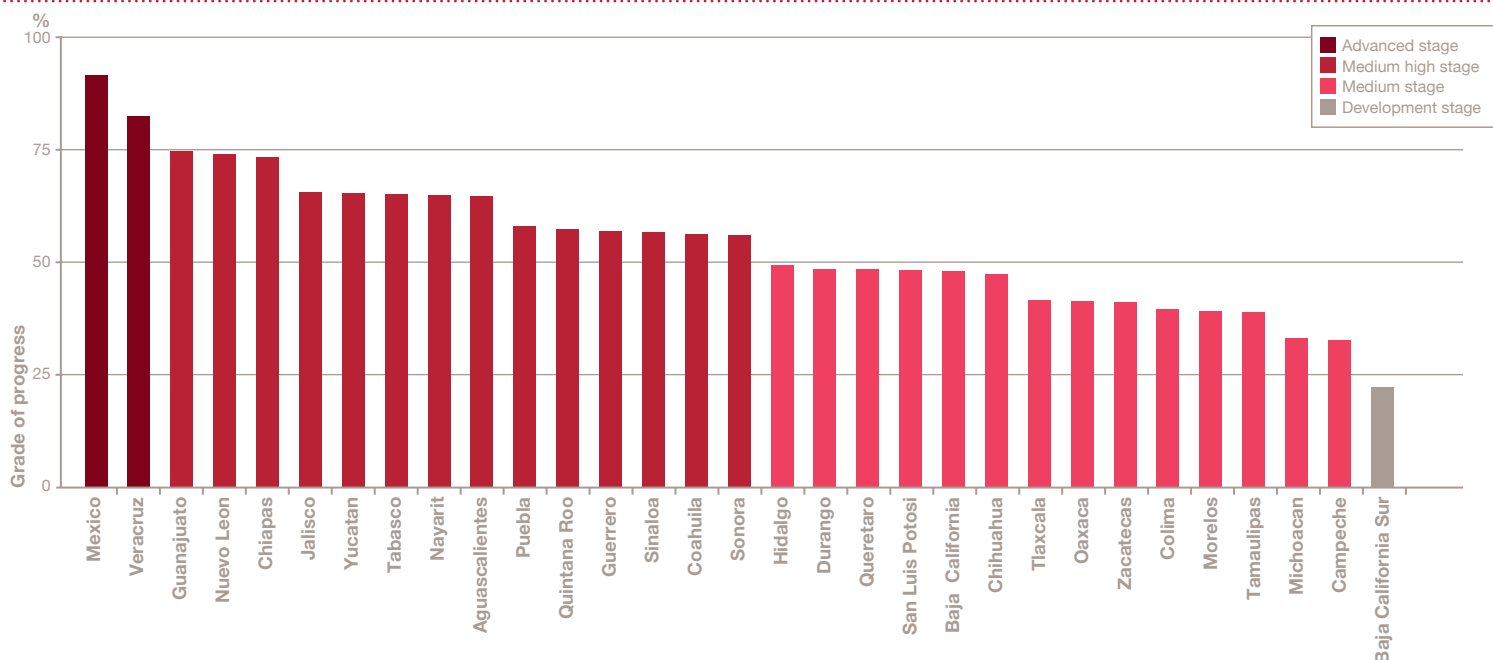
In order to prevent the reversal of achievements in transparency, it is necessary to make even more progress at least in two items: first, public agencies that refuse to disclose information must be penalized –in severe cases, not just with administrative penalties. Second, whistleblowers –employees who disclose information so as to reveal misconduct in public agencies– must be protected.

The call for transparency as a key element in a democracy has been encouraged by different social sector organizations. In the last two decades, Latin American countries –including Brazil, Chile, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru and Uruguay, among others– have designed and implemented Freedom of Information Acts (FOIAs). These FOIAs have provided more transparency to government actions, ensured citizens' right to request and access public information, and contributed to overall accountability. It is estimated that 65% of Latin American countries have FOIAs, which has propitiated a new scenario: today it is possible to access information on government performance through electronic pages. At the beginning, a request to disclose information came from civil society and in 2003 during Mexico's transition to democracy, the Instituto Federal de Acceso a la Información (IFAI) (Federal Institute for Access to Information) was founded. In nearly a decade, electronic individual requests have allowed civil society organizations and society in general to learn about government budgets, state procedures, sentences and many other governmental decisions. Key elements in IFAI are the development of citizen-friendly government Web pages, promotion of independent monitoring and generation of

proactive information campaigns. There is still room for improvement of the legal framework under which transparency operates and makes progress in accountability, which is an essential component of a good government. In this context, and in order to prevent the reversal of achievements in transparency, it is necessary to make even more progress at least in two items: first, public agencies that refuse to disclose information must be penalized –in severe cases, not just with administrative penalties. Second, whistleblowers –employees who disclose information so as to reveal misconduct in public agencies– must be protected. Since employees fear dismissal, suspension, demotion, harassment, intimidation and involuntary transfer, among other things, they require protection. These measures help to ensure that all branches and levels of government accept supervision as a routine procedure, and progress has already been made in this regard.

Since Mexico can document successful experiences, our indicator shows access to public information on the origin and assignment of public resources, as well as to the implementation of laws that harmonise financial and transparency information systems in states and municipalities. Three variables are considered: *Enforcement of the General Law on Government Accounting, Transparency Index and Electronic Government Index.*

Transparency - States



Sources: CIDE (2010), CONAC (2012)

The percentage of progress is the weighted sum performance from states in: Transparency Index, Government Index, General Government Accountability Law implementation.

These variables assess government transparency in states before its inhabitants, which is the extent to which the city-dweller can be informed on public spending, processes and ease to perform such processes in the state.

It was satisfactory to find that most states are in the medium high and middle stages; two in the advanced stage and only one in the development stage.

The Estado de Mexico with 91% and Veracruz with 81% are in the advanced stage. The implementation of LGCG in the first of these states has been striking, and so has its use of electronic systems and response to citizen demands concerning transparency. Veracruz has had an outstanding performance in transparency and in the implementation of LGCG.

Baja California Sur is the only state in the development stage, with an average of 22%, which means that it needs to make an extra effort to go beyond that stage. However, this is an exception.

Thirteen states are in the medium high stage: Aguascalientes, Chiapas Coahuila Guanajuato, Guerrero, Jalisco, Nayarit, Nuevo Leon, Quintana Roo, Sinaloa, Sonora, Tabasco and Yucatan. Chiapas and Nuevo Leon are in the same stage, proving that the implementation of the law can take place in different regions of the country, regardless of their historical backgrounds.

The *Transparency Index* variable shows access to information and the quality of electronic pages for requests (index per *zona metropolitana*), according to CIDE (Centre for Economic Development Research). There are seven states that are in the advanced stage: Aguascalientes, Chiapas, Guanajuato, Mexico, San Luis Potosi, Tabasco and Veracruz.

The states in a medium high stage are thirteen: Chihuahua, followed by Coahuila and Guerrero, and in a similar stage are Jalisco, Nayarit, Oaxaca, Nuevo Leon, Quintana Roo and Tlaxcala.

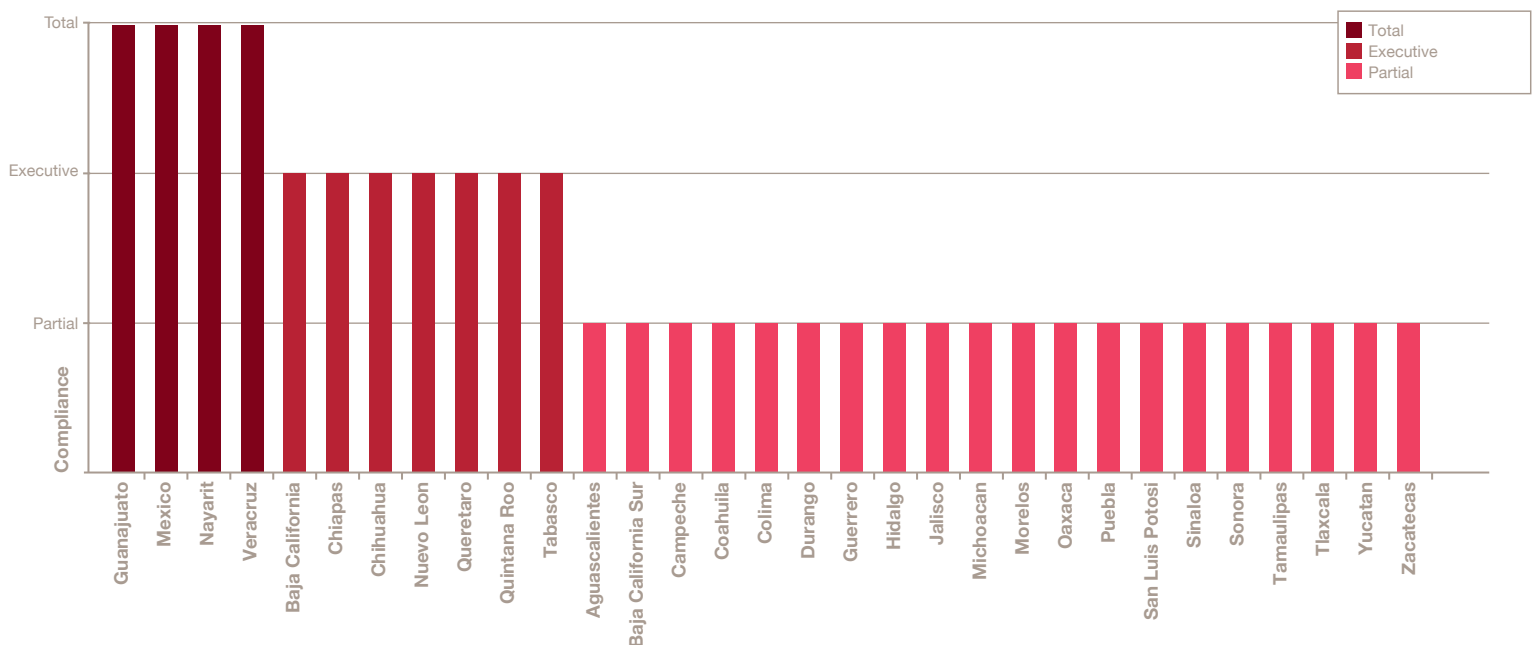
The *Electronic Government Index* variable shows efficiency and use of electronic portals of state governments. Six states are in the advanced stage; Jalisco is first, followed by the State of Mexico, Nuevo Leon, Puebla, Sinaloa and Yucatan.

In a medium high stage are Aguascalientes, Baja California, Chiapas, Coahuila, Colima, Durango, Guerrero, Hidalgo, Sonora and Veracruz. The rest are at an intermediate or development stage.

The last variable is the *Enforcement of the General Law on Government Accounting*, which shows the enforcement of Article 15 in each state. Enforcement may be performed in three ways: Total, which is equivalent to the advanced stage; Executive, which corresponds to the medium high stage and Partial, which refers to a development stage.

According to this classification, there are four states in the advanced stage: Guanajuato, Mexico, Nayarit and Veracruz. The states in a medium high stage are Baja California, Chiapas, Chihuahua, Nuevo Leon, Queretaro, Quintana Roo and Tabasco. The states of Aguascalientes, Baja California Sur, Campeche, Coahuila, Colima and Durango, Guerrero, Hidalgo, Jalisco, Michoacan, Morelos, Oaxaca, Puebla, San Luis Potosi, Sinaloa, Sonora, Tamaulipas, Tlaxcala, Yucatan and Zacatecas are in the development stage, since the enforcement of such Law is still partial.

General Accountability Law Compliance



Source: Consejo Nacional de Armonización Contable (CONAC), update at may 2012

Transparency promotes democracy not only because citizens can access information on budgetary management but also because it encourages the creation of observatories and other formal and informal spaces for public debate.

Three aspects have been considered in measuring transparency: legal, accounting and access to information. Our study reveals that transparency is noticeably enhanced if the use of electronic government is included, since the possibility of providing feedback increases. In other words, transparency implies not only access to information but also the possibility of requesting information. Therefore, transparency is directly linked to managing new technology.

Additionally, transparency promotes democracy not only because citizens can access information on budgetary management but also because it encourages the creation of observatories and other formal and informal spaces for public debate on government decisions. Today, Mexico stands out as one of the countries where citizens place requests for information. According to data available, from 2003 to 2009, Mexican federal agencies received 489,739 requests. From July 2009 to September 2011, in Chile 13,017 requests were made. We may say that even though Mexico

is 10 times the size of Chile the number of lawsuits is relatively much greater. Furthermore, Mexico is considered as one of the countries, together with Chile and Honduras, with proactive measures. According to available figures, in 2010, the compliance rate among central agencies in Chile and Honduras was high (94% and 88%, respectively). In 2009, the compliance rate of Mexican federal agencies in publishing proactive information was also high (82%).³⁴

Independent supervisory agencies are enforcing the right to access information. To date, 98.6% of the 8,884 resolutions by the Mexican Supervisory Institute in the period 2003-2009 to disclose information have been fulfilled.



Campeche's Historical Downtown
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³⁴ FUNNDAR. ELLA Policy Brief: Building the Legal Framework to Support Transparency and Access to Information in Latin America. ELLA, Practical Action Consulting, Lima, Peru (2012) 5 pp.

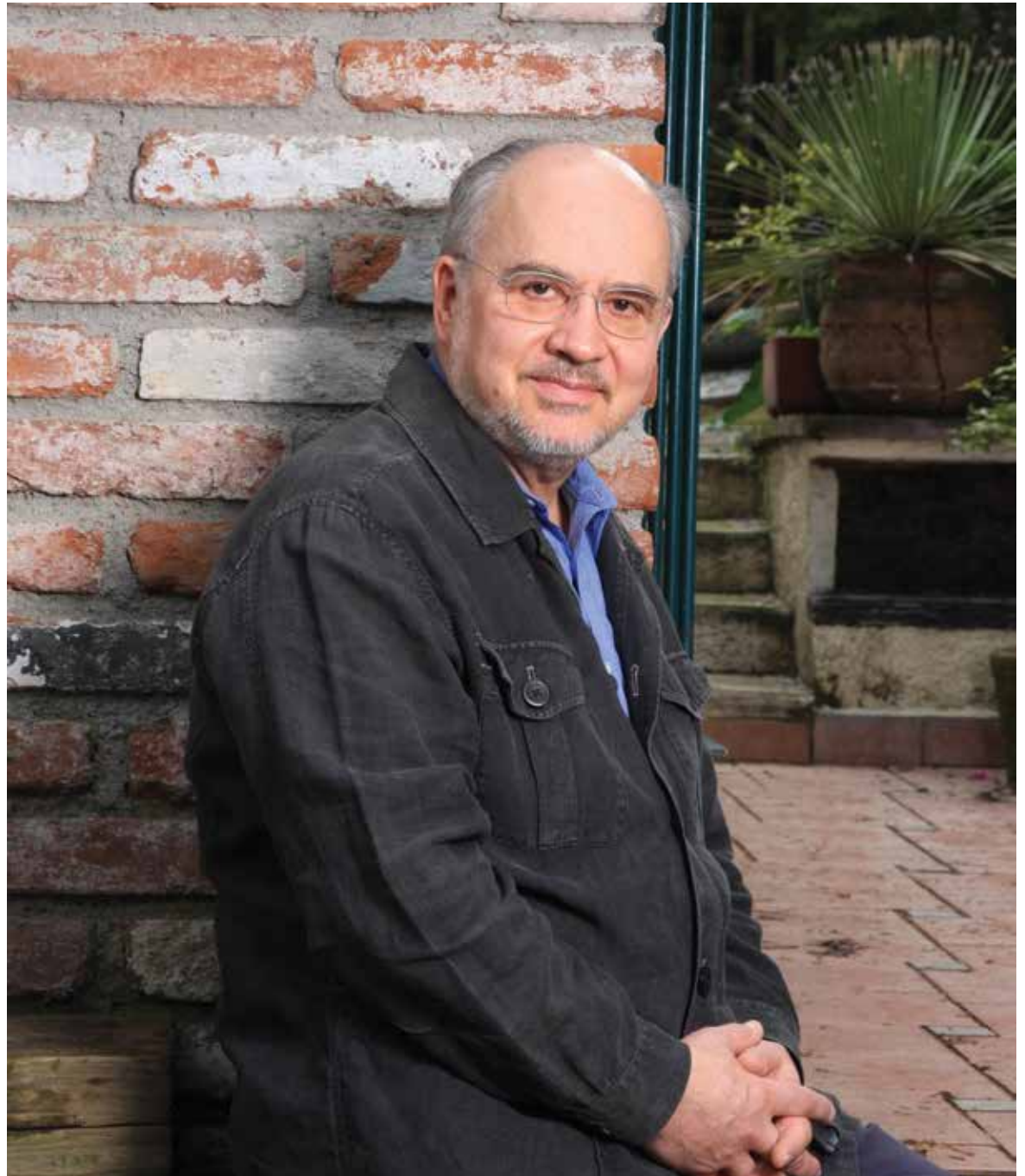
Lorenzo Meyer Cosío

Constructing citizenship through the implementation of transparency

Lorenzo Meyer is one of the most reputed analysts and historians in Mexico. He earned his Bachelor's Degree and Doctorate from El Colegio de México (Mexico College) and his Post-doctorate in Political Science from the University of Chicago. Among his most recent awards are the Award of the Decoration of the Order of Isabelle the Catholic bestowed upon him by the Spanish Government in 2010, and in 2011 he received the National Science and Arts Award from the President of Mexico for achievements in history, social sciences and philosophy.

He has written 20 books, among which the following are outstanding: México para los mexicanos: La Revolución y sus adversarios (Mexico for Mexicans: the Revolution and Its Adversaries); El Espejismo democrático

(The Illusion of Democracy) and El Estado en busca del ciudadano (The State in Search of the Citizen). He has delivered courses in the History Department of the Universities of Columbia, Stanford, Texas in Austin, California in San Diego, Washington in Seattle and the Complutense of Madrid. In Mexico he has been Professor at the Instituto Tecnológico Autónomo de México (Autonomous Technological Institute of Mexico), Universidad Iberoamericana (Ibero-American University) and at Universidad Nacional Autónoma de México (National Autonomous University of Mexico). He is a columnist for "Reforma" (Reforma Daily), participant in the analytic TV programme "Primer Plano" (Close Up) on Once TV Channel and collaborates with Carmen Aristegui in the radio programme Noticias MVS (MVS News).



What citizenship gains through information is power the government loses; what is a gain for one is a loss for the other, and it is a loss for the better. In the case of Mexico, since power was so concentrated, only a few knew how to really manage money from power, decisions from power.

PwC: In the history of Mexico, what cities have been outstanding? For different reasons, what cities would you consider as outstanding?

L: In the history of Mexico, from the colonial period or even before, obviously the leading city has been Mexico City, the political headquarters that already had a very important demographic mass. However, what was its main activity? Why was it sought after? What did Europeans see in the New Spain? They were looking for two things: precious metals and labour. Here in the plateau, there was labour but no precious metals.

Then they went to other cities, which would, in time, become very important. Zacatecas, for instance, became an important city because precious metals were found there, although it had to be populated in the North, which was costly. Veracruz could have been a grand city, but in those days diseases were difficult to control, and that tropical zone was rather hostile.

Cities between Veracruz and Mexico City were founded, like Puebla. It was a city created in accordance with the main route. It was the economic as well as the cultural aorta that ran from Veracruz to Mexico City. There were other cities, such as Orizaba, Jalapa and Cordoba which were *zonas metropolitanas*

that grew during the viceroyship. Economic needs turned other *zonas metropolitanas*, aside from Mexico City, into important *zonas metropolitanas*. However, Mexico City has the peculiarity that it had been important, continued to be so and still is!

PwC: Why did baroque cities appear?

L: They appeared because of the silver boom. The 18th century provided so much richness that one of the most important structures of New Spain, the church, was able to afford luxury spending (although the church did not consider it to be so, but rather as a material, physical expression of spirituality), and if there was money, souls were saved. Investing a good amount in that business was an art that could be experienced very well through the senses, but eventually would lead the individual to contemplation. Thus, baroque cities can be viewed in two different ways: as the deployment of worldly riches or as an extreme effort to make individuals communicate with their spirituality and with God.

PwC: How is historic memory built in urban spaces? What traces of such memory remain in cities?

L: There have always been chroniclers. They are characters who have been present, from the beginning. Probably some of them

were not acknowledged as such, but there is a memory coming from parents, grandparents, news of the past, which are kept and transmitted by chroniclers, thus they are interesting, important. This not only pertains to cities, but to medium size villages as well.

When I arrived at this part of the city where we are now – San Nicolás Totolapan, in the Magdalena Contreras delegation– I met a character, a neighbour who kept photographs and memories of this town. One day he offered them to Once TV Channel because he needed them to be kept not only in his memory. It is an example of the characters that have existed way back then. I would say that they appear when there is an important demographic concentration, complex, sophisticated; someone must keep records.

PwC: Is it possible to think about cities, *zonas metropolitanas* as spaces for social renewal?

For example, in the Mexican case, the mestizo population is fundamental, a fact which had not been foreseen. There was the republic of the Indians and the republic of the Spanish, where was the republic of the mestizos? Well, it existed, but then again it did not. In fact, it did appear, and it is very dynamic today reaching its peak in *zonas metropolitanas*.

PwC: If we thought about *zonas metropolitanas* as Centers of opportunity, what would you think about?

L: Obviously, I would think about education. *Zonas metropolitanas*, in particular Mexico City, are natural Centers where the institutional sectors of the most important universities or technical schools are, and academics that can offer the best education concentrate in them. There are excellent universities in other areas, but such areas are not cities. In fact, some towns are college campuses.

