THE REPORT
Mexico 2014
Baja California
Tijuana: The Advanced Manufacturing Platform for Global Competitiveness

Support Services

- Hot to do business in Mexico
- Cost Analysis and site selection
- Manufacturing services procurement
- Government liaison

+52 664 681 8344  www.tijuanaedc.org  contact@tijuanaedc.org

Proud Member of Cali Baja

Call U.S. and Canada toll free 1855 558 5332

AEDO Certified

MEXICALI, BAJA
MEXICO'S AEROSPACE CAPITAL

- Over 26 established Aerospace companies generating 8,000 direct jobs.
- Universities offering Engineering Careers and Masters Programs.
- + 200 Graduated Students from the Advance CNC Machining Training Center.
- Established and Operating Aerospace Cluster.
- Excellent Supplier Opportunities.

MEXICALI IS HOME TO:

- LM Aerospace, Inc.
- Honeywell
- Gulfstream
- UTC Aerospace Systems
- Rockwell Collins
- Skyworks
- Altair Engineering
- Volare Engineering
- Chromalloy
- Jonathan Engineering Solutions
Port to port
Page 9
Renewed focus on making Baja California a manufacturing centre is also increasing demand for transport, logistics and utilities infrastructure and creating opportunities for firms with expertise in these areas. As of 2014, the proposed project pipeline was valued at over $5.05bn and included land, air and sea transport, as well as water, sewage and electricity.

LOOKING ON THE SUNNY SIDE
4 Opportunities in varied sectors abound for the state

INTERVIEW
8 Francisco Arturo Vega de Lamadrid, Governor, Baja California

PORT TO PORT
9 Expanding infrastructure across the board

DIVERSIFIED OFFERING
11 Hydrocarbons are being bolstered with renewables generation

TAKING TO THE AIR
13 Aerospace manufacturers look anew to Baja California for production

VALUE FOR INTEGRATION
15 Regional relationships are key to the manufacturing sector’s long-term health

SMARTER CHOICES
19 Efforts to boost human capital can sustain growing foreign investment

MORE THAN SUN AND SAND
22 Broadening the state’s appeal to local and international tourists

INTERVIEW
24 Carlo Bonfante Olache, Secretary of Economic Development for Baja California

WINE AND FISH ON THE TABLE
25 Diverse agricultural and fisheries products provide rich opportunities

Value for integration
Page 15
A cornerstone of the local economy, manufacturing is a major source of employment and accounts for a large proportion of the state’s GDP. Close collaboration between industry and higher education institutions is targeting high-tech and research-focused technical skills. This is in addition to sustaining strong levels of foreign direct investment, which surpassed $250m in the electronics segment in 2013.
Looking on the sunny side
Opportunities in varied sectors abound for the state

Baja California (BC) is the Mexican state located farthest to the north-west of the country, abutting the Gulf of California, also known as the Sea of Cortez, and the state of Sonora. To the west lies the Pacific Ocean and to the north are the US states of California and Arizona. Since it is divided by mountains, the Sierra de Baja California, BC’s weather and biodiversity patterns are equally split. The Sonora and Vizcaino deserts to the east and south, respectively, have dry climates with low precipitation. However, the path of the Colorado River through the north-eastern part of the state allows urbanisation as well as agriculture in the area. The municipality of Mexicali has one of the lowest records of rainfall in the country, with less than 50 mm a year. The average annual temperature is 22.6°C in Mexicali, making it the state’s warmest municipality.

To the west of the Sierra mountains, the coastal region, so-called because it borders the Pacific Ocean, has a much milder climate year round. Cities in the coastal region include Tijuana, where the average temperature is 17.6°C and also Ensenada with 17.13°C and an average 250 mm of precipitation a year. Ensenada’s weather in some of its valleys, like Valle de Guadalupe, make it an excellent location for agriculture. Its wine industry is one of the best known in the country. The state has five municipalities: Tijuana, Playas de Rosarito, Ensenada, Tecate and Mexicali, which is the state’s capital. The state has two large urban conglomerations, and the coastal zone, which includes Tijuana, Ensenada, Rosarito and Tecate, which is the most populated area of the Mexicali Valley. The southern part of the state is sparsely inhabited and is home to off-road racing, cave paintings and multiple natural parks.

HISTORY: The first settlers of BC are said to have arrived around 14,000 years ago and originally belonged to nomadic tribes. European knowledge of the peninsula’s existence is much more recent, dating back to 1534, when the Spanish sailor, Fortún Jiménez, aboard the ship Concepción, visited the area. The first settlement initiatives from the Spanish Crown were failures, due to the lack of water and the difficult agricultural conditions. It was not until more than a century and a half after the Spanish arrival, in 1697, that the first successful Jesuit mission was founded. Similar missionary settlements were founded and grew, with the objective of converting and Europeanising locals by introducing agriculture, cattle raising and trade. These missions were centres of religious and political power until 1822.

INDEPENDENCE: The Mexican Independence War came and went without a single uprising in the peninsula, due to its lack of communication with the rest of the country. It was not until the arrival of Thomas Cochrane and his fleet that the pirating menace brought the need to look for support from the recently independent Mexican Empire. In 1848 the empire was partitioned, following to the Mexican-American war, and Alta California became US territory and later the states of California, Nevada, Arizona, Utah and parts of Colorado and Wyoming. Two years later, BC was divided into two northern and southern districts. In 1930 the two districts became territories. At that time the Northern Territory (now BC) had a population of under 50,000.

STATEHOOD: In the 1950s the territory, as much of northern Mexico, was mostly still a sparsely populated semi-desert region. However the population had grown fivefold from the 1930s and its economic activities started becoming more important. BC officially became a state in 1952 and by 1960 the population had doubled. This growth, in combination with the creation of the export manufacturing programme, or maquila as it is widely known, was by 1965 the beginning of the state’s economic and demographic boom.