PwC: When you think about what is new, a novelty in Mexican cities, what do you think about?

L: My answer corresponds to the area I work in, which is politics and political science. I think about political culture. Mexico City is different from all other *zonas metropolitanas*, and of course from rural areas in a very specific sense: there is greater plurality; there is a freer political vision. That is why this great city contributes today with a great deal of opposition to whoever it may be. Civility or political culture in Mexico City is the most tolerant of all, and at the same time it is the most interesting bastion against authoritarianism. So I see in cities, in particular in Mexico City one of the most

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Streets of Puebla, Puebla
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interesting regions for the development of political ideas; more freedom.

PwC: Don't you believe that in the last fifteen years or so, a major transformation has occurred in *zonas metropolitanas* like Cancun, Morelos, Aguascalientes or any other one? We see such dynamism. It is as if they were about to transform themselves in the sense you have mentioned, regarding diversity, openness, or are we exaggerating perhaps?

L: Yes, but a "careful" yes. For example, Cancun is one of those recently created cities, following a political decision of creating a tourist pole to which thousands of people from other parts of the world arrive and yes, they have given the city a lifestyle that would not be possible elsewhere. The transformation of Aguascalientes, for example, has also been quite speedy in some instances. The 1985 earthquake in Mexico caused people to leave Mexico City for different places, which had an impact on Aguascalientes, for example. Queretaro is another city where people from other urban Centers have gone to, not from the country to the city but from one city to another, from one they perceive as too big, a macro-city, and that implies a lifestyle not considered adequate, so people move to other *zonas metropolitanas* where space is more humane. And yes, Mexican cities have grown quickly and have had a sort of migration we had not known because

traditionally, it was from rural zones to urban zones, but today we see that it is among urban zones.

PwC: Thinking about some of your books –for the common citizen, is it possible to perceive a balance between exercising power and government in cities?

L: I believe balance should be our goal. In our daily lives there should be a balance between what civil society demands and monitors and what constituted power does and pursues. Both do not necessarily have equal interests. Through that daily interchange of ideas and power, societies and cities are transformed. And if it is decided to set up a speedway or open an urban zone to something else, it must be disclosed; sometimes there will be support, sometimes opposition, but the authorities can not impose themselves so easily. It is a constant negotiation. I believe that is what ideal democratic urban living is about: this form of exercising power by citizens and public institutions should be our daily practice.

PwC: In terms of transparency, what do you think are the main changes occurring in *zonas metropolitanas* or in municipal governments? Can you identify any positive changes?

L: In recent times, maybe one of the few positive changes Mexico has experienced is that the state party, the Partido Revolucionario Institucional, PRI (Institutional Revolutionary Party) has

stepped down and more or less transformed itself into one party among others, the possibility for the Law of Transparency to become a reality and not just an aspiration was opened. Knowledge or information means power; not only that, but one of the elements of power is information. In the past, it concentrated in government areas, citizens had very little information; having access to information means having power and this is a zero-score game.

What citizenship gains through information is power the government loses; whatever is a gain for one is a loss for the other, and it is a loss for the better. In the case of Mexico, since power was so concentrated, only a few knew how public money, public decisions were managed. Today, inquiries can be made and although citizens will not always get the answer they expect, compared to the past it is a substantial gain. It is one of the best transformations Mexican people have experienced in the last few years.

Technological readiness

*The new millennium opened itself to a virtual universe, parallel to the one where the material and physical life of Mexicans unfolds. This poses a new challenge since its influence is growing day by day, even among those who do not use or can not afford such technologies. Thus, cultural nets are being created anew while others are being strengthened. Those who have had access to the Internet realize that this technology allows them to “navigate” through unsuspected spaces, communicate, interchange, create and recreate possibilities with a freedom that had not been experienced in a world that is apparently becoming smaller. May we say that virtual nets are like a technological Tsunami that is changing Mexico’s cultural patterns?*³⁵

Nowadays, being skilled in virtual technologies is a clear feature in business performance, research and educational activities. Yet in a world where technology is increasingly predominant, communication among people and even political campaigns depend on the Internet even if not everyone can afford it. Having access to technology implies a triple challenge: improving the quality of physical infrastructure, promoting the incorporation of technology into daily life and counting with educational technologies that make it accessible. In such context it is interesting to listen to what Lourdes Arizpe, interviewed for our study, states when she argues that the use of the Internet is a regular means of daily interaction among Mexicans around the world. Moreover, the Internet is facilitating cultural innovation: Rock in Nahuatl, videopolitics or videos on recent forms of popular dances such as salsa or huapango or images of Mexico’s most beautiful or interesting places are spreading everywhere.

In our study, electronic media access is a per capita estimate for *zonas metropolitanas* and states so as to include differences and facilitate the design of a progress pattern. In the assessment of technological readiness for an emergent economy, it is important to bear in mind that the cost of implementing technology must include the installation of optic fiber throughout *zonas metropolitanas*, regions and states, which becomes difficult because of the level of investment, cultural transformation and organization it implies. For example, equipped highways and complementary infrastructure have to be constructed. At present, Mexico has installed optic fiber in several urban and *Zonas metropolitanas* and in certain sections of its states, not all of which are WiFi-equipped. Yet today, Mexico has completed its planning phase and its efforts should be valued. Nonetheless, Mexico would benefit if it accelerated its pace.

According to our findings, at least one third of the Mexican states are in an advanced stage in terms of technological readiness: Baja California, Baja California Sur, Coahuila, Durango, Nuevo Leon, Sinaloa, Sonora, Tamaulipas and Zacatecas. Another 12 are in a medium high stage: Aguascalientes, Campeche, Chihuahua, Guanajuato, Jalisco, Estado de Mexico, Morelos, Puebla, Queretaro, Quintana Roo, Tabasco and Yucatan. The remaining ten states are in a medium stage: Chiapas, Colima, Guerrero, Hidalgo, Michoacan, Nayarit, Oaxaca, San Luis Potosi, Tlaxcala and Veracruz. It must be emphasized that these figures move quickly; for example, the effort made by the state of Jalisco to establish cybernauts is striking, and according to its statistical sources there are 4.1 million cybernauts today.



³⁵ Arizpe, Lourdes, October 2011, "Cultura e identidad: mexicanos en la era global"; Mexico D.F.: Revista de la Universidad Nacional Autónoma de México, Number 92: pages 70-81.

At least one third of the Mexican states are in an advanced stage in terms of technological readiness. Another 12 are in a medium high stage. The remaining ten states are in a medium stage.

A geographical overview shows that in the North, Northeast and Northwest regions of the country an advanced stage has been reached in all states except Chihuahua, which is in a medium high stage. All of the states in these regions exceed 80% technological readiness. For example, in the Northeast region, Sonora scores 99%, Baja California and Baja California Sur almost 84%, and Sinaloa, 86%. In the North, Chihuahua has 67%. However, Durango scores 85% and Coahuila 84%. In the North-west, Nuevo Leon is at 87% and Tamaulipas at 73%. These high percentages show that almost all states in the North, Northeast and Northwest are in advanced stages. Variations among these states are small and show that all northern regions are

highly dynamic, creating enough conditions for business and educational sectors to bridge gaps in technological readiness.

In the center of the country the medium high stage predominates in the states of Jalisco, Guanajuato, Aguascalientes, Queretaro, State of Mexico, Morelos, Puebla and Tabasco. Yucatan Peninsula is also in that stage. The rest of the states are in a medium stage.

For an idea of Mexico's standing in technological readiness, we consulted the "Encuesta nacional sobre disponibilidad y uso de tecnologías de la información en los hogares" (Survey on the Availability and Use of Information Technology in Households), performed by the Instituto Nacional de



Asunción Cathedral, Hermosillo, Sonora
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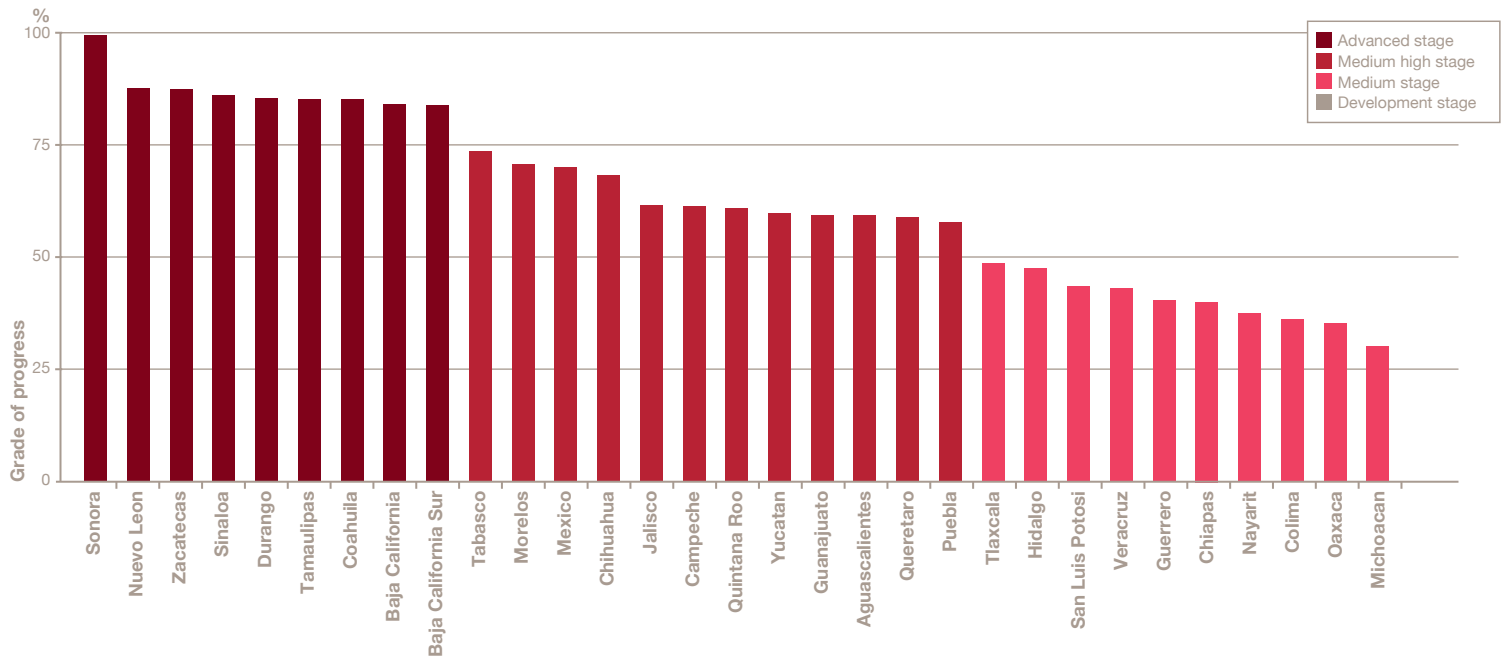
Undoubtedly at least a fourth of Mexican families can access the Internet from home. In all Mexican states there are more Internet users than there are computer users.

Estadística, Geografía e Informática in 2011,³⁶ which provides aggregate data on the number of users. This source shows that as of May 2010, 38.9 million people use a computer and 32.8 millions have access to the Internet. Considering that the country has 120 million inhabitants, that figure represents a quarter of the population can afford access to the Internet. The Survey also shows that there are regional imbalances. For example, in locations such as Mexico City, Nuevo Leon, Sonora and Baja California, 4 out of every 10 households have access to a computer, which is an average of 43.4%. However, in Chiapas, Guerrero and Oaxaca only 1 out of every 10 households can afford access to a computer, which is an average of 14%. Based on such data, we may conclude that although such access may be limited, undoubtedly at least a fourth of Mexican families can access the Internet from home.

To a certain extent, our own data confirm the information rendered by this survey, as we found that Internet access is a key variable that is propelling technological readiness. In all Mexican states there are more Internet users than there are computer users. In most *zonas metropolitanas* Internet use is between 7 and 10% more than computer use, except in Reynosa, Saltillo, San Luis Potosi, Tepic and Tijuana. Although it is necessary to look into this item in more depth, we suggest that technological institutions and higher education centers in these locations explain such behavior.

To the extent that there is Internet availability in *zonas metropolitanas*, we find that the number of Internet users in these areas varies between 22.99 and 48.6%. Regarding computer users the figure varies between 17 and 78.9%. Twenty nine *zonas metropolitanas*, i.e. the majority, score between 30 and 49% in technological readiness due to their combined Internet and computer use. This suggests that most *zonas metropolitanas* are in an medium stage, while only Acapulco and Tlaxcala are still at a planning stage, with 16.4 and 19.8%, respectively. Currently, Tepic is leader with 86% in technological readiness, followed by Hermosillo, Chihuahua and Saltillo.

Technology readiness - States



Sources: Secretaría de Educación Pública – Sistema Nacional de Información de Escuelas (2010).

The percentage of progress is the weighted sum of performance from states in: Public Schools with Internet Acces, Private Schools with Internet Access.

³⁶ INEGI (2012). Estadísticas sobre disponibilidad y uso de tecnología de información y comunicaciones en los Hogares, 2011. Mexico: INEGI; Carrera, F. (2011). Redes Sociales y Networking. Guía de supervivencia profesional para mejorar la comunicación y las redes de contactos con la web 2.0. Barcelona: Profit Editorial. Carreras, R. (2011). ¿Qué es la influencia en las redes sociales? Herramientas para medirla. Disponible en: <http://materialesmarketing.wordpress.com/2011/09/19/que-es-la-influencia-en-las-redes-sociales-herramientas-para-medirla/>; Christakis, N. A. y Fowler, J.H. (2010) Conectados. Madrid: Editorial Taurus, Santillana; D'Adamo, O., García Beaudoux, V. y Freidenberg, F. (2007). Medios de comunicación y opinión pública. Mexico: McGraw Hill; Lupia, A. y McCubbins, M.D. (1998). The Democratic Dilemma: Can Citizens Learn What They Need to Know?. Cambridge: Cambridge University Press.

However, WiFi access is only one stepping stone in guaranteeing Internet use. Either public institutions or households –or both– require computers as well as budgets to pay for the service, in which case computer use would increase. Our data show that Internet and computer use in educational spaces is partially financed with own funds in all Mexican states: computer and Internet access concentrates in private schools. Internet access in private schools scores more than 90% in at least five Mexican states. The scores are 97%, 95%, 94%, 93% and 90% for the states of Nuevo Leon, Durango, Baja California Sur, Sonora and Guanajuato, respectively. After these states we find a group of at least 16 other ones whose Internet access in private schools is more than 80% (Aguascalientes, Baja California, Campeche, Chihuahua, Coahuila, Hidalgo, Estado de Mexico, Morelos, Queretaro, Sinaloa, Tabasco, Tamaulipas, Veracruz, Yucatan and Zacatecas). In sum, just one state, Colima, scores less than 40% of private schools with Internet access, and in this case, the score was 37.7%.

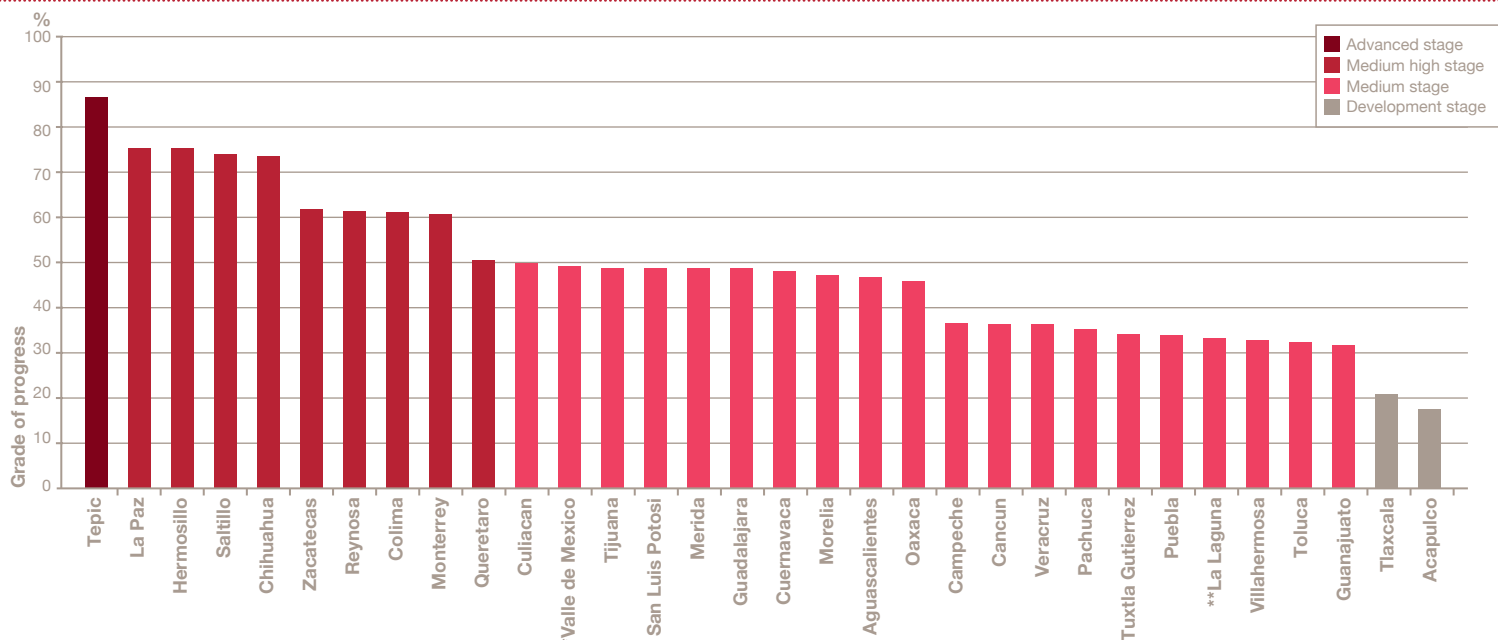
When we evaluated the scores in public schools we found that the use of public funds for this service is scarce: only Coahuila, Nuevo León, Sinaloa, Sonora and Zacatecas scored above 60%, and we found schools possibly located in rural areas that have limited access to the Internet. This is the case of public schools in Chiapas, Guerrero and Veracruz. In this context, efforts in public schools in the states of Sinaloa, Sonora and Zacatecas have been outstanding: seven or eight out of every ten schools have Internet access. This illustrates that the state pattern compensates for the local difficulties which schools might face.

The greatest efforts towards providing Internet access to schools has been made by Zacatecas, where the percentage of public schools with Internet access is higher than in private schools by 5%. Zacatecas then is the only state where public schools rank higher than private schools. Not surprisingly, in an era where information is critical to the social fabric, private schools in all the states are involved in providing Internet access and thus, states like Baja California, Baja California Sur, Coahuila, Durango, Nuevo Leon, Sinaloa,

Sonora, Tamaulipas and Zacatecas are in an advanced stage. In all these cases, efforts have been made to have at least 50% of public school students as users. In sum, access to the Internet has become a hot topic of social and political concern around the globe. Mexico is no exception, and is quite concerned about expanding access to the Internet in public schools.

In sum, access to the Internet and computers is growing, as well as its contribution to the economy. However, Mexico needs to keep on making efforts so as to be as competitive in the Latin American region as Chile. One factor in this direction is the planned 1% increase in investment in science and technology starting in 2012 and anticipated by José Narro Robles, Rector of the Universidad Nacional Autónoma de México.³⁷

Technology readiness - Zonas metropolitanas



*Valle de Mexico: Estado de Mexico - Distrito Federal
 **La Laguna: Durango - Coahuila

Sources: Instituto Nacional para el Federalismo y el Desarrollo Municipal con datos de INEGI (2010).

The percentage of progress is the weighted sum of the performance from metro areas in: Computer Users, Internet Users

37 "Conacyt espera un 1% de aumento para investigación", in El Economista, 19th September 2012, available at <http://eleconomista.com.mx/entretenimiento/2012/09/19/conacyt-confia-que-proximo-gobierno-aumente-1-investigacion>; "A ciencia, 1% del PIB: Peña" in El Universal, 28th September 2012, available at <http://www.eluniversal.com.mx/nacion/200385.html>

Lourdes Arizpe

Mexican Culture: strong enough to survive in the Era of the Internet

Lourdes Arizpe is a leading anthropologist in Mexico and is a historian by the Universidad Nacional Autónoma de México UNAM; Master in Ethnology by Escuela Nacional de Antropología e Historia (National School of Anthropology and History) and earned her Doctor's degree from the London School of Economics in social anthropology. She was awarded the Fulbright and Guggenheim fellowships, is a faculty member of the Davos Economic Forum and advisor to the United Nations Economic and Social Council. Arizpe has written several books and articles, among which are: Patrimonio cultural inmaterial de México: Ritos y Festividades. Mexico: Cámara de Diputados, Crim-Unam and MA Porrúa, Culturas en movimiento: interactividad cultural y procesos globales. (2006). Mexico: Senado de la República, CRIM-UNAM y MA Porrúa, comp. The Cultural Dimensions of Global Change: an Anthropological Approach, Paris: UNESCO (1995). She was science director of the Informe Mundial de Cultura de la UNESCO, vols. 1 and 2. (1998 and 2001), translated into English, French, Chinese, Arab and Russian.



PwC: Due to the fast development of a digital economy, how could the development of the Internet and social networks integrate into the promotion of cultural activities?

L: We all ask ourselves the same question: what is going to happen with this virtual world which all of a sudden is parallel to the real world? Many things are changing: the sense of privacy, the sense of friendship, the sense of community.

Mexico is a country with a significant amount of social intelligence because there is a very special social density. What is missing is compatibility between the cultural world and this virtual world, which is not happening because an audio-visual government policy is missing, let alone a digital policy. Also, youth want to be independent, and it is good that they are and continue to be so, but there must be policies, institutions and investment to support cultural affairs, but above all these cultural abilities must be updated and granted more relevance through the virtual world.

I believe there is an enormous field that is unknown to us, and neither do we imagine how it could leverage these new activities.

What is missing is compatibility between the cultural world and this virtual world, which is not happening because an audio-visual government policy is missing, let alone a digital policy. Also, youth want to be independent, and it is good that they are and continue to be so, but there must be policies, institutions and investment to support cultural affairs, but above all these cultural abilities must be updated and granted more relevance through the virtual world.

PwC: Which might be the next steps in promoting cultural activities in Mexico?

L: Unprecedented fields for the development of cultural activities have opened and are just beginning to be glimpsed in Mexico. So much so that even cultural capitalism has been discussed in the sense that ideas, images, styles have much to do with the developmental capabilities in different countries. They have even been referred to as comparative advantages, and in some cases those comparative advantages have been developed around indigenous culture.

For example, in Australia there is legislation to protect indigenous people so that they are the only ones that can make dream paintings –paintings about dreams– because they dream paintings and render them in a very particular style that has an international market. Hence, one must think about those cultural skills. Cultural assets, social intelligence, intellectual skills have also been discussed, all of which is related to culture. Also, there are knowledge flows, but such flows must be accompanied by cultural flows, and although Mexico has comparative advantages in these fields, they have not been developed yet.

PwC: We would like to know which zones offer opportunities for government, business and society to collaborate.

L: I can mention some zones or cities that may have that possibility. I would start with Veracruz, which has always been a cosmopolitan city, and where cultures and immigrants and economic and cultural trends not only happen but also generate a virtuous circle. Veracruz already produces a lot of music and also has high-quality intellectual Centers such as the Universidad Veracruzana, and it is a tourist attraction closely linked to the Gulf of Mexico and hence to Europe and the United States. However, a balanced development must be encouraged to achieve industrialization and urbanization linked to social and cultural development that benefits all locals.

PwC: Does Mexico have cultural assets?

L: Mexico has very important cultural assets, millenary assets. It is one of the few countries with millenary civilizations and has known how to preserve its culture throughout the 2^{0th} century. In addition, it has made substantial efforts to project Mexico worldwide, and Mexico was a cultural leader. In the last

ten years, that leadership has been lost, but it can be recovered. A new organizational scaffolding must be created to make room for new methods of communication, transmission and negotiation between the State and cultural groups, artists and creators that produce income, presence and media access, among other things.

PwC: And those cultural assets, are they in some region, are they concentrated, scattered throughout the country?

L: Culture is the action of imagining, innovating and practising a meaning that may become a cultural asset. There is much room for discussion. In recent years, an analytical movement in the social sciences has tried to identify the cultural contributions to the development of the economy. A recent study by my friend Ernesto Piedras³⁸ shows that in Mexico the “golden account” in GDP is about 6%, which means that quantifiable cultural activities are already producing 6% of the economic activity.

Most cultural activities have to do with the commercial theatre, the cinema, television; but that is only the tip of the iceberg. Such creativity has been considered as part of Mexican talent, mainly in

the visual arts, film making and in many artistic fields, including handicrafts. This latter category needs effective support if small family businesses are to be set up and recovered, since in the last ten years they have been neglected. Consequently, Mexican handicrafts have almost disappeared.

PwC: How is the cultural patrimony, whether tangible or intangible, woven and drawn into cities as a process? Could you give us some examples of cities?

L: In Mexico, we have two very interesting types of cities: those with an important Pre-Columbian heritage, with indigenous groups that still speak their own languages and manufacture high-quality handicrafts, and those colonial cities that have an extraordinary architecture. Both types are registered with the World Heritage List. Mexico is the Latin American country with the largest number of properties registered with the World Heritage List, even in the Representative List of Intangible Cultural Heritage. This heritage has been very well preserved and developed in some metropolises. For example, the development of the Historic Center in Mexico City has been extraordinary. The project was developed by historians and anthropologists

³⁸ Ernesto Piedras is director general of The Competitive Intelligence Unit, S.C., an economic analysis consulting firm specialized in telecommunications and cultural industries.

There will be a growing interest –in the media and virtual spaces– in listening to and watching music played in different locations, different countries. In that sense, Mexican music has an open door that can offer comparative advantages worldwide.

that were able to draw up a very good development plan. The private sector participated, banks bought old buildings and renovated them or built apartments where artists, young people, people interested in history live today. At the same time, a wide variety of informal activities takes place, from concheros³⁹ dancers to selling urban handcrafts, all of which makes the Historic Center a very effervescent place. People visit on Sundays because there are so many things to see and do: museums, promenades and all kinds of performances. In other cities these types of activity have not been cohesively developed.

PwC: Could you tell us about the contributions of Mexican culture to economic development, and also what the next steps are?

L: Yes. That is exactly what has been discussed once and again in recent years. However, implementing culture may in fact favour the expropriation of cultural activities if it turns those involved into subordinates. Positive results may be achieved, as has been the case of the project to build a tourist center in Bonampak managed by the Lacandon people themselves. However, development projects must include the produce of cultural activities or artists, artisans, indigenous people and mestizos in communities which are amazingly capable of organizing themselves.

PwC: Please, give us some examples.

L: Certainly, I can give you many examples. In Morelos, the dance of the Chinelo⁴⁰ started in a village called Tlayacapan; then it became more elaborate and it was taken to another village called Tepoztlán, and eventually it was picked up by yet another village called Yautepec, where it was enriched with striking pre-columbian textiles. Today, historical scenes, Pre-Columbian ball game and pyramid scenes have been added to the costumes. They are absolutely extraordinary, a true parade of chinelo costumes. All this is done by family organizations and neighbourhoods.

However, all those activities are performed informally, and many of us would like them to be more organized, to contribute more to the people, whether through tourism or selling handcrafts. But this is not always achieved because in general, there is no administrative structure behind the relationship among State, local initiative and private initiative that would ensure an equitable sharing of such benefits. Also, it would be of no use if commercial businesses are only interested in selling the products in a cultural market, regardless of the long-term support offered or, on the contrary, if it eliminates that activity. In this regard, we have an example in breweries that support local festivities but are a negative influence because they sell beer indiscriminately. The goal should be the preservation of a cultural tradition that would also create local employment. This would connect youth to such activities and benefit all the community.

PwC: Please, could you give us examples of specific areas in the arts and handcrafts?

L: There are interesting examples of creativity in handcrafts. For example, amate⁴¹ paper from Guerrero, which has grown its market, even internationally. Some years ago, amate paper painters were rendering new scenes that reflected not only the ethnography of their places of origin, but also events in other places. For example, in New York there were amate papers depicting the Twin Towers attack. There are indigenous groups –for example the Nahua from Guerrero– who sell their pottery throughout Mexican tourist sites and in some places in the United States. This is something they have developed themselves, spontaneously. There was support for such activities in the 90's, and my suggestion is to resume that kind of support.

PwC: From your point of view as a cultural specialist, may we say that Mexican talent is acknowledged in music, art or other art forms?

L: Yes, not only has Mexican talent been acknowledged, it has also become quite popular. Mexican music is internationally renowned; for example, “sones jarochos.”⁴² from Veracruz, which is a state with enormous cultural potential. In the archaeological site of Tajín there is a cultural event that, despite controversies with archaeologists, has become a performance that brings together great musicians and singers.

³⁹ Concheros are mestizo groups that interpret ritual dances of pre-Hispanic origin.

⁴⁰ “Chinelo” is a traditional mythological character in carnivals in several locations of the Estado de Morelos. Chinelos are known for the colors and rich decorations they wear.

⁴¹ Inner bark used as a painting surface. Its origins are pre-Hispanic.
⁴² Music from Veracruz in which a kind of tap dance combines with poetic songs.

Music and dance from Veracruz have increased their audience through the state's cultural centers in many Mexican cities. Not only in Mexico have they become popular; youth who have migrated have picked up that music and made it popular mainly in Los Angeles and Chicago. For example, there are groups that play such music in Los Angeles, recovering the original tradition. They are committed to recovering their roots for the second generation of Mexican immigrants and continue developing such music. In Paris there are bands that play that kind of music too.

It is an example of how the population itself safeguards what today we call intangible cultural heritage, how it may generate activities which enhance not only cultural contributions, flows, but also project Mexico abroad, and are able to create employment and small businesses. However, this is something which also needs to be reflected in public policies and future investment. Authors must be respected in the sense that they are the only ones who can produce such activities.

PwC: This network, is it what we call cultural density when there is more communication among parties?

L: Yes. That is cultural density, such as in Oaxaca. Cultural density there is extraordinary and the people of Oaxaca rightfully demand that development be for everyone's benefit.

PwC: It is one of the places where that issue is discussed most dynamically, isn't it?

L: Yes. They want to safeguard their cultural profile, which is extraordinary; it has an indigenous heritage that has been acknowledged worldwide and they defend it at all costs, in their own right. There are many indigenous groups that manufacture handcrafts, textiles, but they have had to sail in a sea where no one really offers them any support.

PwC: Please, could you elaborate on your ideas on intangible cultural heritage, cultural density and the cosmopolitan character of Mexican culture and its transformation? We believe these ideas may help develop a better understanding as to why invest in Mexico.

L: There will be a growing interest—in the media and virtual spaces—in listening to and watching music played in different locations, different countries. In that sense, Mexican music has an open door that can offer comparative advantages worldwide. Few countries have such musical diversity; Brazil is also doing very interesting things with its art which include expos, activities, shows and Capoeira lessons—a very stylized type of wrestling. Today you can find Capoeira lessons in Paris, New York and Mexico.

PwC: We share your vision about Brazil having so much to contribute to the world, but when one thinks about Mexico, one realizes that it also has a musical and visual richness that in the last decade has not been projected as strongly. What can be done?

L: Support must be given to performers. Foreigners should not be brought in to organize festivals in Mexico; short-term capital should not be attracted, investors interested in long-term projects should. And the government should support local producers in communities, cities. Specifically in cities, there are many young people who make art spontaneously. In Mexico, graffiti is real art by youngsters who have learnt it through the Internet, from friends, and have created extraordinary mural paintings. What is the matter, why cannot these urban murals yield an income for the artists themselves? For example, guided tours should be made. There are many things in the cities that people do not know about and would like to know. Cultural agents and managers would have to be trained so as to place those activities in formal markets.

Three parties must participate: government, with basic support to boost the physical patrimony and safeguard the intangible patrimony; investment to encourage cultural activities, practices and new creations and takes them to the media, and creators themselves, formalizing their activities, acting professionally. All three must work together.

State infrastructure

Regarding infrastructure, we can say that tracing routes and paths has always been part of Mexican history in a territory composed of so many different climates and geographical zones. Moctezuma II, one of the last Aztec Emperors, was brought fresh fish to dine almost every week from over 400 kilometers away, all on foot, crossing mountains from the Gulf of Mexico to the Central Valley. The Spanish Catholic Missions are famous for their routes across Mexican territory. Friar Andrés de Urdaneta, a Spanish Augustinian, inaugurated the route from the Philippines to Mexico, route which later on would contribute to transforming Mexico City into the first global city in the world.

Today that same spirit of having products from one place transported to another or of facilitating connections among regions is turning Mexico into a well-connected country through state of the art highways, airways and seaways. The development of infrastructure continues to be a key factor in the economic growth of a country, and although resource availability is always a challenge, the recent effort made to improve infrastructure is beginning to show results: although according to figures available for 2007 in an international comparative study, Mexico was in 64th place, above Brazil (71st) and Argentina (72nd), and in the same range as China (60th) and India (62nd); (Source: New Economic World Forum, quoted in the National Infrastructure Plan for 2011).

Due to the fact that Mexico is actively trying to improve its competitiveness, the state has considered that financing infrastructure is a priority, and so different schemes have appeared. According to provisions by the Programa Nacional de Infraestructura (National Infrastructure Program) 2007-2012,⁴³ the required investment was estimated at 2 billion 532 thousand million pesos for this period, which is an annual average of 422 thousand million pesos. Of this amount, 30% corresponds to communications and transport; 8% to hydraulic infrastructure; 15% to electricity and 47% to hydrocarbons. Excluding the power sector, it has been estimated that 42% of investment in all other sectors will be financed with public resources and the remaining 58% with private-sector resources.

Financial sources and plans considered for the development of infrastructure are as follows:

- Budgetary Investment, operated in accordance with Expenditure Budgets and considering reinvestment of excess income.
- Long-Term Productive Infrastructure Projects, based on budgetary regulations but including public debt. In recent years, these have been implemented for the development of infrastructure in the power sector.
- Service Provision Projects Considering Regulations. The public sector outsources services from the private sector if it implies saving public resources. Likewise, long-term concessions and contracts are entered into with the private sector for developing infrastructure so that required investment can be amortized.
- Asset Use. It is mainly used in highway projects through existing infrastructure concessions when additional resources may be generated for new projects.
- Investment Funds. The use of public resources is promoted to complement and attract private resources so as to trigger the creation of high social yield projects through mechanisms such as the Fondo de Inversión en Infraestructura (FINFRA) (Investment Fund for Infrastructure).

Through such projects it has been possible to design actions that assess risks associated to projects; build private and public collaboration at the state level; decrease administrative costs by simplifying administrative procedures; eliminate the repetition of legal processes; give juridical certainty so as to promote public investment, which in financial long-term plans has proven to be an alternative mechanism to direct investment in public works, and engage in medium-term strategic planning taking into account different political scenarios. These actions have been geared towards developing transport, which includes highways, ports, railroads and airports, as well as towards improving water sanitation, watering systems

⁴³ Presidencia de la República Mexicana, Plan Nacional de Infraestructura 2007-2012. Available at <http://www.infraestructura.gob.mx/>. Consulted on 12th August 2012.

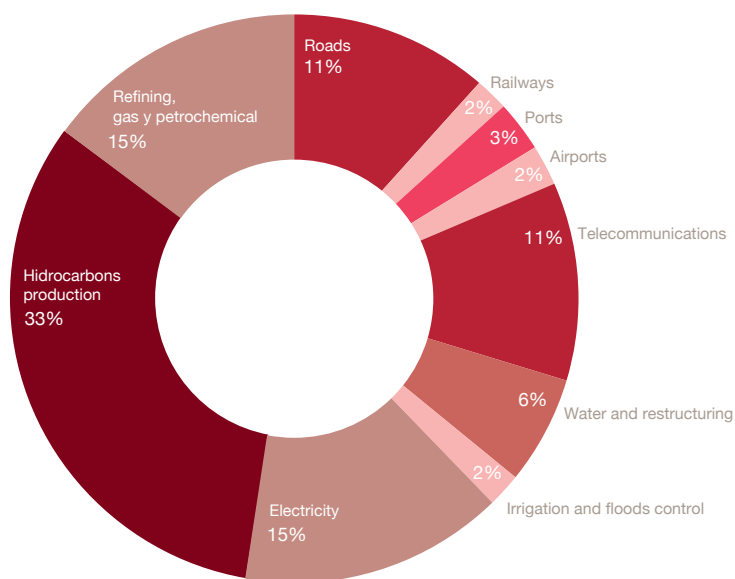


Tampico Bridge, Tamaulipas
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and residual water management; improving energy production, including oil and gas extraction, refineries and petrochemicals. Among these areas, different forms of communication and transport stand out as areas with a greater growth rate of the corresponding investment.

The graph shows the degree of investment estimated by Zones:

Estimated invest by sector 2007-2012



Source: Programa Nacional de Infraestructura 2006-2012

The development of infrastructure continues to be a key factor in the economic growth of a country, and although resource availability is always a challenge, the recent effort made to improve infrastructure is beginning to show results.

The graph below shows an increased private participation in generating infrastructure throughout the country:

At the current level of investment that Mexico has assigned to infrastructure and which ranges between 3.0 and 4.5, important transformations at the federal, state and municipal levels can be appreciated. In our study, we chose four variables to be measured: length of state-owned highways (Km); national airports (passenger and freight services); international airports (passenger and freight services) and average growth rate (2003-2009) of investment in public works and social actions.

Our results show that states like Veracruz, Sinaloa and Chiapas have reached an advanced stage, while 24 states are in a medium high stage and only four in a medium stage: Nuevo Leon, Colima, Hidalgo and Tlaxcala.

If we disaggregate figures by state we can see the total percentages by which progress has been made in the states of the Mexican Republic. Such percentages reflect in the total indicator, showing, for example, that Baja California Sur, Campeche and Chiapas are

three states in an advanced stage; Durango, in the northern region, is also showing significant progress as well as Guanajuato, Guerrero, Jalisco, Mexico and Oaxaca. San Luis Potosi reflects high performance, although still in a medium high stage.

Regarding the first variable, *Length of Highways*, there are three states in an advanced stage, five at the medium high stage, eleven at the middle stage and twelve states that are still in the development stage.

As regards *National Airports*, only eleven states have such airports: Colima, Guanajuato, Guerrero, Jalisco, Mexico, Nayarit, Oaxaca, Puebla and San Luis Potosi have one airport each; Michoacan and Veracruz have two. The rest of the states do not have a national airport.

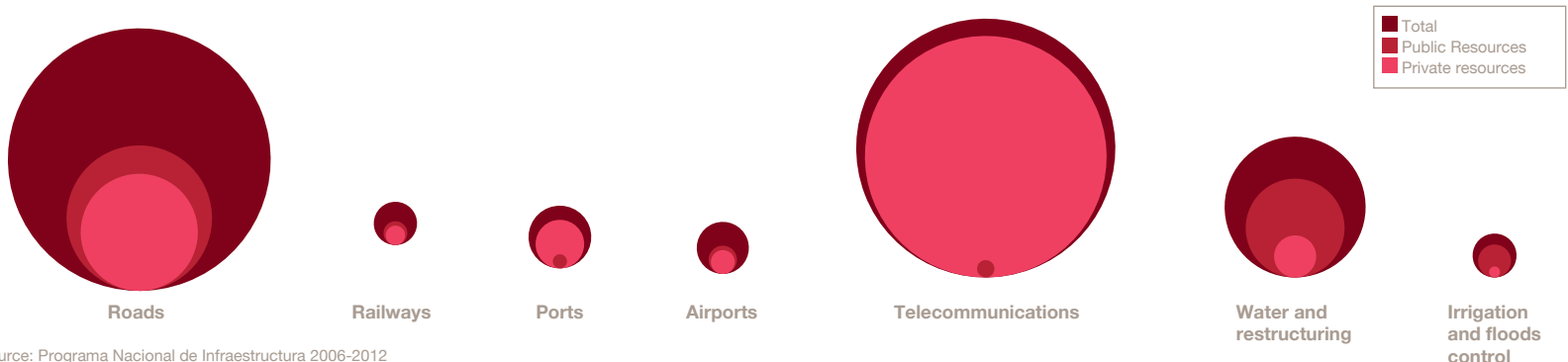
As for *International Airports*, the scenario is much more encouraging: only three states do not have even one. The states that have an international airport are Aguascalientes, Baja California, Baja California Sur, Chiapas, Coahuila, Colima, Durango, Guanajuato, Guerrero, Jalisco, Mexico, Morelos, Oaxaca, Puebla, Queretaro, Quintana Roo, San Luis Potosi, Sinaloa, Tabasco and Zacatecas.

Campeche, Chihuahua, Michoacan, Nuevo Leon, Sonora, Tamaulipas, Veracruz and Yucatan have two international airports each.

The *Average Growth Rate (2003-2009) of Investment in Public Works and Social Actions* is the last variable under this indicator. The states in an advanced stage with the highest percentages are Baja California Sur, Campeche, Nayarit, San Luis Potosi and Sinaloa.

Summarizing, important and highly significant steps have been taken in the area of infrastructure throughout Mexico; yet, international standards are being set higher and higher, and Mexico has an immense and complex territory composed of land and water. It is for this reason that the efforts to develop infrastructure have included puertos secos (Dry Ports). Dry Ports are terminals that connect with several seaports through highways or railways. The usefulness of dry ports consists in making it possible to decentralise the transportation of merchandise from routes that may be saturated due to the high volumes transported daily.