The manufacturing related bonanza was further consolidated in 1994 with the implementation of the North America Free Trade Agreement (NAFTA). This spurred immigration to BC among Mexicans seeking jobs. More recently, the state has seen a diversification of commercial activities. Cities like Tijuana and Mexicali have become lively urban centres with widely varied educational, gastronomy and entertainment options.
**POPULATION & WORKFORCE:** BC has more than 3.3m inhabitants, amounting to around 3.5% of the country’s population. Its median age is 26 and almost 40% of inhabitants are under the age of 20. As with most of Mexico, the biggest percentage of the population is Mestizo (of mixed Amerindian and European blood), although some small indigenous communities still exist. A large migration from East Asia in the 19th and 20th centuries formed a sizable community, with the Chinese community in Mexicali one of the most noted examples. BC is also host to a large number of American and Canadian immigrants. It is estimated that more than 200,000 Americans live in the state, many of them retirees. A strong wave of in-country migration from many different Mexican states is responsible for the multicultural composition and is strongly related with the economic boom of the manufacturing industry and the desire to move on to the US. Migration to the state in the search of economic opportunities has caused the economically active population (EAP), which was reportedly 1.5m for the entire state, to achieve the highest overall economic activity participation in the country, at 61% of the population over 14.

The latest employment figures from February 2014 show a 94.53% employment rate, according to the Secretariat of Economic Development (Secretaría de Desarrollo Económico, SEDECO). The two border municipalities, Tijuana and Mexicali, are home to almost 80% of the people. Of the state’s inhabitants, almost 92% live in urban areas and more than 80% are concentrated in its five main cities. The capital city of Mexicali has an estimated population of 998,000, while Tijuana, the state’s largest city, is home to an estimated 1.67m inhabitants. Ensenada and Tecate’s inhabitants are calculated at 503,000 and 108,000, respectively (CONAPO).

**EDUCATION:** With its 951,000 students, 55,000 teachers and 4400 schools, BC has one of the highest public investments in education. The Mexican Institute for Competitiveness (IMCO) points out that 31% of the EAP has attended high-level education. The state has 187 tertiary institutions, of which 67 have postgraduate studies, according to the 2013-14 Sistema Educativo del Estado de Baja California. In IMCO’s 2012 competitiveness report, BC advanced nine spots in the Economic Sector Innovation category, showing the state’s commitment with industry cooperation, innovation and research. Patent registration grew from one per million inhabitants in 2008 to 5.84 in 2010.

**POLITICS:** BC was the first state to elect a governing party different from Partido Revolucionario Institucional (PRI), since the foundation of the political party in 1929. As of 1989, Partido Acción Nacional (PAN) has governed the state. PAN is the political party that was also responsible for the federal government from 2000 until 2012, when the election of President Enrique Peña Nieto brought the PRI back to federal office. Francisco Vega, the current governor of BC, took office in 2013 as the fifth-consecutive PAN governor. PAN is part of the Pacto por México, a tri-party agreement aimed at legislating a number of political reforms, such as the fiscal, energy, education and telecoms laws.

**ECONOMY:** At MXN424bn ($32.9bn), the figure cited by the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI) in 2012, BC’s GDP would place it at slightly under 3% of the national total, locating it as the 11th-largest in the country. BC’s GDP fell by more than 8% in 2009 due to the economic crisis in the US and strong trade and commercial ties with its northern neighbour. Economic recovery has been under way since 2010 with 2.2% growth, 4.4% in 2011 and 4.2% in 2012, according to INEGI. BC’s main economic contributors to GDP are manufacturing and commerce with 19.4% and 16%, respectively, according to figures from the state’s Ministry of Economy. Total direct foreign investment (FDI) is reported at $192.4m for the last quarter of 2013, and at $771.1m for the whole year, growing 30% from 2012 figures. Remittances have slightly risen and stand at $542m for 2013, according to SEDECO.

BC has the most industrial parks of any state in Mexico, adding up to 93, including two techno parks, and one IT cluster, according to Foro Consultivo Científico y Tecnológico, an organisation that benchmarks science, technology and innovation.
Agriculture and fishing contribute 3.2% to BC's GDP, but new efforts to provide water could see this grow technology and innovation developments in the country. The state ranked 10th in competitiveness in the 2012 state ranking by the IMCO, moving up three places from 2010. The institute also said BC was the most efficient tax collection service of all Mexican states.

Historically strategic sectors in the state include aerospace, electronics and metal-mechanic manufacturing, with medical appliances and medical services both showing strong recent growth. Carlo Bonfante, BC's Secretary of Economic Development, told OBG in an interview, that the current administration is seeking to reposition the state as major investment attraction hub. He said competition is fierce, not only within Mexico but also with places like Alabama, Georgia, Texas and Arizona which are offering incentives and grants for re-shoring and general development in their states. The secretary said two of the strongest upcoming sectors in the state will be mining, which will see the development of significant investments in metallic-mining exploitation, and renewable energy. Bonfante forecasts possible FDI of $3bn-4bn in mining and $3bn in energy. Other sectors that will probably receive attention due to their recent development in the state include biotechnology and information technology.

INCENTIVES: The Mexican tax system is arranged such that most taxes are collected at the federal level, and states and municipalities have limited room to offer fiscal incentives to attract investment. In the case of BC, incentives are offered in the form of reductions in payroll tax and utilities costs such as water and wastewater. However, as Bonfante told OBG, the state is concentrating on attracting investments based on long-term factors such as the availability of competitively priced resources including natural gas, water and electricity.

TAX REFORM: BC and all the border areas in Mexico have faced challenges due to the recent passing of fiscal reform. The change in legislation brought an increase to value-added tax in the border region to 16% from the previous 11%. The steeper comparison to California and Arizona's 7-9% taxes may be detrimental to tourism, especially for day-trippers, and caused inflation of 0.34% during the month of February 2014.

IMAGE ABROAD: BC, together with the rest of Mexico, has long been battling the issue of negative perception abroad. Current statistics show that the state has turned a corner on safety and security issues. Reported violent robbery is down by 33%, while kidnaping has dropped by 71% compared with 2009 figures, according to 2012 figures issued by BC's Secretariat of Public Safety (Secretaría de Seguridad Pública del Estado, SSPE). In a comparative approach, BC would rank below 18 US cities for violent crime and below 12 for murders, according to statistics from the US Federal Bureau of Investigation (FBI) and SSPE. Robert Lyle, chairman of the Baja California Centre, told OBG, "Negative perception persists and we have to work on changing it. The Tijuana Economic Development Commission (CDT) has a commitment to change that image with its Tijuana Innovadora programme. We have invited people like Al Gore and Larry King, in order to get more attention and show that things have changed."

INFRASTRUCTURE: Availability of multimodal transport including rail, seaports, airports and highways have made integration of the state's logistics a possibility. Proximity with one of the largest seaports (Long Beach California) and Los Angeles Airport has been an important factor as well. Further integration is under way with the announcement of a 120-infrastructure-project plan by the state's infrastructure department. The plan is not limited to transportation. It includes opportunities in sectors such as water desalination, sewage and energy generation. The total value of the pipeline amounts to MXN65bn ($5.05bn), from which the state will be looking to obtain more than 27% from private investments via PPP contracts.

ENERGY: Three natural gas connections with the US gives the state access to competitively priced energy resources. IEnova, a company owned by Sempra Energy, and InterGen both have privately owned electricity generation facilities for energy export that add up to more than 1000 MW. Additionally, BC is host to the largest geothermal energy facility in the country, Cerro Prieto, with more than 540 MW installed capacity. In addition to these it has developed the first state-government owned Wind Park, La Rumorosa, with 10-MW capacity. BC is the only state in Mexico that has an agreement with a private company for lower electricity costs. Wind and solar power could be the biggest growing sectors, with the recently passed energy reform aimed at opening up energy markets. Generation, transmission and distribution of electricity, added to water and gas sales by pipeline, amounted to MXN16.1bn ($1.25bn) in 2012, or 3.8% of the state's total GDP.

AGRICULTURE & FISHING: Agriculture and fishing contribute MXN13.7bn ($1.06bn) to GDP 3.2% of the state's total. In regard to agriculture, the main productive areas in BC, Mexicali, Guadalupe and San Quintin, are host to most of the state's harvests. The limited availability of water in the coastal zone has created opportunities in desalination and efficient water management technologies for agriculture. These opportunities would
allow expansion of the state’s already established wine industry. In the fishing sector, an initiative by the fishing secretariat to mitigate against over-exploitation of stocks and strengthen enforcement by local and federal officials is expected to incentivise industry and protect resources. Additionally, recent attention to aquaculture and mariculture, combined with advances in biotech and industrial biology, may bring important investment opportunities in an already growing sector.

**TOURISM:** With a diverse geography and long history in the sector, the state annually generates more than MXN50bn ($3.9bn) from the tourism industry. More recently, the focus is switching to growing niches such as the meetings, incentives, conferences and exhibitions (MICE) sector where a MXN600m ($46.6m) investment produced the Baja California Centre in 2013, a venue that hosted 150,000 people in its first year. Another sub-sector, health tourism, will almost certainly see expansion. The state aims to formalise it by creating a special directorate. The 510,000 patients a year estimated by the Health Tourism Cluster is foreseen to grow to 800,000 in 2014 in light of the formalisation decision, combined with rising US health care costs and an already strong service provider base.

**MANUFACTURING:** The state’s main industrial strength lies in manufacturing, with MXN87bn ($6.8bn) in 2012 representing over 20% of its GDP. The sector has seen a steady recovery from the 2008-09 crisis. With long established industries such as electronics and home appliances, the manufacturing base of the state is strong. Other highly developed sectors include medical device manufacturing and automotive. A new player in the field that could see growth in the coming years and carries great potential is manufacturing of renewable energy equipment. One plant is already manufacturing solar panels and subsectors are seeking to increase the proportion of locally procured materials and supplies, opening up opportunities in that area of production as well. Additionally, there are more than 60 aerospace manufacturers in the state and this segment has grown more than 20% in the past eight years.

**BIOTECH:** Research institutions in BC have been an important part of the biotech sector’s evolution. Advances in the areas of fish reproduction and farming have seen the possibility of repopulating the almost extinct totoaba population. Additionally, incubation and technology transfer programmes, such as Bajalnova (see analysis), have given rise to achievements in sectors such as the pharmaceutical industry. The CICESE-Silane alliance has seen the birth of a high-tech research centre with nine patents under its belt already.

**INFORMATION TECHNOLOGY (IT):** IT firms like Softek, Telvista, Samsung SDA and Gameloft settled in the state to capitalise on support. It@baja, BC’s IT cluster, has been driving growth and the new Baja Innovation and Technology Center Tijuana (BitCenter), a 5000-sq-metre space, will host 25 small IT firms. Expressions of support have come from the government, research institutions and technology clusters focused on IT.

**OUTLOOK:** Close to the US and far from most of the rest of Mexico, Baja California has historically sought to tread its own path. This path has induced it to become part of a bi-national and bi-cultural environment. Having a neighbour with the economic capabilities of California can be an advantage or a challenge depending on viewpoint. However, recent economic recovery figures and stability have been shown that BC’s path may just be the correct one. Access to tangible resources such as natural gas, water and electricity and intangible ones, such as a trained and abundant workforce, distinguish the state from other potential investment regions. If BC continues to support the integration of education and industry, the state could see a marked shift from manufacturing to the development of an innovation and research driven market.

However, for this to happen at a major scale there is much to be done. Exciting examples in some sectors already show the way, while industries like aerospace, where research and engineering centres are already up and running, and biotech, where important advances related to the local fauna and human health have been made, are setting an example of what could be the beginning of an even more rapid advancement for BC.

The state’s main industrial strength lies in manufacturing, which contributed $6.8bn in 2012, or more than 20% of its GDP. The sector has seen a steady recovery from the 2008-09 crisis.

<table>
<thead>
<tr>
<th>GDP by sector, 2012</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>20.6%</td>
</tr>
<tr>
<td>Commerce</td>
<td>16.4%</td>
</tr>
<tr>
<td>Other services</td>
<td>16.1%</td>
</tr>
<tr>
<td>Real estate &amp; services</td>
<td>13.5%</td>
</tr>
<tr>
<td>Construction</td>
<td>12.1%</td>
</tr>
<tr>
<td>Transport, mail &amp; storage</td>
<td>5.4%</td>
</tr>
<tr>
<td>Gov’t activities</td>
<td>4.4%</td>
</tr>
<tr>
<td>Educational services</td>
<td>4.3%</td>
</tr>
<tr>
<td>Energy generation, gas &amp; water distribution</td>
<td>3.8%</td>
</tr>
<tr>
<td>Agriculture &amp; fishing</td>
<td>3.2%</td>
</tr>
<tr>
<td>Mining</td>
<td>0.2%</td>
</tr>
</tbody>
</table>
Realising benefits

OBG talks to Francisco Arturo Vega de Lamadrid, Governor of Baja California (BC)

How does not being connected to the national power grid affect power intensive industries?