Estimated invest by source of funding 2007-2012



Source: Programa Nacional de Infraestructura 2006-2012

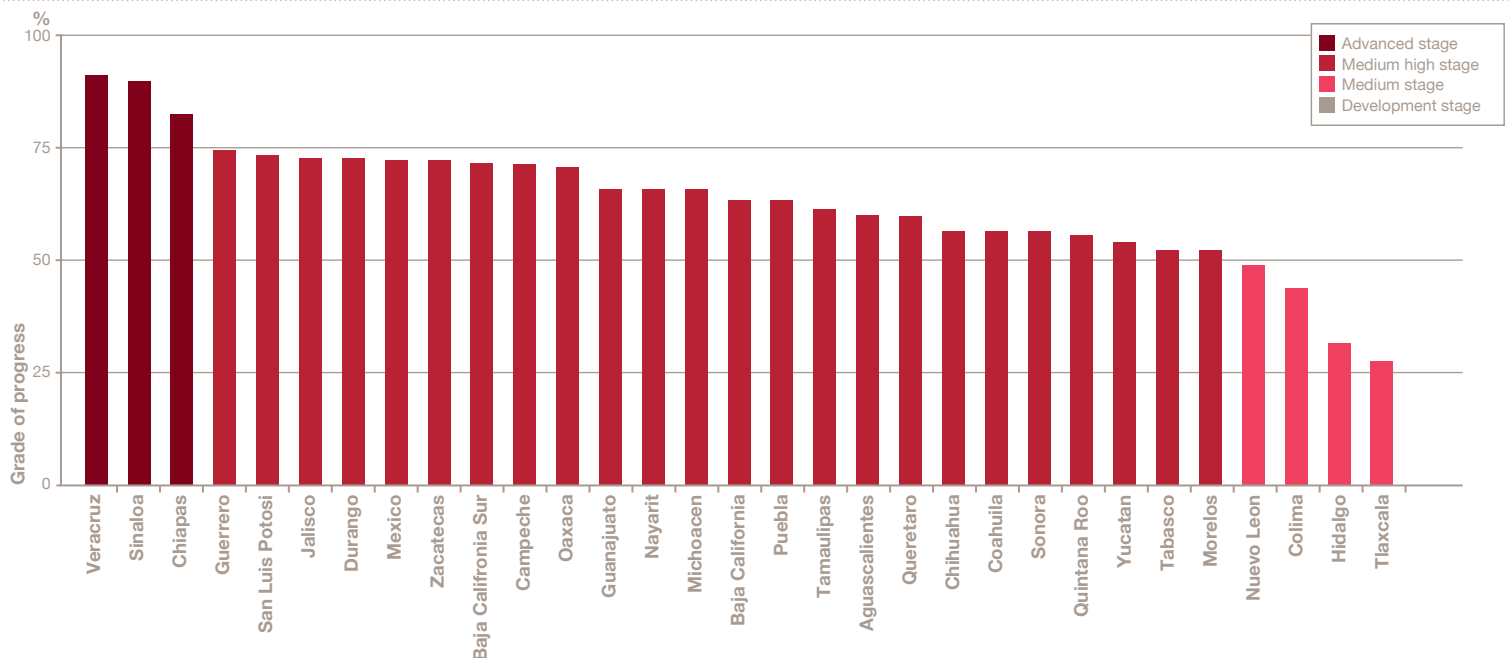
Dry Ports developed in Mexico have significantly contributed to the improvement of transportation logistics since they channel bills of lading throughout the nation allowing shipments (imports and exports) to circulate. Today, Mexico has the most important logistics port in Latin America, and it is the fourth most important one worldwide. Located in Guanajuato, this port has facilities that include a national and international airport, customs, a business district, railway cargo and an industrial site. Some of the customers at this port are Aceros Suceo Palme de León (Palme León Swedish Steel), Estafeta (Courier), Hal Aluminium and Hino Motors. Another example is the San Luis Potosí Interport, accessed mainly by train. A more recent example is Hutchinson Port Holdings Mexico located in Hidalgo. It is a terminal that started to be built in 2010. And it still is fighting for the consolidation of public and private investment that is estimated at 200 million pesos. The size of the Dry Port will be 196 hectares and will move around one million containers per year. The Dry Port of Monterrey, still being planned, will connect Houston, Dallas, San Antonio, Austin, Laredo, Colombia, Monterrey, Saltillo and these cities to the rest of Mexico. It is a corridor that implies the construction of toll roads for freight, toll roads for cars, railways, gas pipes and wireless nets. It will be the aegis of binational trade and of the development of a new region.

At present, the development of programs for delivering sanitized water, for oil refining and improvement of infrastructure for extraction or delivery need greater attention. Finally, although the electricity sector is experiencing important reforms, these would have to be continued together with the development of new hydraulic and eolian forms of energy. In this context, the *Programa Nacional de Infraestructura* (National Program for Infrastructure), 2007-2012 provides a significant guide on public expenditure assigning top priority to transportation in order to increase the quality and competitiveness of its coverage by assigning up to 60% of investment to this variable. Yet, in the Mexican context transportation is but one variable or dimension to consider when participating in international rankings; that is to say, other countries are also engaged in similar activities. This explains at least in part why Mexico stepped down from position 33 to place 64 between 1996 and 2007. As mentioned above, although Mexico has improved in certain areas such as airports, telecommunications and railroads, it has not grown enough in terms of telecommunications or port capacity and has held back in logistics. Additional problems might arise in the construction of highways throughout the sinuous, extensive and diverse national territory. For the time being, high access is concentrated in the Mexico City-Irapuato and Mexico City-Guadalajara highway

systems, including Queretaro, Guanajuato and the north of Michoacan. This highway development hinders the full articulation of the different regions in Mexico, and emphasizes the weight of the centre-east and centre-west *zonas* as investment magnets.

Within *zonas metropolitanas* there is a need to decrease commuting time and increase inter- and intra-state communication. According to urban developers, the main challenge consists in articulating a long-term strategic project designed according to a thorough analysis in which numerous actors and institutions can come together to design the desirable or model country that encompasses their aspirations. For others, the immediate problem is more concrete, and consists in drawing up specific plans and projects, such as those proposed by the 100 highway projects, having financial resources available to implement those plans and projects and revert the dramatic deterioration of the country's competitiveness in the global economic context.

Infrastructure - States



Sources: Instituto Nacional para el Federalismo y el Desarrollo Municipal con datos de INEGI (2010), INEGI – Perspectivas Estadísticas para cada Entidad Federativa (2011)

Oscar de Buen Richkarday

Growing through the enhancement of the country's infrastructure

Oscar de Buen Richkarday is a civil engineer by the Universidad Nacional Autónoma de México (National Autonomous University of Mexico) and Master of Science specialized in Transport by the Massachusetts Institute of Technology (MIT). Throughout his career he has held diverse positions at the Secretaría de Comunicaciones y Transportes (SCT) (Secretariat of Communications and Transport).

Currently, he is Deputy Secretary of Infrastructure in that same Secretariat. He is a Permanent Member of the Mexican Academy of Engineering, Member of the Executive Committee of the PIARC Road Association and heads the Commission for Technological Interchange and Development of that same Association, and also performs as SCT Representative before the Technical Committees for diverse trust funds related with highway and is in charge of the follow-up of the technical, operational and preservation aspects of the national highway net.



PwC: In the last ten years, which have been the main developments in Mexican infrastructure?

O: The cities we have today are the result of a set of actions that have been taken over many years. This includes construction: houses, buildings, highways and urban layouts. Urbanization –organizing a city– requires supplying water, sanitation, waste disposal, etc.

A relative innovation in urban development –not so much an innovation but a growing concern of the citizenship about our environment– is dealing with environmental issues. Today, work is being done towards the possibility of constructing sustainable infrastructure and providing our city dwellers, our cities with better surroundings and more agreeable living conditions.

PwC: Has communication among Mexican cities increased in the last years?

O: I believe that in the last ten years investment in infrastructure has increased substantially, specifically in highways. If we compare investment in 2001 and investment in 2010 –in current pesos, without discounting inflation– the increase factor is 1:7 or 1:8, approximately. It was about a growth in public investment and about private investment that was channelled to infrastructure.

Mexico is also starting to work on social infrastructure such as prisons for the security sector. This shows that the schemes are feasible and projects can be structured considering their specific characteristics always. These are not easy schemes, and they are not within the reach of just anybody, even if there is a will to profit from them. There must be certain specialization, financial capacity, experience, but it can be achieved.

Most projects have been inter-urban –projects that improved city connections. Others are bypass and access projects or highways for the improvement of city interaction with surrounding transport nets. In the last years, many bypasses were built, many highways surrounding cities, thus preventing long-haul traffic –in general, heavy-vehicles– from going through cities. Some very outstanding examples are the 220 km long Mexico City north bypass that goes from San Martín Texmelucan, near Puebla to Atlacomulco, in Estado de Mexico, surrounding Mexico City and crossing several very important highways, thus allowing long-haul traffic to flow without crossing Mexico City. In the last few years, other bypasses have been constructed, for example in Mexicali, Jalapa, Matehuala and San Luis Potosi, and we are finishing another one in La Piedad.

Other bypasses are under construction, for example in Culiacan and Mazatlán; Guadalajara will start one soon. It has been a systematic effort, and if we go to cities like Mexico City, “second floors” are examples of investment in infrastructure; everyone has an opinion on this type of infrastructure. But it is a fact that works are being done, works that are going to be very important for the current and future development of our cities.

PwC: Is it possible to have a substantial highway and freeway development while taking care of the environment?

O: Nowadays, all projects approved and taken to the construction phase have to meet the requirements established by environmental law; that is something that is already part of regular projects and infrastructure development and not only for highways, but for all types of construction: urban works, waste treatment, water provisioning, distribution nets, today in Mexico it is compulsory to analyze and explicitly take into account the environmental impact of everything regarding infrastructure. All the above-mentioned factors, I believe, influence the quality of life in cities.

PwC: Much has been said about the convenience of public sector and private sector collaboration as regards investing in infrastructure. How is this relationship in Mexico?

O: This relationship happens all around the world: it is a worldwide trend that, from my point of view, can be attributed to a categorical reality: the need for infrastructure is far greater than government investment capacity to meet such need. Investment in infrastructure, by definition is a long-term investment: Whoever invests one peso must wait, maybe 15, 20, 30 years to recover it.

These are not minor investments but very high ones that require a whole series of safeguards or protection mechanisms. This is what has happened in many countries, in Mexico as well. Here, we have engaged in these mechanisms in cases such as highways, some urban transport, water projects and urban waste disposal projects. I would say that there has been minor progress concerning the variety of potential fields to work on; but I believe that with our experiences of successful projects, and not only that, but a history of successes and a series of tools that favour and enable the development of similar projects in the future. For example, the Law on Public-Private Associations approved by Congress last January reflects both the growing interest in this type of investments and the will to promote them in the country.

Another example is the national infrastructure fund which is a trust fund set up in Banobras (National Bank of Public Works and Services) and designed exclusively for providing public resources to projects with private sector participation, for example long-term concessions, hiring and project follow-up schemes in different sectors, such as highways, electricity and utilities. We have a series of tools that we can use to promote and favour the development of such projects, which are so important for Mexico, as are most infrastructure investment projects.

PwC: You are giving us examples mainly of economic infrastructure: water, dams, highways, but what role could the private sector perform when it invests in social infrastructure, in education?

O: Mexico is also starting to work on social infrastructure such as prisons for the security sector. This shows that the schemes are feasible and projects can be structured considering their specific characteristics always. These are not easy schemes, and they are not within the reach of just anybody, even if there is a will to profit from them. There must be certain specialization, financial capacity, experience, but it can be achieved.

There are examples of success in this country, of works performed through these schemes. For example, there is a regional hospital in Leon, Guanajuato; another one in Ciudad Victoria, Tamaulipas; there are some state government administrative offices, such as in Chiapas. As I was telling you, currently there is a programme for the construction of prisons in order to increase Mexico's capacity to lodge people imprisoned for different reasons and abate overcrowding and general dissatisfaction with the prison system.

Today we are still facing a great challenge in terms of urban transport because there are needs that have been very poorly met, and the urban population legitimately expects more efficient transportation every day. I believe that all of us in Mexico would like to have better urban transport, be it the subway, bus or car, we would all like to have better commuting conditions. All these factors generate a huge need, and consequently a huge opportunity.

I believe the program includes ten prisons, most of them under construction. There are also other projects: the State of Mexico has done a lot for hospital infrastructure, urban highway infrastructure that is not for toll ways but can be built under this type of scheme. I believe that there are cases and above all experiences on which to base the creation of a new generation, a new project development that is important for the country in many respects.

PwC: In which ways does infrastructure renovation contribute to economic and social development in Mexican cities?

O: Above all, it contributes social capital goods of public use that are going to be available for many years; it brings employment for many people: infrastructure has a very important economic effect because of the type of work it demands and the activity it generates. Behind every infrastructure project there is a huge productive chain involving providers, transporters, people in other sectors who apparently do not have much to do with construction, but are in some way involved and are part of the production chains that add value and generate positive economic effects.

It contributes with taxes from the economic flow generated in infrastructure: there is Value Added Tax, Income Tax and there are other fiscal items that contribute substantially. Of course the most important part that we as engineers often lose sight of

since we focus on building, on achieving that something we had in mind materializes, and that is where the engineer's fundamental task ends, and the user, who is not necessarily an engineer, actually starts using and benefiting from such infrastructure when he or she goes to work or when people live and work in buildings or houses which are equipped, or when they use highways. Such individual is going to use it for years to come and if the infrastructure is well conceived, well made, well assembled, it is a social asset that is going to last a lifetime.

PwC: Then, if we think about Mexican cities as opportunity Centers for the development of infrastructure, would you see a window of opportunity?

O: Undoubtedly. For example, today we are still facing a great challenge in terms of urban transport because there are needs that have been very poorly met, and the urban population legitimately expects more efficient transportation every day. I believe that all of us in Mexico would like to have better urban transport, be it the subway, bus or car, we would all like to have better commuting conditions. All these factors generate a huge need, and consequently a huge opportunity. Another example is sewage treatment, since it can be treated, recycled and used for many other purposes. In Mexico, we do not treat it in the proportion we should.

PwC: Which would be some examples of new affairs, novelties in the field of infrastructure?

O: Something I believe is already happening in Mexico quite intensely, and which probably needs to be emphasized more is the construction of metro-buses that provide one type of solution for one type of demand in one type of urban corridor, but perhaps in other cases light trains are required; others may require a subway line with more capacity. All this constitutes an important field of work for us. Here in Mexico City there is an imperative: a new airport. I do not know exactly where it should or could be located, but we evidently need a new airport. If we want to be competitive, we need to be able to communicate more easily inside and outside the country, and to do that we need a new airport. The one we have transports between 30 and 32 million passengers a year. We need to improve mass urban and suburban transport, create regional transport lines, above all railways that offer an alternative to the currents of dormitory suburban flows; in this sense, we need resources, imagination, ideas, intergovernmental collaboration and we need society to participate in making these projects feasible.

There are many Mexican cities with water supply issues, mainly in the center, in the high plain. We need to provide maintenance and preserve aqueducts and distribution nets. We lose a lot of water because of poor pipelines.

Our drinking water utilization rate is low. This is also a field in which there is a lot of work to do and also a lot of opportunities.

Other novelties concerning sustainability and renewable power are intelligent buildings, sustainable buildings and green constructions. I believe that a country like ours, so sunny, with so much potential regarding natural resources that can be made useful, offers many opportunities; whether it can be easily achieved or achieved in the short run, is a different matter. But they must be assessed to see if there are fields where the country may develop activities that are competitive, that generate opportunities, employment and regional and world leadership.

PwC: What do the public and private sectors need to learn about collaboration for leveraging their work?

O: I would talk about a constant that influences all sectors and items: institutional strengthening. Preparing and developing all these types of activities and projects requires both a government capable of generating those projects and a private sector capable of realizing them under different participation modes. However, if the government does not have the structures, the capacities, the specializations for generating such projects, things will not progress quickly because in the end the government is the promoter and developer. The private sector can not say it wants to set up a train from Mexico to Queretaro; it needs

the government to open all the context within the legal framework and create the appropriate conditions for carrying out the project.

From my point of view, people are at the core of institutional strengthening. Institutions require qualified, specialized, committed and honest people. If they have them they can do many things. However, if we do not create proper conditions that allow having such people in different governmental structures –be they municipal, state or federal– it is going to be more difficult. I am not saying it is not possible, but it is going to be much more difficult, it is going to take a lot of work and it is going to be much slower.

PwC: How is life quality in a city linked to the development of infrastructure?

O: A topic we have not discussed but is obviously essential is integral urban development; residential areas near work places, disposed in such a manner that you do not have to commute all around the city to fulfil basic needs. Our main cities – Guadalajara, Monterrey, Tijuana, Puebla, Merida, obviously Mexico City– have taken up so much space that their dimensions are hardly human. In such context, going over urban development strategies and promoting rational policies so as to take advantage of the territory are key factors.

PwC: Since you are in highway construction, you have been able to see how the country's physiognomy has been changing. Could you share some of this with us?

O: Of course! For example, the much criticized Cuernavaca-Acapulco speedway that allows many people to travel to Acapulco on week-ends and have an apartment there. It is turning Acapulco into Mexico City's beach, and by doing so, Acapulco has been revitalized. But this same phenomenon is happening in many other places: for example, industrial and economic activities are increasing in cities that are no longer Mexico City, Guadalajara or Monterrey.

PwC: Can you give us some examples?

O: Aguascalientes, Leon, Irapuato, Salamanca, all El Bajío, Queretaro. The Secretariat of Communications is about to finish a speedway from Mexico City to the port of Tuxpan, which will be 2.5 hours away from Ecatepec, from the Indios Verdes area, and Tampico, a port farther to the north, will be reached in six hours. All this bring places closer, making things easier, providing people with greater mobility and drastically changing both the picture and expectations. For example, in the north we have all these assembly plants and industrial production in Zones like Chihuahua, let alone Monterrey, Saltillo, Monclova, Matamoros and Reynosa. Before all the insecurity and violence started, Reynosa was the city

that had the highest growth rate, based on a very important assembly industry.

PwC: Are highways in Mexico better nowadays?

O: Major highways are quite good and perform an increasingly important and strategic role. Undoubtedly they can be improved in many ways, but today their role is highly significant for the country. The issue is that many people do not know them, do not use them frequently and are influenced by perceptions of other realities that are not our reality.

PwC: Does the development of highways contribute to regional and local development?

O: The development of highways contributes through improved competitive conditions in a region or city. Certainly it is not the only element because there are many others that influence, but the fact that one can easily circulate quickly and economically around the country is a must for development. For example, in El Bajío today an industrial automotive and manufacturing conglomerate is appearing; in Queretaro, an aerospace one, in addition to its traditional farming and agro-industrial activities. In Guadalajara there are some electronics, software and automation development zones; all this is a product of many factors, but certainly the ease to communicate has a lot of influence.

We have a vast shoreline along the Gulf of Mexico and along the Pacific Ocean. We have a 3,000 km. long borderline with the United States, the longest one between a third-world or developing country and a developed economy; we have very important natural resources; we are a great country, with a population that generates a very attractive market and is very capable and skilled; we are country number eleven or twelve in terms of population, production, in terms of many things.



Nayarit Highway
©Banco de imágenes CPTM / Ricardo Espinosa (REO) Photographer



Today, the border with the United States is eight hours away from Queretaro, Leon or Aguascalientes. We could get there faster; there is always room for improvement, but we are capable of efficiently transporting products and people around the country. I have no doubt that we have made much progress.

PwC: It seems that in your answers there is someone who has very directly lived the pressure of competing worldwide to place Mexico in the scene, valuing what we have and what we do not, all of which interests us very much because we believe it picks up the experience of trying to construct a world-class country with whatever resources are available, whatever conditions, whatever problems; and in that sense, we would like you to tell us a bit more about that expectation of constructing Mexico as a world-class country.

O: We have a vast shoreline along the Gulf of Mexico and along the Pacific Ocean. We have a 3,000 km. long borderline with the United States, the longest one between a third-world or developing country and a developed economy; we have very important natural resources; we are a great country, with a population that generates a very attractive market and is

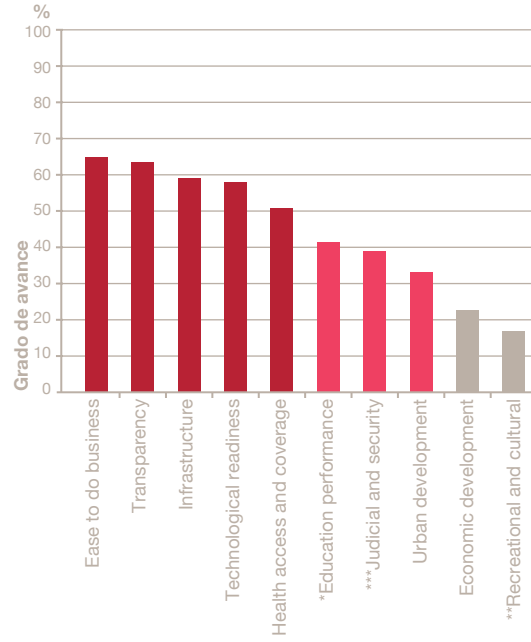
very capable and skilled; we are country number eleven or twelve in terms of population, production, in terms of many things.

In sum, Mexico is a very important country, noticeably located. So in my opinion, insofar as we are able to develop a country that has better means of communication (highways, railways, airports, ports, all the necessary factors for connecting inside and outside the country), we are going to have one of the key elements for positioning ourselves more advantageously in an international level and for interacting more beneficially, contributing more to our national development and to increasing the life quality of our people. Why? It is because communication and mobility generate investment opportunities, employment, production, employment, education for younger people and a series of additional benefits. An isolated country, simply, has fewer opportunities than a country that is well communicated with the rest of the world.

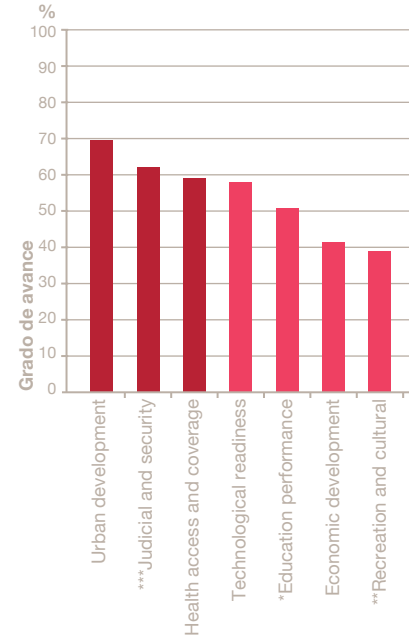
Indicators by state and “zona metropolitana”

Aguascalientes

Aguascalientes

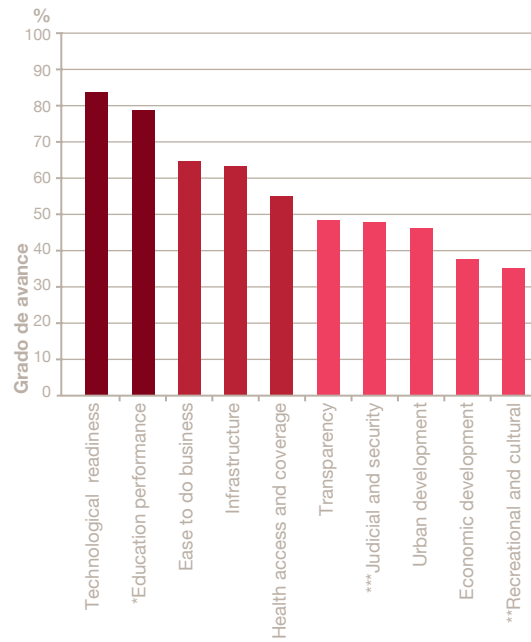


Aguascalientes

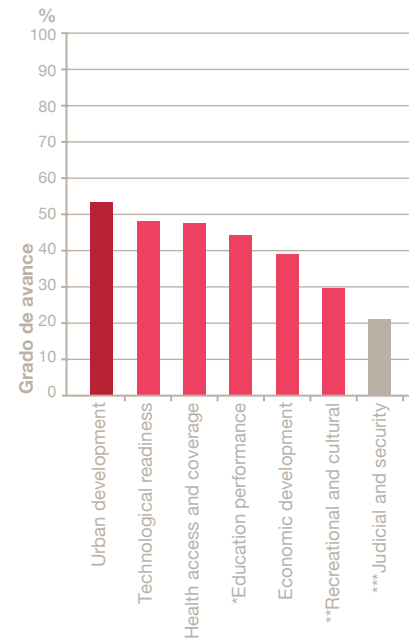


Baja California

Baja California

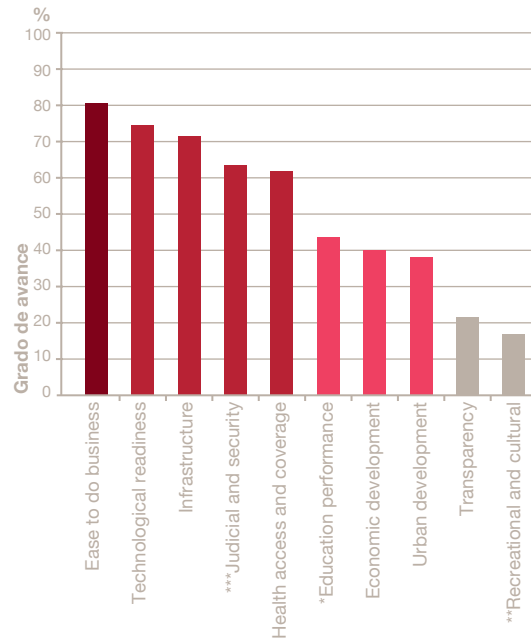


Tijuana

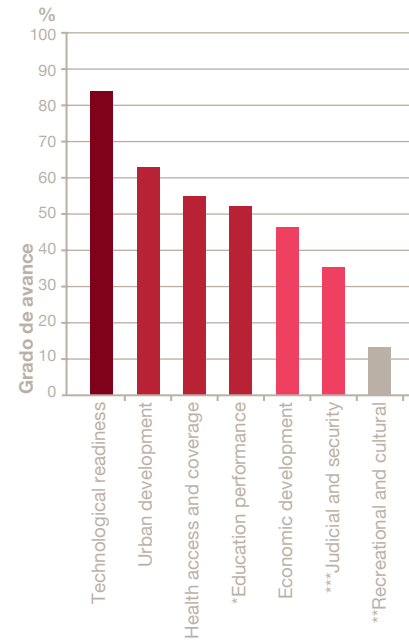


Baja California Sur

Baja California Sur



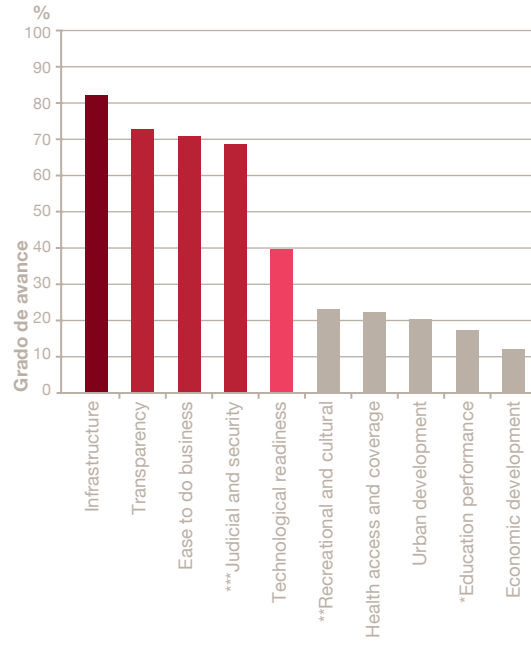
La Paz



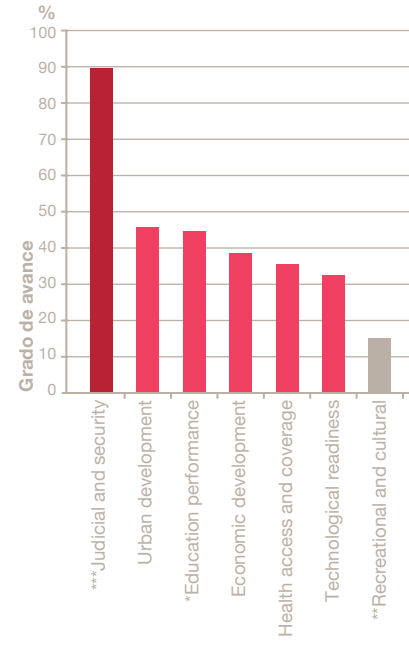
* Educational Performance and young entrepreneurship
 ** Recreational and cultural activities
 *** Enforcement of judicial and security reforms

Chiapas

Chiapas

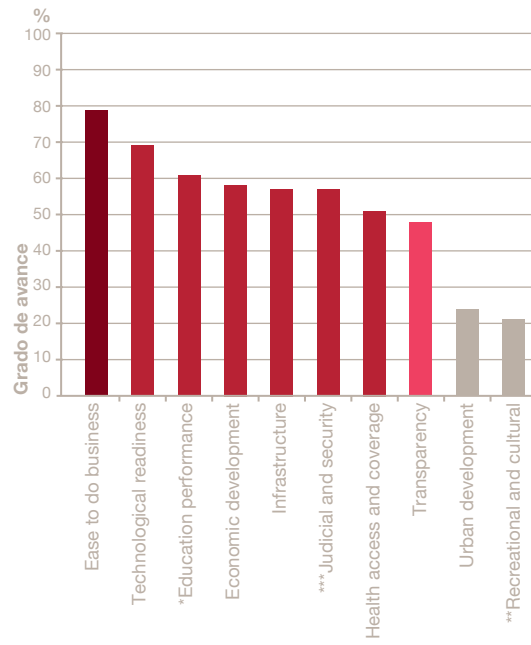


Tuxtla Gutierrez

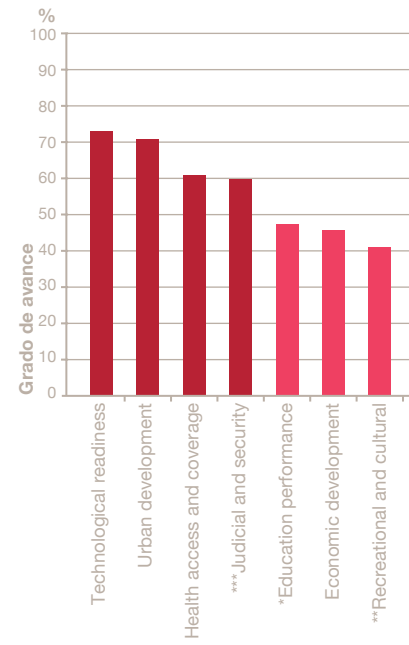


Chihuahua

Chihuahua

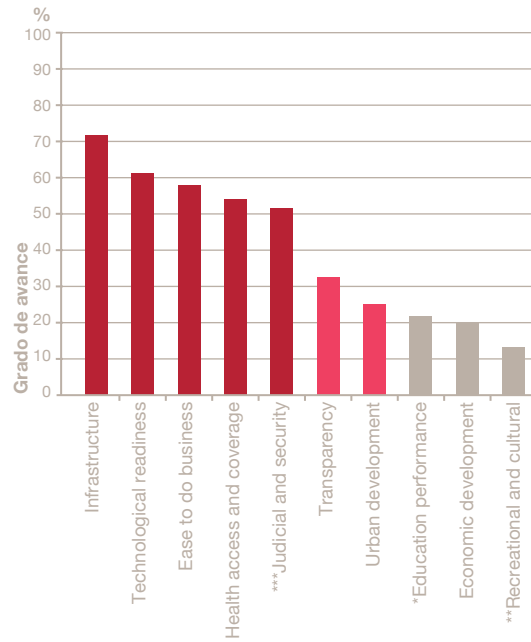


Chihuahua

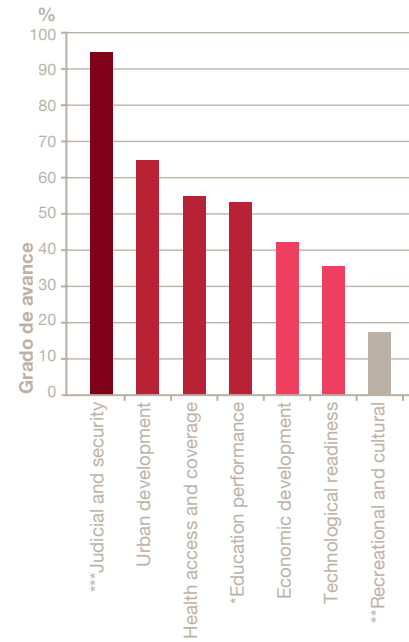


Campeche

Campeche



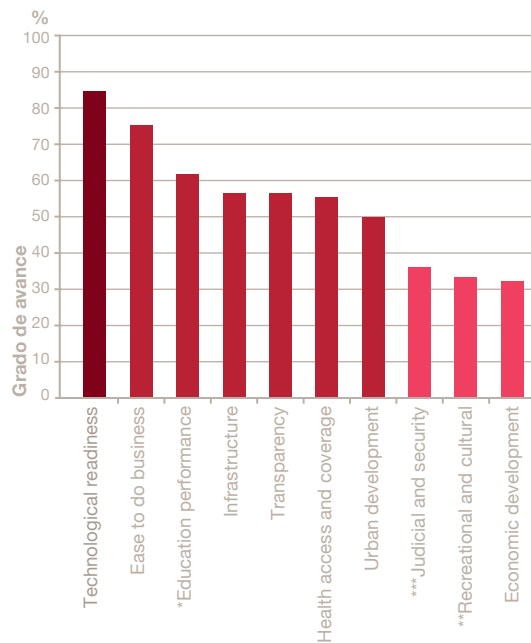
Campeche



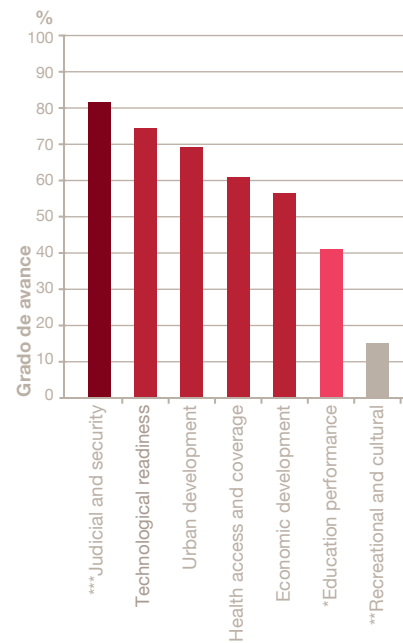
* Educational Performance and young entrepreneurship
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 *** Enforcement of judicial and security reforms

Coahuila

Coahuila

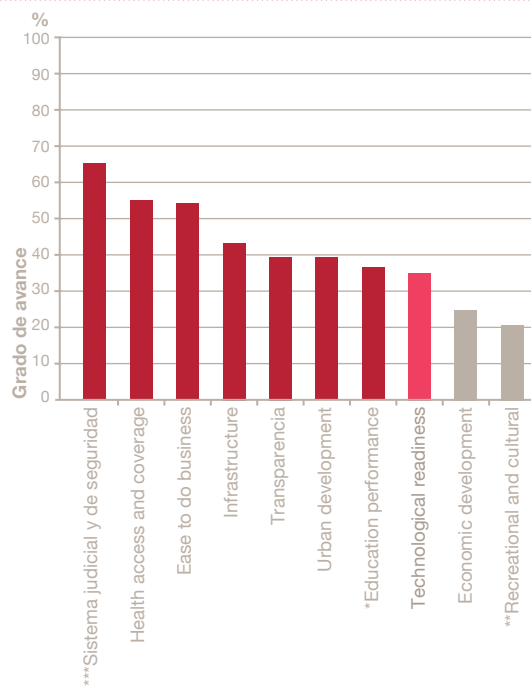


Saltillo

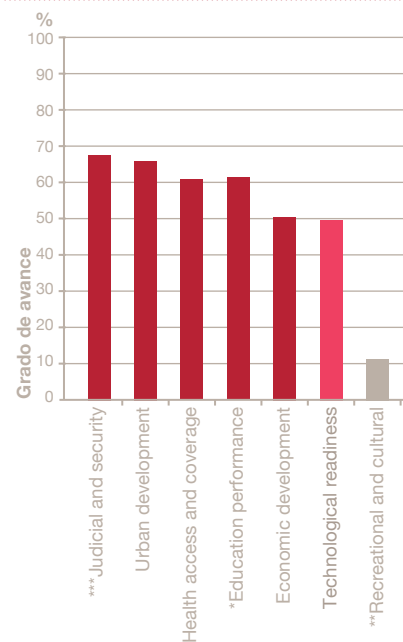


Colima

Colima

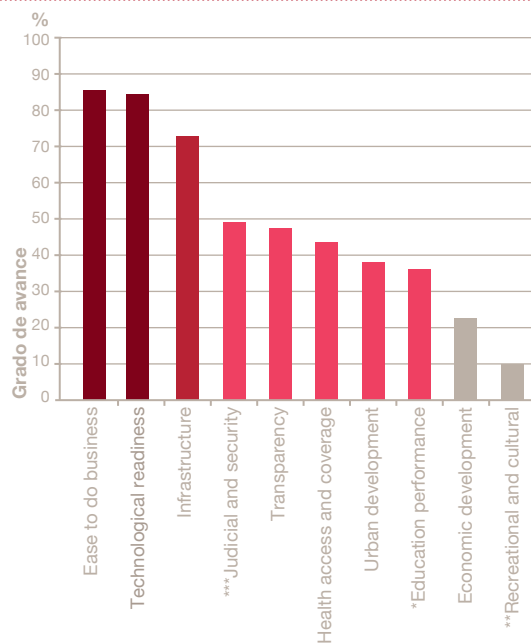


Colima

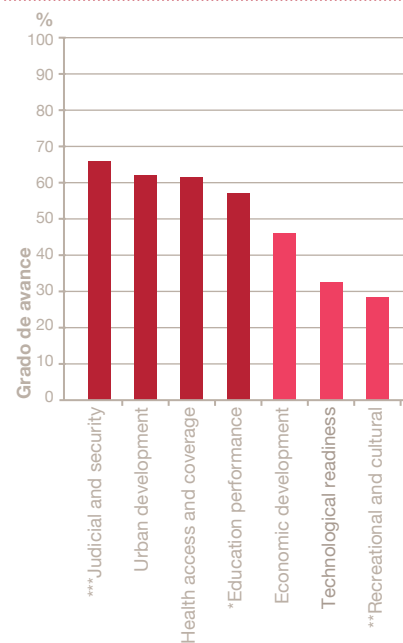


Durango

Durango



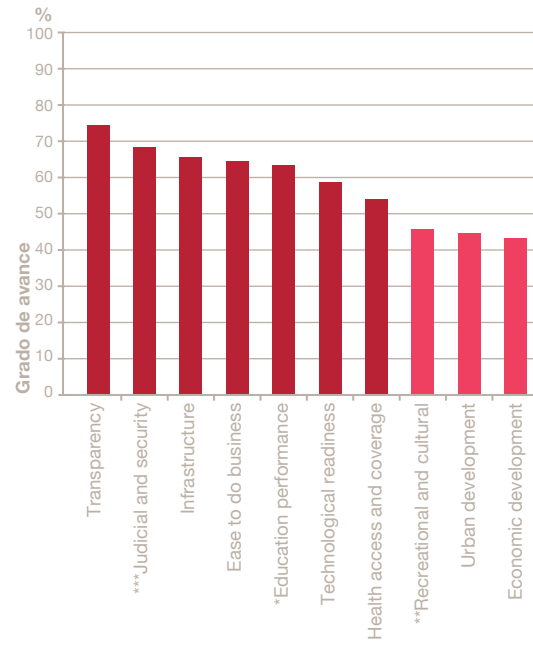
La Laguna



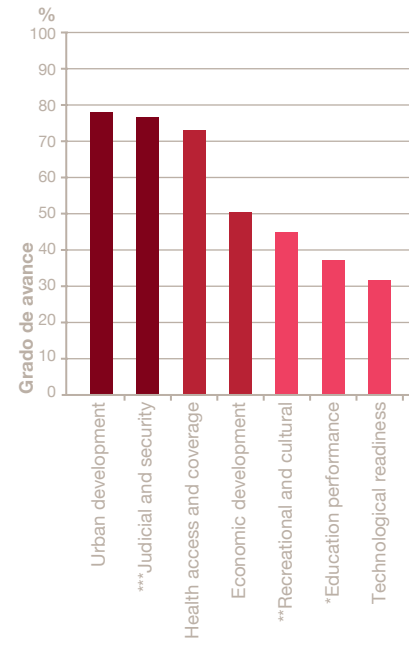
* Educational Performance and young entrepreneurship
 ** Recreational and cultural activities
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Guanajuato

Guanajuato

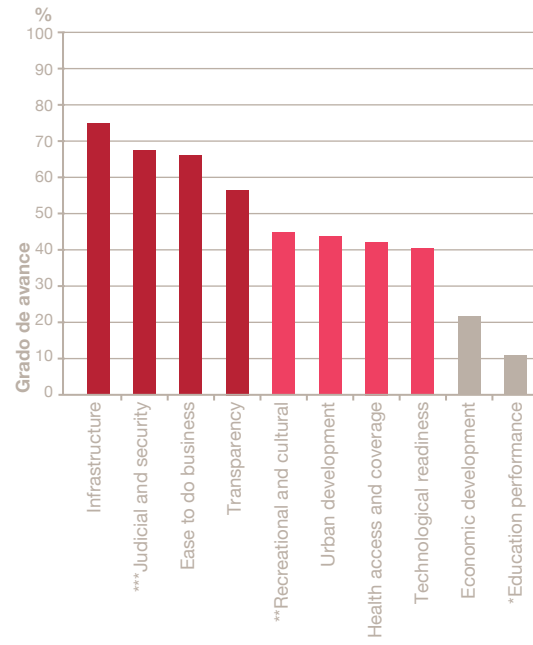


Guanajuato

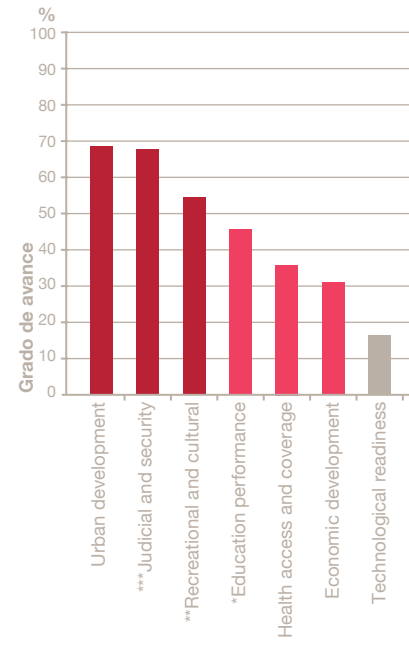


Guerrero

Guerrero

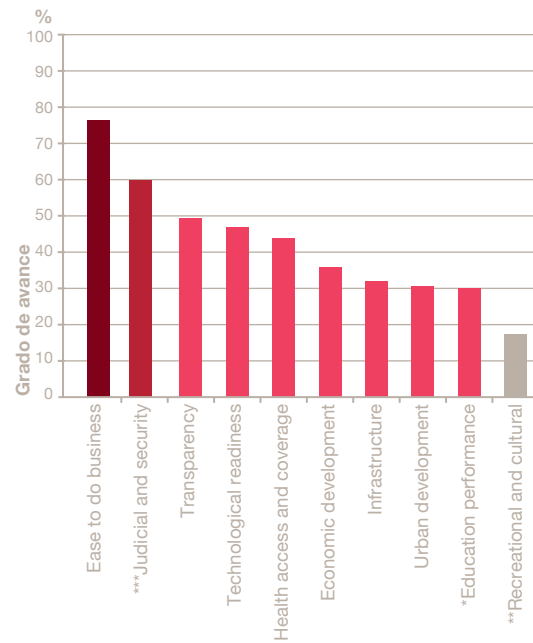


Acapulco

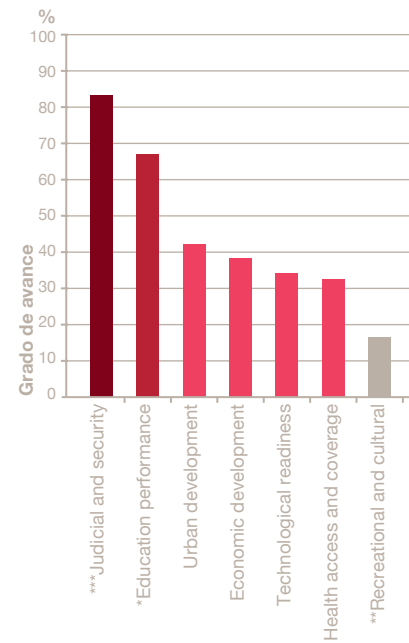


Hidalgo

Hidalgo



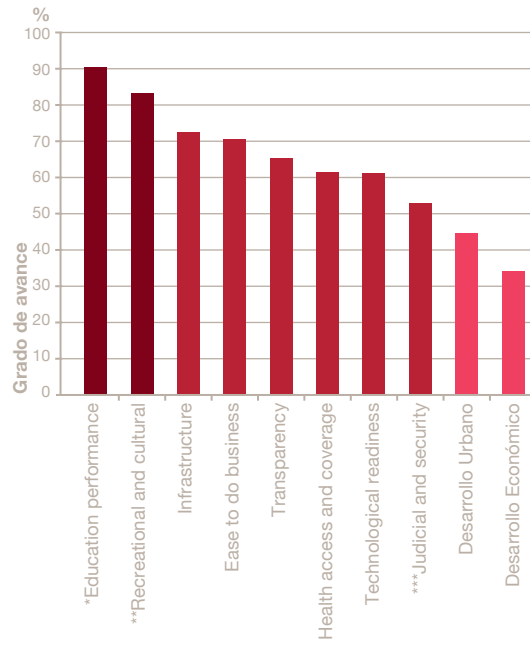
Pachuca



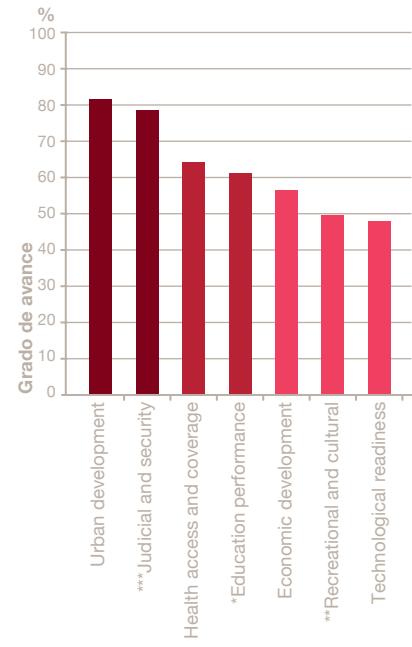
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Jalisco