VEGA: Thanks to our location adjacent to the eighth largest regional economy in the world, the US state of California, the BC region benefits from enough imported power to service all new investment spaces. The majority of products and services in the area are covered by the North American Free Trade Agreement, which covers the linking of distribution systems for electricity and gas. This, in turn, provides security and improves supply to both sides of the border.

In addition to wind-generated power, what types of clean energy can be produced in BC?

VEGA: BC has many renewable resources. We have one of the highest levels of solar irradiation both in the country and world, and the state is Mexico’s biggest generator of geothermal energy, with an installed capacity of 540 MW at the Cerro Prieto geothermal plant. We also have a 150-MW wind power park under construction. Furthermore, BC has the resources to develop tidal and wave hydropower, as well as the potential to tap biogas from landfills. Currently, we have a private firm working on a system for processing methane from cattle manure to generate electricity. Finally, we are working through the State Energy Commission to identify public-private partnership (PPP) opportunities for renewable energy generation. Thus the state law requires that 50% of electricity consumed in government buildings must come from renewable sources.

Alongside the MXN65bn ($5.05bn) of government-funded infrastructure projects under way, what opportunities exist for the private sector?

VEGA: The government of BC has identified more than 100 strategic projects that will support development, help generate employment and boost the welfare of all families in BC. Investment opportunities arise in various areas of economic activity, covering a wide spectrum of projects dealing with urban, economic, social and other issues. Included in these projects are improvements to Mexico’s road network, such as better links to the border crossings into the US via California. Airport cargo and passenger seaports facing the Pacific Ocean in the BC region are also receiving attention. In addition to these key focus points, there are a number of other projects to improve logistics and transportation infrastructure. Within this scope, government support is being provided for road paving equipment, social welfare initiatives, programmes to boost safety, as well as for renewable energy projects in both wind and solar.

The state government is set to spend a record budget over the next six years. Furthermore, we now have the opportunity to carry out projects via PPPs, where the investment risk is shared between the collaborating sides. This provides a level of legal certainty for firms involved in the upgrading of the region’s infrastructure and logistics platforms.

What measures is the government taking to support small and medium-sized enterprises (SMEs)?

VEGA: In BC, 99.5% of companies are SMEs and they account for approximately 68% of employment in the state. We have created a Business Services Centre where SMEs can receive training and support in terms of joining the formal economy if they are not part of it already. The centre also aims to develop a friendlier business framework, with easier procedures and less red tape. We also provide guidance on management of operating costs and financing options available for new businesses, in addition to training, advice and technical assistance to help strengthen operations.

Through the State Programme for the Development of Providers, small businesses are made aware of the opportunities available for fulfilling the needs of big business and industry. The programme also provides support for certification, business management, access to funds and introduction to export events and seminars. Our main goal is to help companies realise the benefits of formality, thereby strengthening the economy.
Port to port
Expanding infrastructure across the board

With close to 60m crossings per year (in both directions), the boundary between Baja California (BC) and the US is the most crossed border in the world. BC is one of six Mexican states that shares a border with the US as well as being one of the 11 states with access to the Pacific Ocean along the state’s 720 km of Pacific coast. The administration is looking to expand the existing infrastructure by including, as part of the State Development Plan, an aggressive public-private partnership (PPP) offering of 120 infrastructure projects in many different fields such as transport, water treatment, storm and wastewater management, and energy. The cost of the project pipeline adds MXN63bn ($4.9bn), of which MXN17bn ($1.3bn) are expected to come from private investors.

TRANSPOST: The 265-km border between BC and the US states of California and Arizona has six crossing points with California, which are located in the municipalities of Tijuana, Tecate and Mexicali. At one, San Ysidro, 13m cars cross each year. Based on a study by San Diego’s Regional Planning Agency (SANDAG), which projected an 87% increase in vehicle traffic through San Ysidro by the year 2030, an on-going expansion project for the crossing point is currently under way. The US government plans to invest $226m in 2014 and the total projected cost is calculated at more than $700m.

The state has over 200 km of BC railways, comprising 144 km of main lines, 45 km of secondary lines and 29 km of private railways. Ferromex’s rail line serves Mexicali. This is a 50/50 joint venture with Union Pacific with a crossing at the Mexicali/Calexico border. On the other side of the Rumorosa mountain range, railroad operations are under the administration of the State Government of BC and are concessioned out to Carrizo & Gorge Company. This railway consists of a short line from Tijuana to Tecate, where there is a border crossing to Campo, CA. Although there is no direct rail link between Tijuana and Mexicali, it is possible to transport goods via Tijuana-Tecate-Campo-Calexico-Mexicali. Tijuana also has a daily connection to San Diego, operated by Rail America, while a link to Los Angeles, the US and Canada is available through BNSF. The plan to build a railroad from Tijuana to the Ensenada region is also in a priority for the current administration.

PORTS: Five seaports make up the port system in BC; four on the Pacific Coast and one in the Sea of Cortez. The most prominent one is Ensenada, which moved 2.37m tonnes of cargo in 2013. This port connects BC with the US west coast and the Asian market and is integrated into the Intermodal Corridor Ensenada-Border BC. The corridor joins the Ensenada, Tijuana, TECATE and Mexicali Customs houses with the US to accelerate ground cargo transit. However, many companies in the BC region still prefer to ship via Long Beach port (which handles 75m tonnes of cargo per year), even with the extra effort required to import/export products via truck.

The Port of Sauzal de Rodríguez, or “El Sauzal”, is only 10 km north from Ensenada. It is mainly used for food industry cargo, moving live, frozen and processed products to US and Asian markets. Expansion plans for this port are under way (see analysis).

AIRPORTS: BC has four main airports, Tijuana, Mexicali, Ensenada and San Felipe, which between them handle almost 6m passengers per year. Works to be completed in 2014 are under way by Otay Tijuana Venture and Grupo Aeroportuario del Pacifico (GAP) for a direct Mexico-US border crossing in Tijuana airport, which in its first phase will cost more than $50m, plus $34.5m for the purchase of land in the US. These projects explore the potential for connecting Tijuana Airport directly with the US without involving border authorities. With this move, Tijuana’s airport aims to be a hub for the Southern California and BC region. In 2014 passenger and cargo traffic for this area centred around the San Diego and Los Angeles airports, which had 17m and 66m passengers, respectively, compared to Tijuana’s 4m.

BC shares a border with the US states of California and Arizona. The 265-km border has six access points with California, and just one, at San Ysidro, sees 13m cars pass through each year.
HIGHWAYS: The state’s highway network consists of more than 2700 km of paved roads. Federal Highway 2, the connection point linking BC to the rest of Mexico, runs from Tijuana to Mexicali and all the way to Mexico City. The cities of Tijuana and Mexicali offer road connections to the ports of Ensenada and Long Beach, as well as ground connections to the US. Mexicali connects to Calexico through two of its three border crossings, and Tijuana connects to US Interstate Highways I-8 and I-5.

STRATEGIC PLAN: Manuel Guevara, the secretary of infrastructure and urban development for BC, emphasised to OBG the importance cargo transport, logistics and connectivity have on the state. He said one project would connect the railway lines from Tijuana and Tecate to Ensenada. The planned length of the line is 98 km, with an investment of around $140m, which would make it possible to import and export transport cargo from the Pacific Ocean, via the port of El Sauzal, between the US and Mexico. The project is based on the existing concession on the right-of-way possessed by the state and should be planned as a PPP. This mega-project is seen as working in concert with an expansion of the El Sauzal port and an intermodal terminal in the Otay area with a total cost up to MXN5bn ($388.5m).

WATER: The Colorado River provides most of the state’s water, and the main urban areas of Mexicali, Tijuana and Ensenada depend almost completely on this body of water. There are bi-national treaties that ensure water availability, although the cost of bringing water to each of these cities varies greatly. While Mexicali is directly on the river’s path, both Tijuana and Ensenada are more than 200 km away. Water has to be pumped up more than 1000 metres to cross the La Rumorosa mountain range. The cost of the infrastructure and the energy requirements of transporting water make it an expensive resource.

With an installed capacity of more than 100 MW, the state spends some MXN600m ($46.6m) a year on electricity for water pumping alone. Javier Orduño, the director of BC’s State Energy Commission, told OBG. Complexities, such as transport in the drinking water infrastructure, have revealed a new set of business opportunities in the field of water desalination. Currently Ensenada has its first project under construction. At a cost of $48m, OHL Mexico, a transport and utilities construction firm, is building a plant that will output 15 cu metres of potable water per minute for more than 90,000 inhabitants. A development of this type indicates the maturity of the technology in combination with the high water costs in the area, averaging MXN17.18 ($1.32-1.39) per cu metre, will make it possible to replicate this type of projects in the state as long as reliable, long-term water tariff contracts can be guaranteed.

HEALTH CARE: Health infrastructure consists of almost 100 hospitals and clinics, both public and private, according to 2011 figures from the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía), the latest available. The number of private clinics and hospitals in the state has shown a 40% increase in the past 10 years. The specific services catering to health care tourism have received much attention, to such an extent that the current administration has decided to create a special directorate to exploit it (see analysis).

MINING: The mining industry consists mostly of non-metallic exploitation. The main product of the region is sand, with a value of MXN2.1bn ($163m) from the total mining production of MXN3.9bn ($305m) in 2012, as reported by Servicio Geológico Nacional. The predominance of non-metallic mining is due to the closure of the San Felipe Company in 2001, which reduced the state’s gold and silver production. However, in 2010 Grupo México, a mining holding, announced a $1.5bn project in El Arco, which would centre around copper extraction and boost the state’s metallic output. The biggest challenge for this project includes the underdevelopment of transport and utilities infrastructure in south-east BC, a fact that could bring new investments in the sector for the undeveloped south-east part of the state.

If the current administration is able to break the financing barrier for its major projects, upcoming years could see significant investments in infrastructure. As Guevara told OBG, “More important than incentives, such as tax reductions, the best way to bring investment to a region is by building infrastructure. That is why this is the main challenge for the administration if it is to regain a leading role in the region.” Mexico has long faced challenges for PPP projects, for which BC is doing a thorough revision of the state’s existing PPP legislation, published in 2009. The new PPP law is expected to be complete in 2014 and should simplify and expedite the realisation of these kinds of projects. The state’s own annual MXN6bn ($466m) budget, combined with private investment and the possibility of development funding from financial institutions, such as NADB Bank, could make these developments a reality.
Diversified offering

Hydrocarbons are being bolstered with renewables generation

The Baja California (BC), energy sector has a number of peculiarities. BC is interconnected to the US natural gas pipeline system, giving its industry access to this reliable and competitively priced energy source (see analysis). Regarding electricity, BC is one of the two states in Mexico – the other one being Baja California Sur (BCS) – that is not connected to the national electrical system (SEN). However, as opposed to BCS, BC profits from various points of electrical interconnection with the US, which has important implications for the energy sector and BC consumers; mainly, the possibility to buy and sell energy from and to the much more competitive US market. Numerous new opportunities in the energy sector are expected and a considerable inflow of capital will be required, based on the fact that the energy industry in Mexico is on the verge of seeing the biggest change since the nationalisation of the oil and gas and electricity sectors in 1938 and 1960, respectively. As of 2014, the full implications of these reforms and the details of draft legislation remained in the hands of legislators in the Mexican congress.