Jalisco

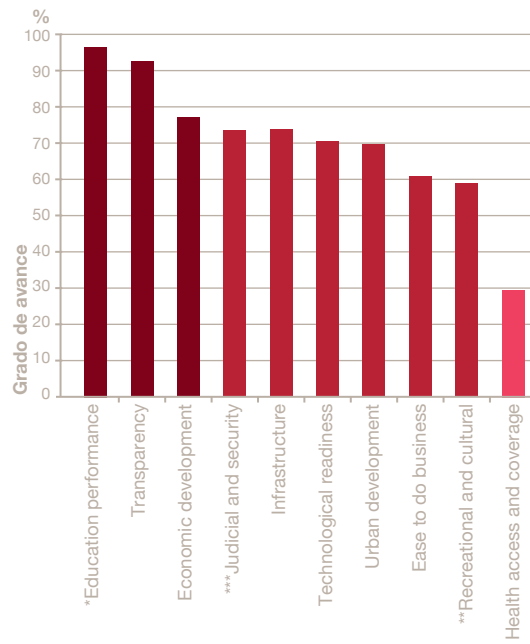


Guadalajara

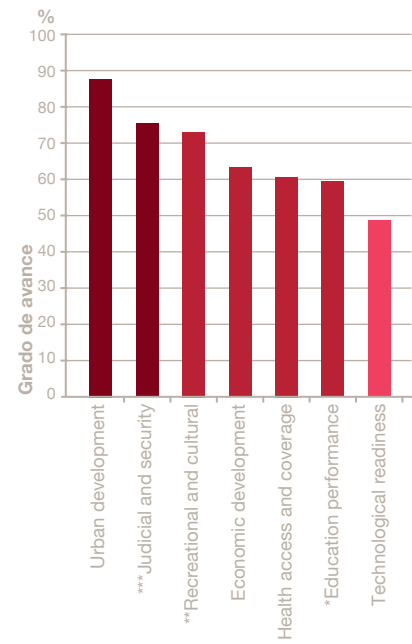


Mexico

Mexico

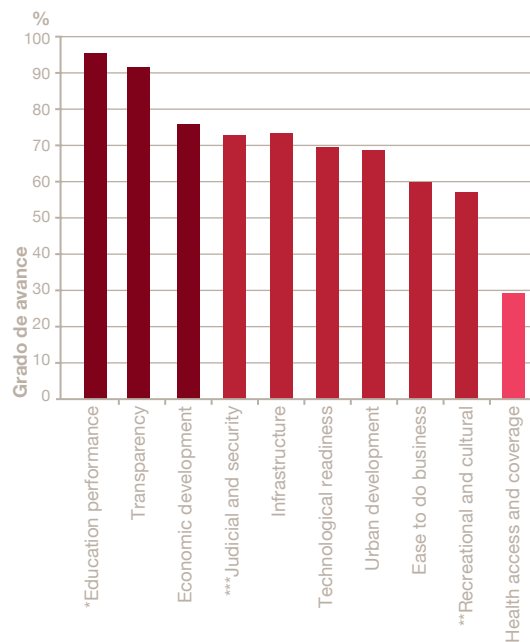


Valle de Mexico

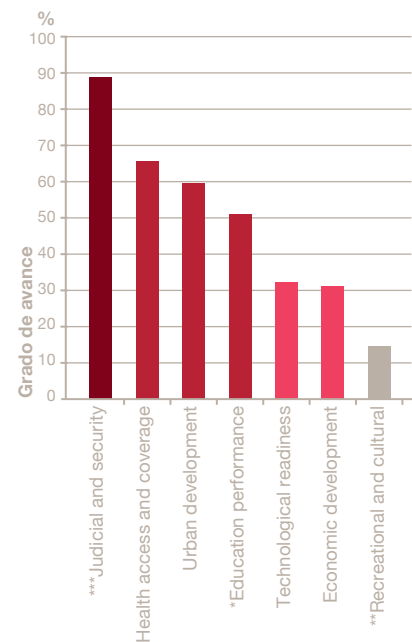


Toluca

Mexico



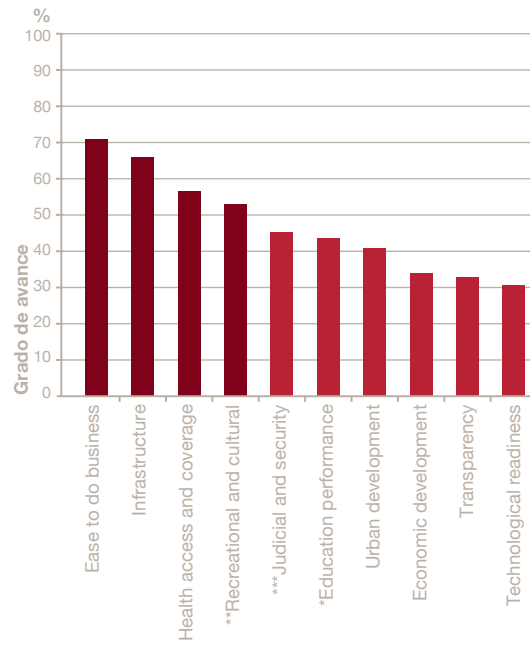
Toluca



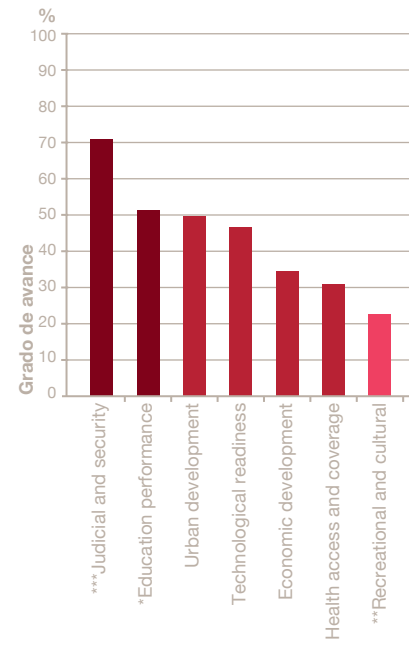
* Educational Performance and young entrepreneurship
 ** Recreational and cultural activities
 *** Enforcement of judicial and security reforms

Michoacan

Michoacan

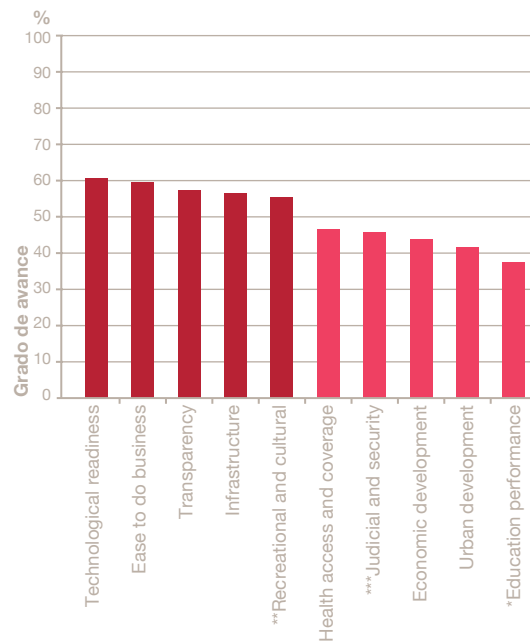


Morelia

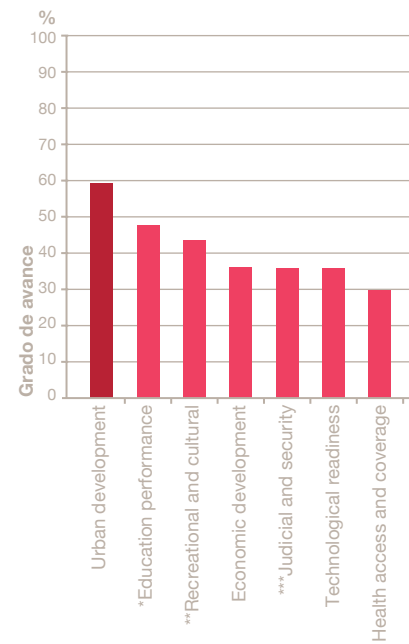


Morelos

Morelos

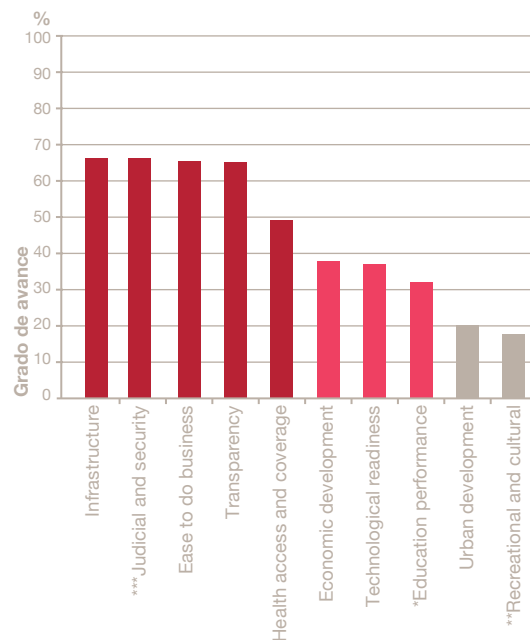


Cuernavaca

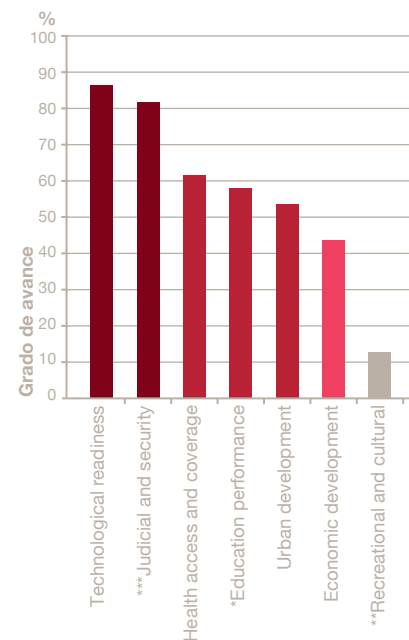


Nayarit

Nayarit



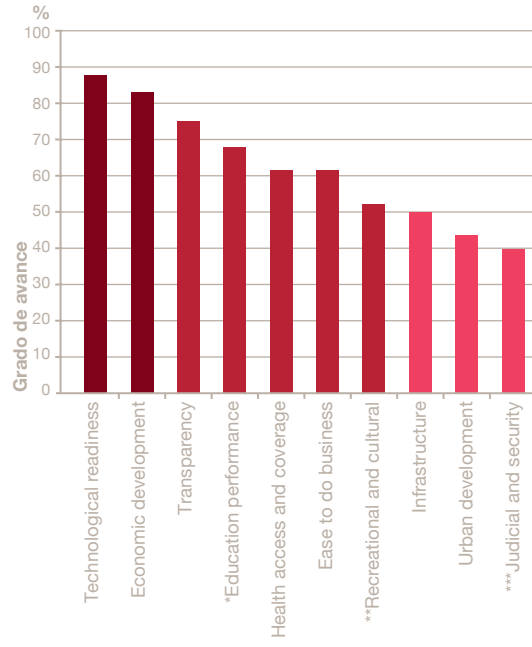
Tepic



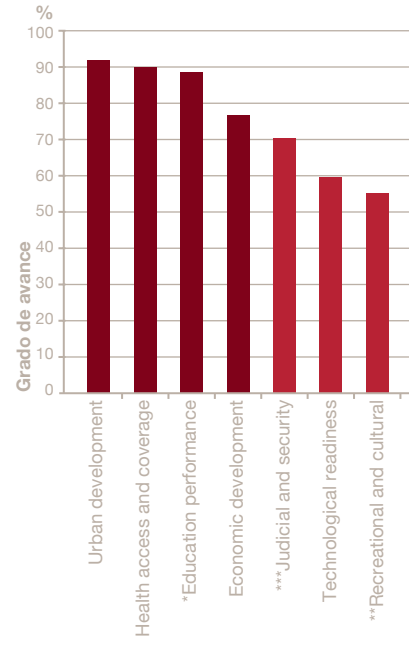
* Educational Performance and young entrepreneurship
 ** Recreational and cultural activities
 *** Enforcement of judicial and security reforms

Nuevo Leon

Nuevo Leon

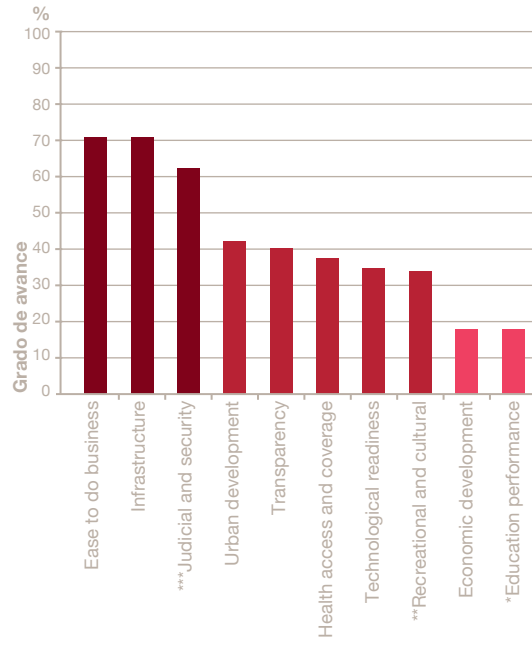


Monterrey

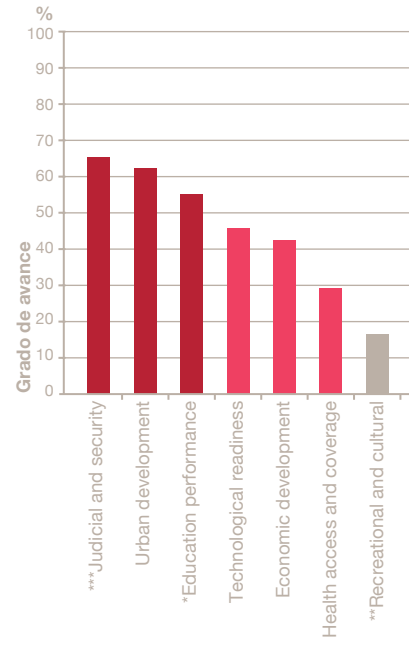


Oaxaca

Oaxaca

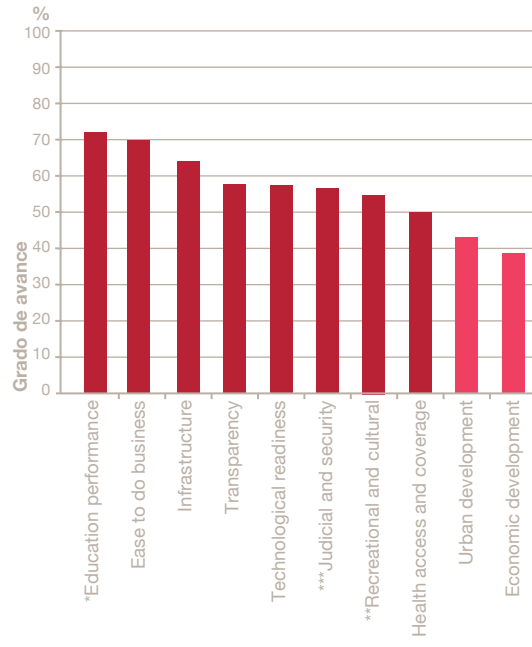


Oaxaca

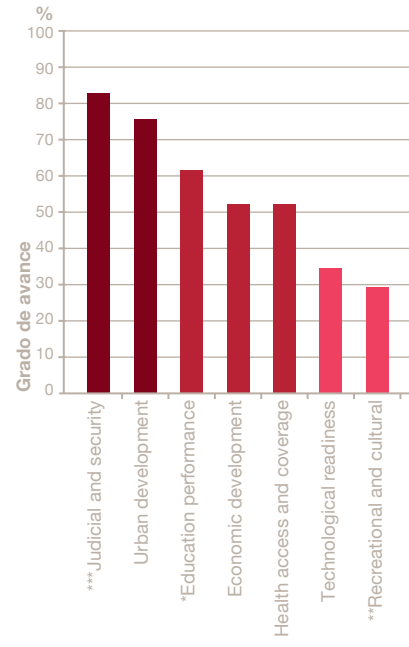


Puebla

Puebla



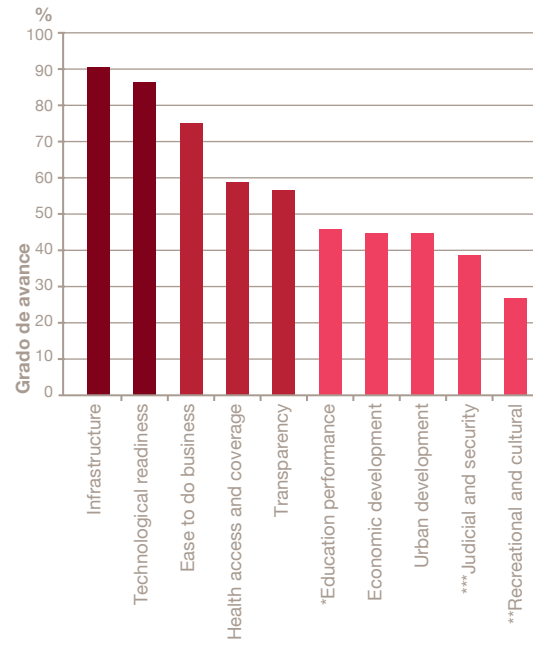
Puebla



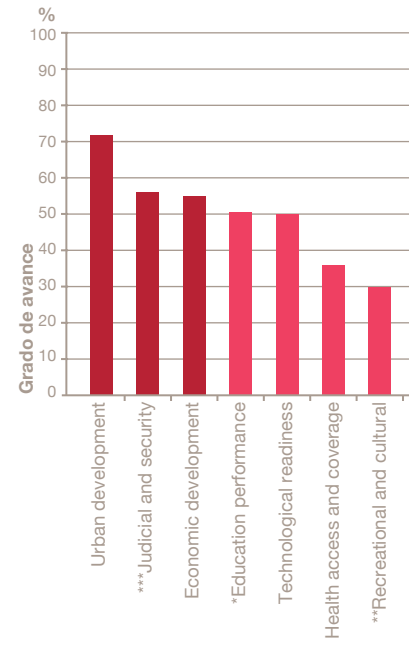
* Educational Performance and young entrepreneurship
 ** Recreational and cultural activities
 *** Enforcement of judicial and security reforms