OIL & GAS: BC’s gas sector has been and should continue to be an active one. “BC has three natural gas connections, one in Tijuana, one in Mexicali and one in Algodones for natural gas importing, which is a great advantage that the rest of the country does not possess,” Javier Orduño, director of BC’s State Energy Commission, told OBG. In addition to the pipelines, Sempra Energy completed in 2008 a $975m liquefied natural gas re-gasification terminal, “Energía Costa Azul”. This terminal is intended to receive imports from the US West Coast and Asia for the Mexican NG pipelines, mainly for electricity generation. On the oil side, the state-owned oil company, Petróleos Mexicanos (PEMEX), reports no active crude production. However, investment opportunities exist in the form of storage and distribution facilities for refined products, as well as in service stations. However, the phasing out of fuel oil in many thermoelectric facilities operated by the Comisión Federal de Electricidad (CFE), combined with the substitution of natural gas for power, has exacerbated the slowdown of the oil and oil-product business.

ELECTRICITY: Due to the lack of interconnection to the rest of the country’s electric grid, BC has been forced to tread its own path. Even with the existing interconnection with the US, electricity imports are not significant, with 214 GWh imported from a total of 11,821 GWh (2%). On the other hand, BC exported 830 GWh to the US in 2010, according to the CFE. With 1.1m local users and the possibility to export to the US, the BC energy market could attract investors’ attention when the energy reform finally settles. Current CFE generation capacity includes 320 MW conventional thermoelectric, 1,262 MW combined-cycle, 299 MW turbogas, and 540 MW geothermal. Additionally, there are two private generators with combined cycle plants, Sempra/Enova with 679 MW and InterGen with 1,100 MW.

TARIFFS: The BC region has two main seasons for variable tariffs (mainly those for industry). The summer season has an additional peak demand charge due to the extra load used for operating air conditioning and refrigerating units. This charge can make electricity tariffs considerably higher for said seasons, which in turn could render industry in the area less competitive. BC has an agreement with a private company to provide competitive electric prices from surplus energy produced at private plants.

RENEWABLES & CLEAN ENERGY: A significant challenge to renewable energy development is resource mapping. The availability of detailed resource maps is crucial to firms for minimising risk and maximising investment in renewable projects. For several years, the National Renewable Energy Laboratory has brought wind and solar resource maps to Mexico. However, not all regions are the same, and BC has unique geographical features that require more detailed wind and solar maps to justify investment.
Baja California Analysis

Solar: On the solar front, CFE has started operation of the MXN259m ($20m) 5-MW pilot solar project in Cerro Prieto with an outlook to construct a 50 MW thermo-solar facility in the area. Other permits have been requested to the Energy Regulation Commission (CRE) and additional proposals have come for example, in the form of thermo-solar energy from companies such as Abengoa.

However, the lack of explicit incentives supporting capital-intensive renewable energy technologies, like solar, has kept the growth of the sector at a slow pace, with only 5 MW installed, 60 MW approved and around 100 MW under construction as opposed to California’s over 5600 installed MW (2013:SEIA/GTM). This could change with the upcoming energy reform if incentives such as feed-in tariffs could be set by generation technology.

Biogas: Biomass technology has not seen significant participation in Mexico with a share of 3.8% of all the national renewable energy generation (CFE/CRE) and BC has been no exception. However, recently a new 1-MW biogas from animal waste project has been announced in the state. The project is to be built as a PPP with the energy generator BLP, the meat producer Bonita Carne and the State’s government who is also the intended customer, planning to use said energy to cover some of its services, mainly schools. The biogas sector, especially from animal waste, could become a profitable field if incentives, reliable long-term contracts with the substrate generators (ranches, farms, slaughterhouses, etc.) and high value PPPs could be reached.

Hydroelectric: Since 2010 there’s been an initiative for a run-of-the-river hydro project related to the Mexicali-Tijuana aqueduct. The idea is to utilise the potential energy of the water coming down from the Rumorosa range to generate electricity and offset energy requirements for pumping. Such a project could be of great economic interest since water pumping expenses for the aqueduct amount to more than MXN600m ($46.6m) per year, Javier Orduña, director of BC’s State Energy Commission, told OBG.

BC’s energy interconnection with the US in both natural gas and electricity provides a stable platform for investments in the energy industry. Additionally, the high demand for energy in California, with a special emphasis on clean and renewable energy, could boost these types of projects in the BC region for several years. This boost would depend on multiple factors, including the acceptance by the California Energy Commission of Mexican projects as certified renewable production. If certification and a firm framework can be established, the export of renewable energy and/or renewable energy certificates could transform previously under-performing projects into profitable ventures. The availability of natural gas could also further incentivise the opening of the local electricity-generation market by combined-cycle in order to offer more competitive tariffs for industrial consumers, as long as the energy reform establishes a clear framework for it.

Geothermal: BC has long been known for being host to the largest geothermal installation in Mexico. The CFE’s Cerro Prieto project started in the 1970s and has been developed in five stages. The last one, “Cerro Prieto V” consists of a 100-MW power plant, and the projects combined equal more than 540 MW. At the moment there are no private geothermal plants in the state. However, this may change in the upcoming years since companies such as Dragon is already operating the first private geothermal plant in Nayarit and others such as ENEL are starting their geothermal programmes.

Wind: BC is the only state in Mexico with a state government-owned wind park. “La Rumorosa I” is a small, 10-MW facility constructed by Turbo Power Baja Energy but owned and operated by the BC government. More important than its capacity is the fact that it served as proof that the Tehuantepec region is not the only exploitable area for wind generation in the country. As of mid-2014, two other firms were developing projects in the “Rumorosa” region: Sempra, via its Mexican sister company IEnova, and Mexico Power Group. IEnova is developing a first phase of a 156-MW project, which will be located close to the US-BC border. With an investment of more than $300m, the project will connect with the US via the Sunrise Powerlink, in east San Diego. This interconnection will be made possible via a new cross-border 230-KV transmission line. The US Department of Energy issued a presidential permit to a subsidiary of Sempra International for construction, operation, and maintenance of the connection. When completed, the transmission line will supply electricity from the Mexican wind farm to the California market. For the second project, Mexico Power Group is planning a 72-MW wind park for public street lighting in Tecate, Rosarito and Ensenada. One of the barriers to development in the Rumorosa region is the lack of interconnection infrastructure, as there are few power lines available and no sub-stations.