Sinaloa

Sinaloa

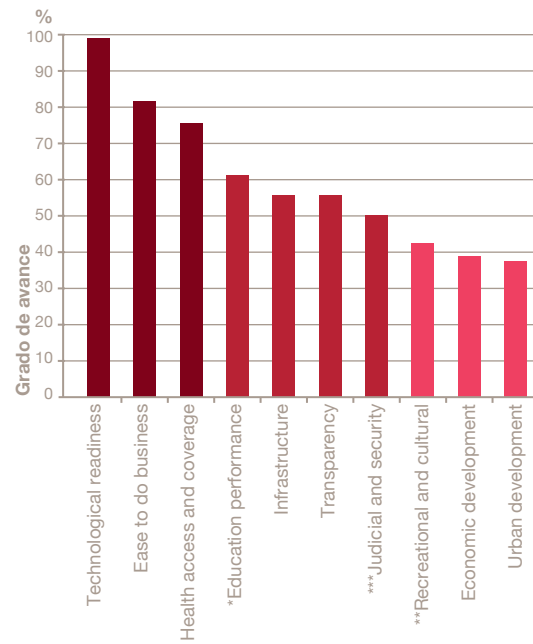


Culiacan

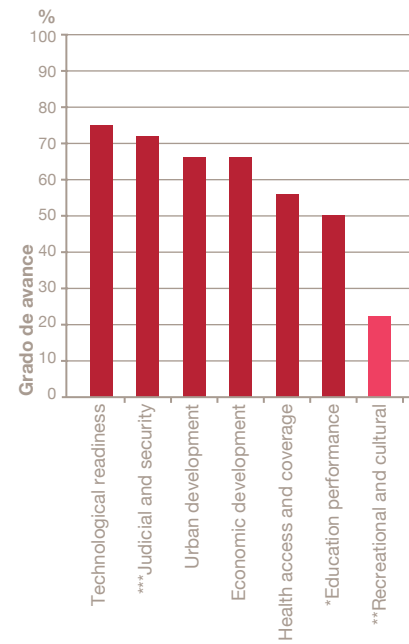


Sonora

Sonora

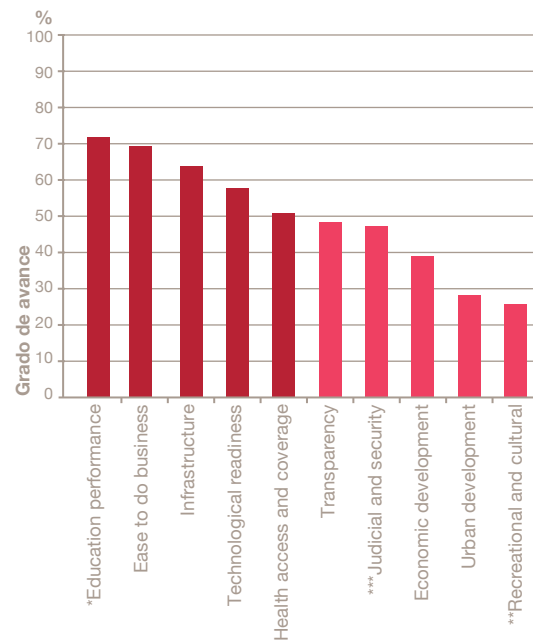


Hermosillo

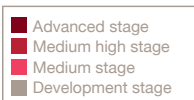
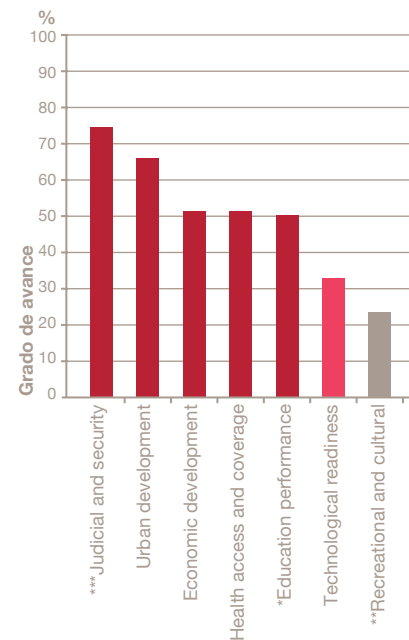


Queretaro

Queretaro



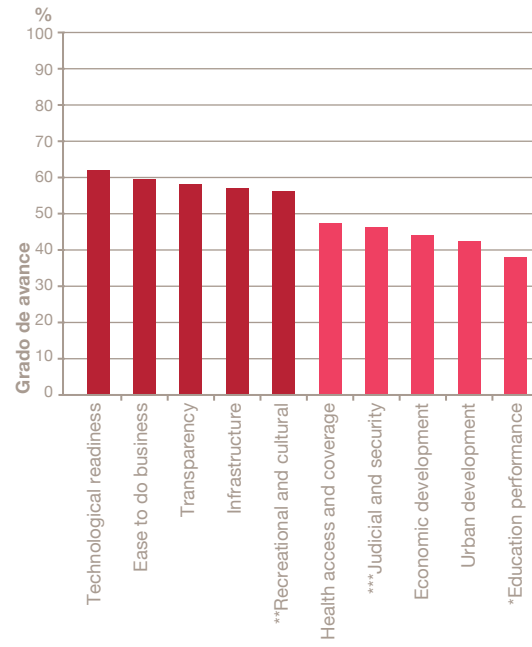
Queretaro



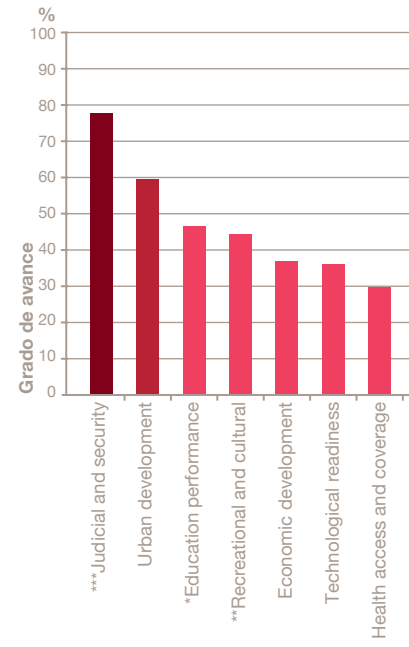
* Educational Performance and young entrepreneurship
 ** Recreational and cultural activities

Quintana Roo

Quintana Roo

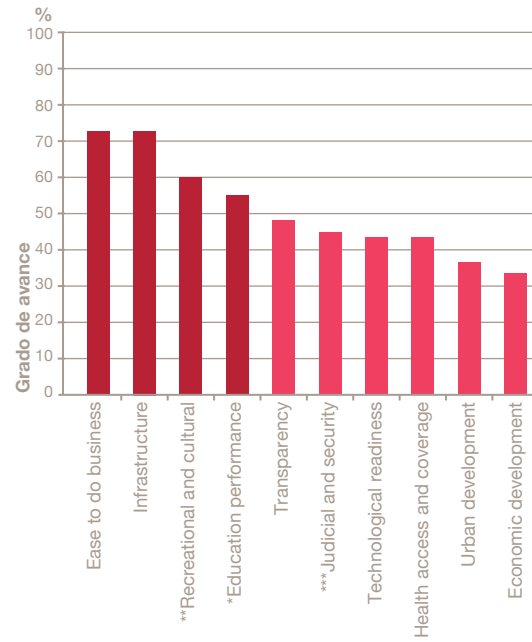


Cancun

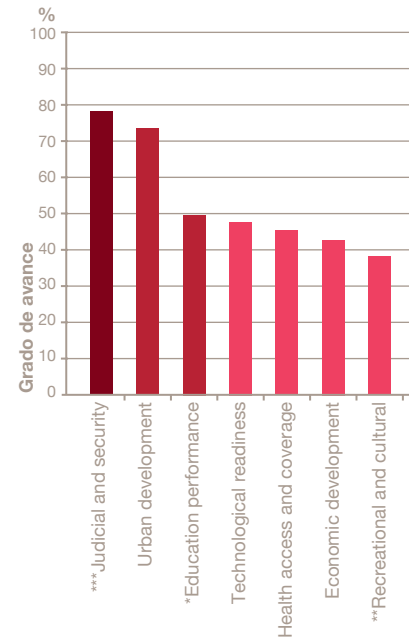


San Luis Potosi

San Luis Potosi

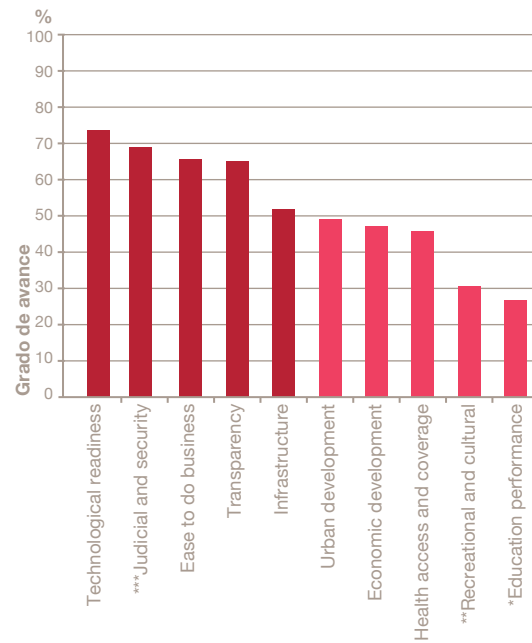


San Luis Potosi

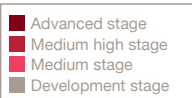
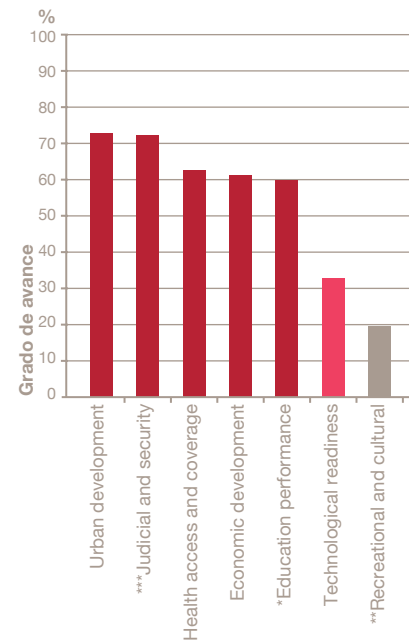


Tabasco

Tabasco



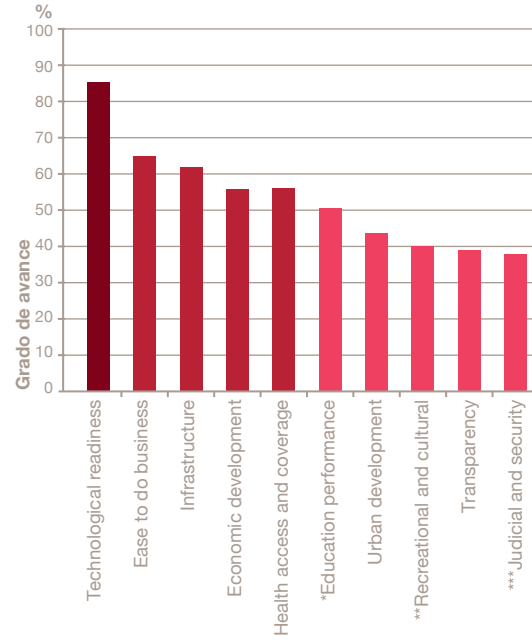
Villa Hermosa



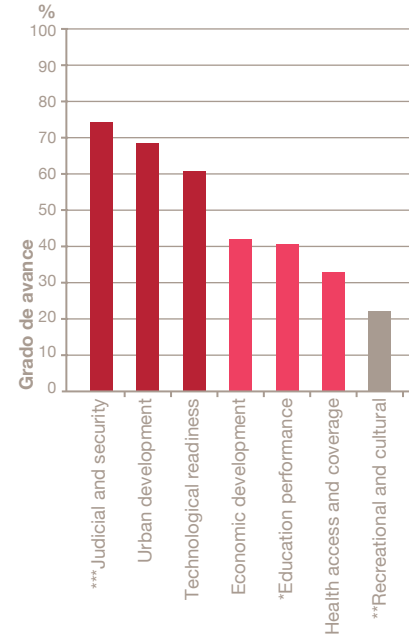
* Educational Performance and young entrepreneurship
 ** Recreational and cultural activities
 *** Enforcement of judicial and security reforms

Tamaulipas

Tamaulipas

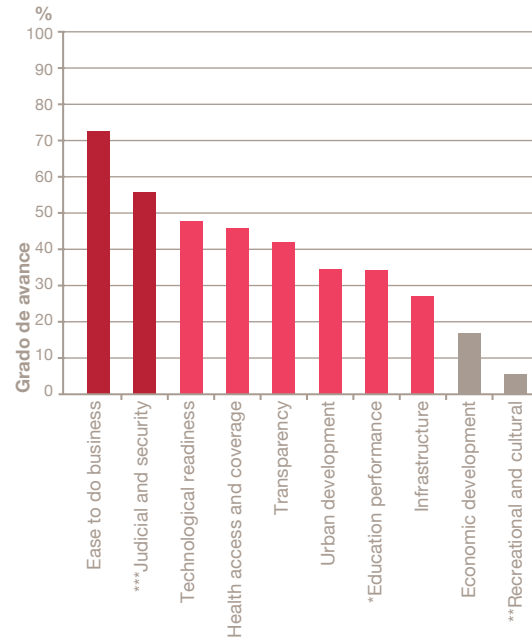


Reynosa

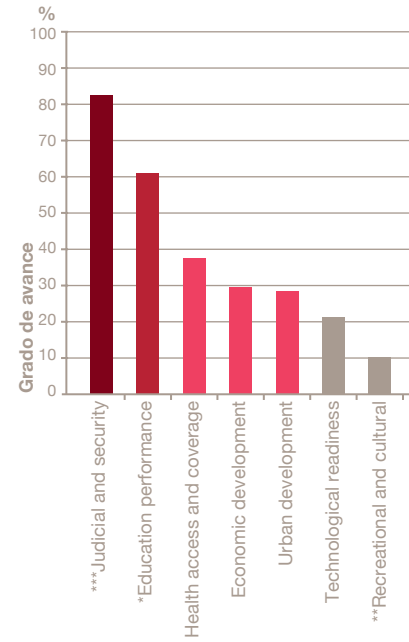


Tlaxcala

Tlaxcala

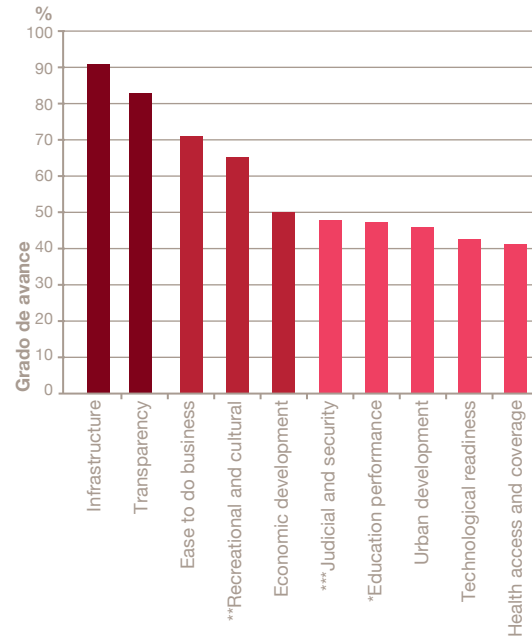


Tlaxcala

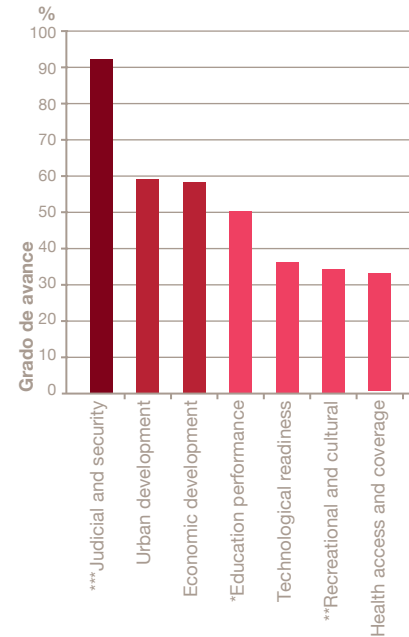


Veracruz

Veracruz



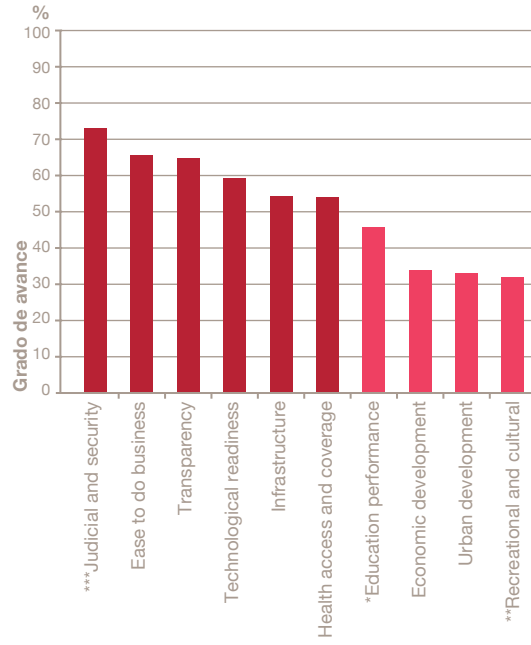
Xalapa



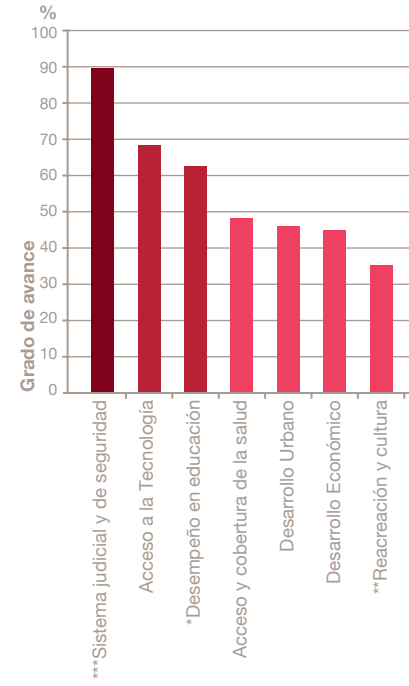
* Educational Performance and young entrepreneurship
 ** Recreational and cultural activities
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Yucatán

Yucatan

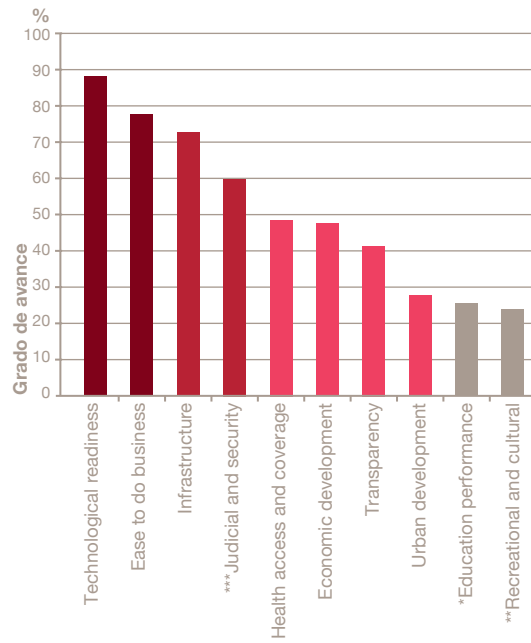


Merida

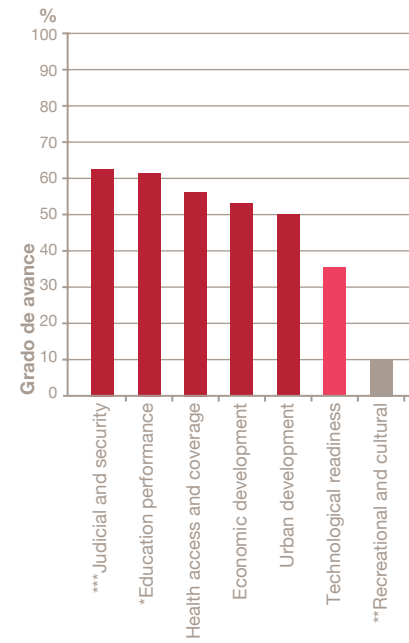


Zacatecas

Zacatecas



Zacatecas



* Educational Performance and young entrepreneurship
 ** Recreational and cultural activities
 *** Enforcement of judicial and security reforms

Methodological notes

1. Definition and Composition of the Indicators

Educational performance and young entrepreneurial capabilities

Definition: It shows the quality of the educational system and student performance in basic and mid-advanced grades, including activities concerned with leadership or empowerment.

Variables:

Number of Students in Each Basic Education Group: Number of students in public primary and junior high education programs divided by the number of groups in these programs. In Mexico primary education begins at age six and lasts for six years. Junior High School covers grades 7, 8 and 9. The information is for the 2008-2009 school year.

Schooling Index: Average number of schooling years for each state. It is an average of the years of attendance to elementary and high school. Figures correspond to 2010.

Number of Schools per 100,000 Inhabitants: Total number of public and private schools in the state from pre-elementary to university.

Public Libraries per 1,000 Inhabitants: Total number of public libraries in *zonas metropolitanas*. Figures available for 2012.

Percentage of Private Schools: Percentage of private schools in each *zona metropolitana*. Figures available for 2012.

Student Performance in National Quality Test (Enlace)[1]: Average percentage of students that had good or excellent grades in the Enlace test in private and public schools located in *zonas metropolitanas*. Figures available for 2011.

Student Performance in National Quality Test (Enlace): Average percentage of students that had good or excellent notes in the Enlace test in private and public schools located in *zonas metropolitanas*. Figures available for 2011.

Family Means to Send Their Children to School: Percentage of elementary school children who use the Opportunities Scholarship⁴⁴ and whose families receive financial support for education. Figures available for 2011.

Percentage of the Population with Higher Education: Percentage of the population which is 18 years or older and has attended higher education. Figures available for 2010.

Number of Researchers in Science and Technology: Total number of researchers that belong to the National Researcher's System in each state. Figures available for 2011.

Certified Postgraduate Programs: Number of postgraduate programs certified by Consejo Nacional de Ciencia y Tecnología (National Council on Science and Technology). Figures available for 2011.

Number of business "Incubators": Number of business "incubators" in universities and registered in the Ministry of Economy in each state, mostly located within the premises of a university. Figures available for 2012.

Technological readiness

Definition: It shows technological access and use by the inhabitants of *zonas metropolitanas* and/or states for educational and daily purposes. It refers to educational and daily life purposes.

Variables:

Internet Availability in Educational Centers: Percentage of public and private elementary, secondary and preparatory schools (junior and junior high) with access to Internet in each state. The percentage was calculated by the work team. Figures available for 2010.

Internet Users in Each Household: Percentage of Internet users estimated from the information available on houses with access to Internet. Figures available for 2010.

Computer Users in Each Household: Percentage of computer users estimated from the information available on private houses that have computer equipment. Figures available for 2010.

State infrastructure

Definition: It is the federal, state and municipal investment *zona metropolitana* in physical, economic and social infrastructure in the last 10 years. It shows the development of infrastructure through public and/or public-private works.

Variables:

Highway Length: Total number of highways built in each state.

Airports: Number of airports in each state. It includes airports with freight and passenger facilities.

Average Growth Rate of Investment in Public Works and Actions: Average growth rate of investment in public works and state actions in each the state.

Health access and coverage

Definition: It refers to progress made in total coverage and access to healthcare, as well as to the relationship between health centers and number of inhabitants in each state and *zona metropolitana*. (It includes both private and public sectors).

Variables:

Public Hospitals for Every 100,000 Inhabitants

Private Hospitals for Every 100,000 Inhabitants

Doctors in Direct Contact with Patients in Public Hospitals for Every 100,000 Inhabitants

Doctors in Direct Contact with Patients in Private Hospitals for Every 100,000

Beds Available in Public Hospitals for Every 100,000 Inhabitants

Beds Available in Private Hospitals for Every 100,000 Inhabitants

⁴⁴ Oportunidades is a Mexican federal development program for those sectors of the population living in extreme poverty. It provides support in education, health, nutrition and income.

Economic development

Definition: It refers to the population's well-being as a consequence of the implementation of public and private plans for increasing productivity and economic performance.

Variables:

Economic Activity: Percentage of the GDP in each state.

Type of Economic Activity: The classification of economic activity in primary, secondary and tertiary sectors.

Fiscal Autonomy: Percentage of taxed income and the corresponding tax received by the state.

Direct Foreign Investment: The amount is calculated for each state.

Per capita GDP, 2003-2010

Industrial Parks

GDP Growth: GDP was estimated using constant local currency (Mexican pesos) for 2003.

Consumer Price Index for Each *zona metropolitana*: This index reflects the purchasing power in each *zona metropolitana*.

Number of Bank Branches per 1,000 Inhabitants: The figure is estimated for *zonas metropolitanas* as banks tend to concentrate in them.

Number of Established Business: Information disclosed by the Ministry of Economy shows this figure with reference to medium-size industries which are those that have between 31 and 100 employees.

Number of Credit Card Contracts for every 1,000 Inhabitants

Credit from the Fondo Nacional de la Vivienda para los Trabajadores (National Housing Fund for Workers) for Every 1,000 Inhabitants: This information shows the number of workers that have been employed for at least more than one year, which is the time required to obtain a loan from that institution.

Economically Active Population

Development Bank Credits: Credits are estimated for each *zona metropolitana*.

Ease to do business

Definition: It refers to the legal requirements, costs and time to set up a business, from the moment it is legally/fiscally constituted to the moment it opens.

Variables:

Setting Up a Business: Cost of documentation.

Setting Up a Business: Waiting Time.

Energy Costs: Charge per KW of invoiced demand by businesses, in Mexican pesos.

Social Insurance Cost for Each Worker.

Urban development

Definition: It refers to growth and quality of new real estate development in cities. It also refers to the increase in well-being as a consequence of urban growth, planning and access to housing credit.

Variables:

Housing Demand: Housing demand is estimated by quarter for *zonas metropolitanas*.

Houses with Access to Potable Water: This figure is estimated for *zonas metropolitanas*.

Houses with Access to Electricity: This figure is estimated for *zonas metropolitanas*.

Recreational and Cultural Facilities Available: This figure is estimated for *zonas metropolitanas* and includes sports activities.

Public Investment in Public Works and Public Actions: This figure is estimated for *zonas metropolitanas*.

Airports: Freight and passenger airports in each *zona metropolitana*.

Sustainable Transport: Urban Massive Transportation Projects that are funded by local governments and private capital and which are socially profitable.

Public Transport per 10,000 Inhabitants: Total number of registered vehicles in each state.

Water Purification Plants: Water purification plants in each state.

Public Investment in Urbanization, Housing and Regional Development: Federal government investment assigned to the states.

Recreational and cultural activities

Definition: It shows recreational, cultural and sports activities available to the population in states and *zonas metropolitanas*.

Variables:

Recreational Facilities: Number of established institutions that offer sports, culture or recreational activities.

Museums: Total number of museums in each municipality, according to the cultural information system of the Consejo Nacional para la Cultura y las Artes (National Council for Culture and the Arts).

Theatres: Total number of theatres in each municipality, according to the cultural information system of the Consejo Nacional para la Cultura y las Artes (National Council for Culture and the Arts).

Cultural Centers: Total number of cultural centers, according to the cultural information system of the Consejo Nacional para la Cultura y las Artes (National Council for Culture and the Arts).

Magic Towns⁴⁵: Listing of all tourist towns that are registered in this category.

Golf Courses: Total number of Golf Courses in each *zona metropolitana*.

Hotel Rooms: Total number of hotel rooms registered with the Ministry of Tourism.

⁴⁵ Magic Towns is a development program devised by the Mexican Secretary of Tourism (Sectur) in 2001, together with other agencies and state and municipal governments, and whose purpose is the promotion of tourism in villages and towns that are culturally interesting.

Judicial reforms implementation and security

Definition: It shows the enforcement of laws, reforms and actions of Legal Institutions that influence citizen's perception concerning security.

Variables:

Percentage of Enforcement of the Judicial Reform: Evaluation by the Secretaría Técnica para la Implementación del Nuevo Sistema de Justicia Penal (SETEC) (Technical Secretariat for the Enforcement of the New Penal Justice System).

Police per 100,000 Inhabitants: Includes all police, according to the State Report on the Sistema Nacional de Seguridad Pública (National Public Security System).

Sentences per 100,000 Inhabitants: Number of federal jurisdiction sentences.

Thefts/Robberies per 100,000 Inhabitants: Thefts classifies as common robberies by the Sistema Nacional de Seguridad Pública (National Public Security System).

Violence and Incidence: Measurement of the 8 most common crimes committed per 100,000 inhabitants. These include homicide, executions and car theft.

Transparency

Definition: It shows accessibility to public information on the origin and destination of public resources, as well as law enforcement that harmonizes financial information systems and transparency in states and municipalities.

Variables:

Enforcement of the Ley General de Contabilidad Gubernamental (General Law on Government Accounting): Number of reports submitted to the Consejo Nacional de la Contabilidad (National Council for Accounting) by the executive, legislative and judicial government branches, as well as by municipalities and other state entities.

Transparency Index: Score for access to information by electronic request through electronic pages of the Instituto Federal de Acceso a la Información (IFAI) (Federal Institute for the Public Access to Information).

E-Government Index: Independent evaluation of governmental web page design, friendly access, quality of information provided, list of procedures that are offered by any given state agency, among other variables in electronic government pages.

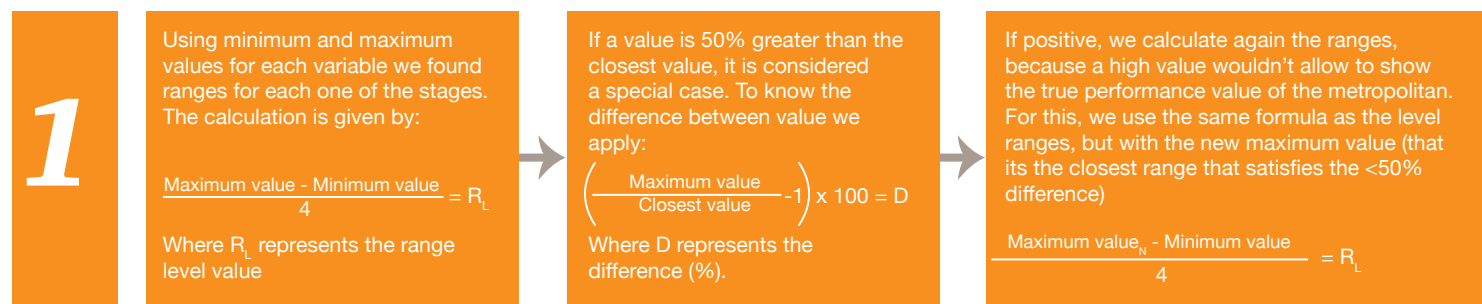
2. Measurement System offered by indicators and variables

The variables system is used to provide a total score to every indicator. It is important to highlight that a metropolitan area can present specific indicators in the development stage, others in the middle stage and

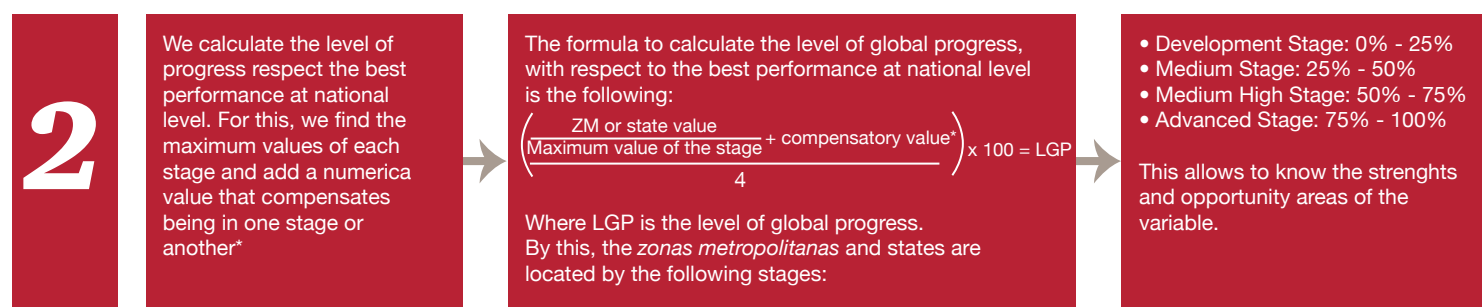
others in the advanced stage, and the score of the indicator represents the aggregated performance of all the variables considered.

¿How were the values estimated?

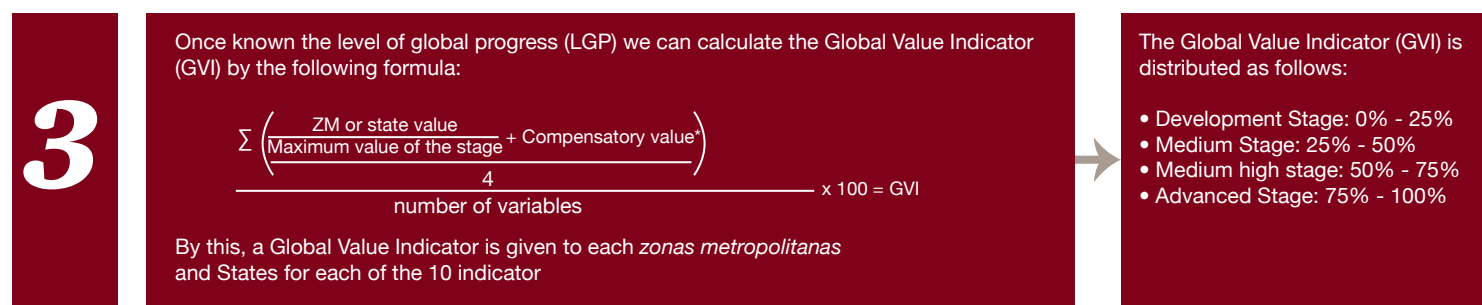
Level Ranges – Identifying States and Metropolitan Areas in their respective ranges



Level of progress – Identifying strenghts and opportunity areas in zonas metropolitanas and states



Grade of progress – Identifying opportunity areas and strenghts of the states and zonas metropolitanas



The Global Value Indicator allows, not only to place a *zona metropolitana* or State on a stage, but also identify strenghts and opportunity areas in general. A *zona metropolitana* or State in the advanced stage doesn't mean that the work is done, just as a *zona metropolitana* and State in development stage doesn't mean that no effort has being done.

The GVI allows to know, in a global way, the level of opportunities in each of the 10 indicators of the study.

*The compensatory values of each stage are: Development stage: +0; Medium stage:+1; Medium high stage: +2; Advanced stage: +3.

3. Zonas metropolitanas and municipalities

Aguascalientes

Metropolitan zone of Aguascalientes

Municipalities: Aguascalientes
Jesús María
San Francisco de los Romo

Baja California

Metropolitan zone of Tijuana

Municipalities: Tecate
Tijuana
Playas de Rosarito

Baja California Sur

Municipio: La Paz

Campeche

Municipio: Campeche

Colima

Metropolitan zone of Colima

Municipalities: Colima
Comala
Coquimatlán
Cuauhtémoc
Villa de Alvarez

Chiapas

Metropolitan zone of Tuxtla Gutierrez

Municipalities: Chiapa de Corzo
Tuxtla Gutierrez

Chihuahua

Metropolitan zone of Chihuahua

Municipalities: Aldama
Aquiles Serdán
Chihuahua

Coahuila

Metropolitan zone of Saltillo

Municipalities: Arteaga
Ramos Arizpe
Saltillo

Durango

Metropolitan zone of La Laguna

Municipalities: Matamoros
Torreón
Gómez Palacio
Lerdo

Estado de Mexico

Metropolitan zone of Toluca

Municipalities: Almoloya de Juárez
Calimaya
Chapultepec
Lerma
Metepéc
Mexicaltzingo
Ocoyoacac
Otzolotepec
Rayón
San Antonio la Isla
San Mateo Atenco
Toluca
Xonacatlán
Zinacantepec
Coyuca de Benítez

Estado de Mexico

Metropolitan zone and Distrito Federal

Municipalities and Burroughs:

| | |
|-------------------------|-----------------------------|
| Azcapotzalco | Huixquilucan |
| Coyoacán | Isidro Fabela |
| Cuajimalpa de Morelos | Ixtapaluca |
| Gustavo A. Madero | Jaltenco |
| Iztacalco | Jilotzingo |
| Iztapalapa | Juchitepec |
| La Magdalena Contreras | Melchor Ocampo |
| Milpa Alta | Naucalpan de Juárez |
| Álvaro Obregón | Nezahualcóyotl |
| Tláhuac | Nextlalpan |
| Tlalpan | Nicolás Romero |
| Xochimilco | Nopaltepec |
| Benito Juárez | Otumba |
| Cuauhtémoc | Ozumba |
| Miguel Hidalgo | Papalotla |
| Venustiano Carranza | La Paz |
| Tizayuca | San Martín de las Pirámides |
| Acolman | Tecámac |
| Amecameca | Temamatla |
| Apaxco | Temascalapa |
| Atenco | Tenango del Aire |
| Atizapán de Zaragoza | Teoloyucán |
| Atlautla | Teotihuacán |
| Axapusco | Tepetlaoxtoc |
| Ayapango | Tepetlixpa |
| Coacalco de Berriozábal | Tepotztlán |
| Cocotitlán | Tequixquiac |
| Coyotepec | Texcoco |
| Cuautitlán | Tezoyuca |
| Chalco | Tlalmanalco |
| Chiautla | Tlalnepantla de Baz |
| Chicoloapan | Tultepec |
| Chiconcuac | Tultitlán |
| Chimalhuacán | Villa del Carbón |
| Ecatepec de Morelos | Zumpango |
| Ecatzingo | Cuautitlán Izcalli |
| Huehuetoca | Valle de Chalco Solidaridad |
| Hueyoxtlá | Tonanitla |

Guanajuato

Metropolitan zone of Guanajuato

Municipalities: Leon
Silao
Irapuato
Guanajuato
Celaya
Apaseo del alto
Apaseo el Grande

Guerrero

Metropolitan zone of Acapulco

Municipalities: Acapulco de Juárez
Coyuca de Benítez

Hidalgo

Metropolitan zone of Pachuca

Municipalities: Epazoyucan
Mineral del Monte
Pachuca de Soto
Mineral de la Reforma
San Agustín Tlaxiaca
Zapotlán de Juárez
Zempoala

Jalisco

Metropolitan zone of Guadalajara

Municipalities: Guadalajara
Ixtlahuacán de los Membrillos
Juanacatlán
El Salto
Tlajomulco de Zúñiga
Tlaquepaque
Tonalá
Zapopan

Michoacan

Metropolitan zone of Morelia

Municipalities: Morelia
Tarímbaro

Morelos

Metropolitan zone of Cuernavaca

Municipalities: Cuernavaca
Emiliano Zapata
Huitzilac
Jiutepec
Temixco
Tepoztlán
Xochitepec

Nayarit

Metropolitan zone of Tepic

Municipalities: Xalisco
Tepic

Nuevo Leon

Metropolitan zone of Monterrey

Municipalities: Apodaca
Cadereyta Jiménez
García
San Pedro Garza García
Gral. Escobedo
Guadalupe
Juárez
Monterrey
Salinas Victoria
San Nicolás de los Garza
Santa Catarina
Santiago

Oaxaca

Metropolitan zone of Oaxaca

Municipalities: Oaxaca de Juárez
San Agustín de las Juntas
San Agustín Yatareni
San Andrés Huayápam
San Antonio de la Cal
San Bartolo Coyotepec
San Jacinto Amilpas
Ánimas Trujano
San Lorenzo Cacaotepec
San Pablo Etla
San Sebastián Tutla
Santa Cruz Amilpas
Santa Cruz Xoxocotlán
Santa Lucía del Camino
Santa María Atzompa
Santa María Coyotepec
Santa María del Tule
Santo Domingo Tomaltepec
Tlaxiaco de Cabrera
Villa de Zaachila

Puebla

Metropolitan zone of Puebla-Tlaxcala

Municipalities: Amozoc
Coronango
Cuatlancingo
Chiautzingo
Domingo Arenas
Huejotzingo
Juan C. Bonilla
Ocoyucan
Puebla
San Andrés Cholula
San Felipe Teotlancingo
San Gregorio Atzompa
San Martín Texmelucan
San Miguel Xoxtla
San Pedro Cholula
San Salvador el Verde
Tepatlxaco de Hidalgo
Tlaltenango
Ixtacuixtla de Mariano Matamoros
Mazatecochco de José María M.
Tepetitla de Lardizábal
Acuamanala de Miguel Hidalgo
Nativitas
San Pablo del Monte
Tenancingo
Teolochocho
Tepeyanco
Tetlatlahuca
Papatotla de Xicohténcatl
Xicohtzinco
Zacatelco
San Jerónimo Zacualpan
San Juan Huactzinco
San Lorenzo Axocomanitla
Santa Ana Nopalucan
Santa Apolonia Teacalco
Santa Catarina Ayometla
Santa Cruz Quilehla

Queretaro

Metropolitan zone of Queretaro

Municipalities: Corregidora
Huimilpan
El Marqués
Queretaro

Quintana Roo

Metropolitan zone of Cancun

Municipalities: Isla Mujeres
Benito Juárez

Tabasco

Metropolitan zone of Villahermosa

Municipalities: Centro
Nacajuca

San Luis Potosi

Metropolitan zone of San Luis Potosi

Municipalities: San Luis Potosi
Soledad de Graciano Sánchez

Sinaloa

Municipio: Culiacan

Sonora

Municipio: Hermosillo

Tamaulipas

Metropolitan zone of Reynosa

Municipalities: Reynosa
Río Bravo

Tlaxcala

Metropolitan zone of Tlaxcala

Municipalities: Amaxac de Guerrero
Apetatitlán de Antonio Carvajal
Apizaco
Cuaxomulco
Chiautempan
Contla de Juan Cuamatzi
Panotla
Santa Cruz Tlaxcala
Tetla de la Solidaridad
Tlaxcala
Tocatlán
Totolac
Tzompantepec
Xaloztoc
Yauhquemecan
La Magdalena Tlaltelulco
San Damián Texoloc
San Francisco Tetlanohcan
Santa Isabel Xiloxotla

Veracruz

Metropolitan zone of Veracruz

Municipalities: Alvarado
Boca del Río
Medellín
Veracruz

Yucatan

Metropolitan zone of Merida

Municipalities: Conkal
Kanasín
Merida
Ucú
Umán

Zacatecas

Metropolitan zone of Zacatecas

Municipalities: Guadalupe
Zacatecas

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Dra. Margarita Velázquez Gutiérrez
Directora del Centro Regional de Investigaciones
Multidisciplinarias (CRIM), UNAM
Examiner of the Document

Fernanda de la Cruz Pérez, UNAM

Translation and edition

Renato Rivera

Edición y revisión

Ariadna Gómez, UNAM

Photography

Consejo de Promoción Turística de México

Ricardo Espinosa

Pintando con Luz

Gabriel González

Fundación Escalera

Gobierno Federal

Francisco Santos



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