Pumping water is extremely expensive due to the state’s geography, amounting to roughly $46.6m annually between Mexicali and Tijuana.
Taking to the air

Aerospace manufacturers look anew to Baja California for production

The fact that more than 60 companies, representing 39% of the total aerospace industry in Mexico, are installed in Baja California (BC) is a testament to the historic development of a focused cluster in the state. Sectoral developments can be traced back more than 80 years. An aircraft factory in the city of Tijuana, called the Compañía Aérea de Construcción y Transporte, was founded in 1927. Its aim was to compete with the US aeronautical industry and it did so by designing three planes: BC-1, BC-2 and BC-3. The BC-2 was the first to complete the Mexicali-Mexico City flight and later went on to complete various missions to Central America. Its less successful successor, the BC-3, discouraged investors from continuing to put capital into the company, causing it to shut down in the 1930s. The oldest company still operational in the sector is Rockwell Collins, established 49 years ago, which also makes it the oldest aerospace firm in the country.

CAPACITY: The current situation for the aerospace companies is promising. Worldwide, the aerospace sector is experiencing large backlogs. Boeing alone reported $441bn on the order books in 2013, graphically illustrating the immediate requirement of more capacity in the sector’s value chain. Mexico has been up to the challenge. Since 2001 Alix Partners, a US-based advisory firm specialised in business consulting, placed Mexico over India and China as the most competitive destination in manufacturing for the US market (2011 US Manufacturing Outsourcing Index, Alix Partners, 2011). In the past eight years, the country recorded a sustained annual growth of 17% in aerospace exports. In 2011, BC’s export contribution of $1.15bn represented 27% of the national total, according to ProMéxico, the export promotion agency.

BC hosts a wide diversity of companies that include Honeywell, UTC Aerospace System, Gulfstream, Eaton, Parker, Lockheed Martin and Hutchinson Seal. Close to $13bn has been invested by the aerospace industry in the state. Also, as an added value, during the upcoming implementation of the Bilateral Aviation Safety Agreement (BASA), aerospace firms will be allowed to certify as complying with FAA regulatory issue Mexican-made aerospace designs & components in accordance with US standards. This will avoid duplicate certifications or additional reviews by US government agencies. The BASA should drive further investment interest in the country in general and in the BC region in particular. Tomas Sibaja, Chairman of the BC Aerospace Cluster, told OBG, “BC is a leading authority in this sector. With an average yearly growth of above 20% in the past eight years, all economic indicators – whether measured in export and import values, employment generation, number of companies and most important maturity and diversification data – confirm these facts.” The BC Aerospace Cluster reported that 2013 investment results were positive, showing a 122% increase on the amount of investment recorded in 2012.

LOCATION: The presence of more than a third of the country’s aerospace firms in BC is not by chance or coincidence. UTC, a major aerospace and defence contractor, chose the state in preference to China, India and the Czech Republic. As with many other sectors, the geographical proximity to the US, and more specifically the California and Arizona markets, make integration simple and convenient. Around 75% of exports in the state are to the US, while the rest heads to Canada, the UK, France and Germany, among others. Added to the geographical proximity, BC allows duty-free imports and exports for the sector, in addition to other incentives in the form of tax reductions such as payroll taxes and costs of utilities such as water.

WORKFORCE: BC’s history of aerospace development has made the state advance hand-in-hand with the sector. This has, in turn, encouraged higher education institutions to offer industry-specific solutions targeting the sector. A total of almost 16,000 employees participate in the sector in BC. “In cooperation with some of the main educational institutions, such as Colegio Nacional de Educación Profesional Técnica, Universidad Tecnológica de Tijuana, Centro de Estudios Tecnicos

Between 2006 and 2014 the nationwide aerospace sector experienced annual export growth of approximately 17%, and in 2011 BC contributed 27% of total exports.
OBG, “One of the problems in manufacturing is that the designers are far away from where the products are made. We are leveraging local engineering capabilities to support the manufacturing footprint across Mexico,” Garcia said. “This will bring with it a higher value-added, since we would not only provide faster delivery, better quality and cost reduction, but also better integration of design and manufacturing processes.”

Another example of aerospace innovation is 3D Robotics. The company was co-founded by former Wired Magazine editor, Chris Anderson, and Jordi Muñoz, a BC local who came to aerospace with a background in DIY drones and became a successful entrepreneur. The firm specialises in unmanned aerial vehicle (UAV) manufacturing and is headquartered in Berkeley, CA. It has engineering facilities in San Diego and a manufacturing plant in Tijuana. The company is an example of the benefits of bi-national integration, innovation and technology exchange in the aerospace cluster.

CHALLENGES & OPPORTUNITIES: The aerospace industry in Mexico has low local and national supply chain integration, and many of the processes necessitate crossing an international border in order to be completed, as many of the supplies come from outside of Mexico. Even with the possible exemption of import/export taxes, the additional expense, time and logistics implications of such low-integration-level processes open up an obvious question: Could the Mexican aerospace sector be more efficient through further supply chain integration? Many believe so, including the Premio Nacional del Emprendedor, which in 2012 gave the BC Aerospace Cluster a MXN6m ($466,000) grant for integration and supply chain development. Part of the grant was used to seek opportunities, which were estimated at an annual S1.18bn in the form of market demand for aerospace products. Additionally, 30 smaller Mexican enterprises were identified as potential sector suppliers, of which 15 are established in BC. These potential suppliers will be going to London in 2014 to visit the Farnborough International Air Show to look for export opportunities in an attempt to incentivise such integration, leading to a process of seeking investments to expand the aerospace industry’s abilities to manufacture components.

With the conclusion of the National Aerospace and Defense Contractors Accreditation Programme and implementation of the BASA, BC will likely see important growth in the sector. However, competition inside the country is fierce, with other states offering incentives in the form of tax exemptions and reductions, as well as lower land costs. Nevertheless, BC will continue to be a prime location for aerospace, partly due to its history, advances in education/industry programmes and the availability of a trained workforce. If the efforts currently under way by companies like Honeywell Aerospace and cluster directors are sustained, they may succeed in redirecting the industry towards a greater emphasis on engineering and design. Provided investment figures maintain their upward trajectory and supply chain integration is achieved, the effect could be a growth circle leading to more investment.
Value for integration
Regional relationships are key to manufacturing’s long-term health

The manufacturing industry in Baja California (BC) goes back to the 1960s, as a response to post-war industrialisation plans of the US, Japan and Europe. During those years, the maquila concept, which referred to a free trade zone manufacturing operation, was applied to identify a specific type of industry. However, the term actually derived from an incentive programme established by the Mexican government in 1965 and geared to the industrialisation of the areas near Mexico’s northern border. A maquila refers to a factory owned by foreigners used to assemble imported parts for finished products which are exported. Inherent in the original idea was that labour costs would be low.

In 1994, with the signing and implementation of the North American Free Trade Agreement (NAFTA), the BC manufacturing industry saw an unprecedented boom, with year-on-year growth of 19.7% in 1993-94 rising to 43.8% in 1994-95, according to figures issued by the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI).

Initially, companies employed large numbers of workers for labour-intensive jobs, mainly in industries such as textiles and consumer electronics. In more recent years, the manufacturing industry has come a long way: modernisation of the state’s infrastructure, resource availability and the existence of a skilled workforce have converted a sizeable slice of that growth into the creation of high added-value industry.

GLOBAL: Fender, a musical instrument manufacturer, has been a part of the BC industrial sector for more than 25 years. Its facility in Ensenada started with string production, and today the factory manufactures complete instruments, including guitars and amplifiers. BC’s workforce has been a key part of this evolution.

As Isela Hernandez, Fender’s human resources manager, told OBG, “We have employees with more than 23 years of experience and we are one of the companies with the lowest staff turnover rate in the region.”

Today, Mexico boasts commercial agreements with more than 40 countries including the US, Canada, the EU and across Latin America. BC’s manufacturing industry has capitalised on most of these agreements. With suitable geographic access to large consumer markets, BC has become a benchmark among Mexican states, being the leader in sectors such as aerospace (63 companies), consumer electronics and more recently, developing high-tech sectors such as medical devices, semi-conductors and renewable energy.

TARGET MARKETS: Another significant development has been the expansion of target markets. Originally, the manufacturing sector was mostly focused on producing exports destined for the US.

However, the markets have since shifted. This is a result of several factors, including the inclusion of Canada with NAFTA in the mid-1990s, while more recently, accelerated globalisation and economic growth in Mexico and much of Latin America has increased the profile of BC’s manufacturing sector from both the Mexican market and the entire Latin American consumer base.

According to the World Bank in 2012, in global terms the Latin America market includes 581m people, with a GDP of around $5.34trn, or 6.9% of the global total, of which Mexico’s 120m inhabitants contribute approximately $1.17trn. This expansion of the market’s focus has been further supported by Mexico signing a number of agreements with Latin American trade blocs including Mercosur, Mexico-Central America Free Trade Agreement and the Pacific Alliance.

Although many commercial business models have been applied, today the region has forged a name for itself, meaning that companies do not rely solely on outsourced operations. Many brands and original equipment manufacturers have installed manufacturing plants in BC, producing everything from components to market-ready products. The sector’s diversity has seen the emergence of products from televisions to automobiles to solar panels to radio frequency transmitters, and prosthetics to pacemakers and many others.

Given its strong interdependency with the US economy, the 2008 crisis brought many challenges to the...
state and the sector. GDP in BC fell by 8.2% from 2007 to 2009. However, more recent numbers point towards recovery, with an 11.2% uptick from 2009 to 2012, according to figures from INEGI. Additionally, with increasing tendencies to bring back offshore manufacturing operations to North America, the bi-national region that includes BC and southern California might see profitable cross-border cooperation going forward.

**GEOGRAPHICAL ADVANTAGE:** As in many other sectors, proximity to US markets has been a strong driver. In the case of manufacturing, due to the origins of the first business models used, BC’s location was not so much advantageous as crucial to kick-off the sector. In the early days of manufacturing plants operating in FTZs, simple, labour-intensive partial transformation of products were carried out, requiring the operation to be as geographically close as possible to keep costs down.

At present, BC’s location remains a significant factor in the sector’s development, but in a different manner. Due to the evolution of manufacturing, BC has built important infrastructure for the simplification and efficiency of global commerce. Many examples exist, including border crossings, railroads, highways, seaports and airports, which make commercial exchange easier not only with US markets, but also with Canada, Latin America and Asia. Moreover, regional integration with neighbouring areas such as San Diego and Imperial County have created new commercial and knowledge-exchange opportunities, notably in electronics, medical devices and aerospace, among others.

**BUSINESS MODELS:** Economic units for export manufacturing, or maquila, is a business model that has been active in BC for more than 50 years. It has been characterised by profit generation based on the creation of added value by outsourced manufacturing, the generation of labour-intensive employment and the import of raw materials and components for their assembly and export back to the US.

Tijuana Economic Development Corporation (DEITAC) estimates that more than 500 such units exist just in the city alone, while the BC’s arm of the Secretariat for Economic Development (Secretaría de Desarrollo Económico, SEDECO) notes more than 900.

In 2006 the Mexican government published a Decree for the Promotion of the Manufacturing, Maquila and Export Service Industry, known more widely as IMMEX. This programme provides beneficiaries the advantage of temporarily importing, free of import duties and value-added tax (VAT), the goods needed for use in an industrial process or service to produce, transform or repair foreign goods for subsequent export and includes the provision of related export services. This includes raw materials, parts and components, shipping containers, machinery and equipment.

Companies involved in all these fields can participate in the IMMEX programme as long as they comply with certain conditions. However, early 2014 saw a step back in the IMMEX programme, when President Enrique Peña Nieto’s fiscal reform was applied. In addition to raising VAT from 11% to 16% for the border zone, the reform targeted import duties and individual voluntary arrangement exemptions that apply to IMMEX companies. The first change converted tax exemptions to tax refunds. To obtain refunds stricter rules regarding requirements and procedures have been proposed. While the reform has been in effect since January 2014, the lack of procedure and infrastructure has slowed full application of the IMMEX modifications. Nevertheless, these amendments should be in effect by October 2014 at the latest, according to an announcement by the Tributary Administration Service.

**SHELTER:** Another approach to offshore manufacturing adopted by companies has been the shelter model. As Enrique Esparza Jr, president of DEITAC, told OBG, “The shelter model is a business arrangement that was first applied in the 1970s. In it, a foreign investor has no legal presence in the host country. Instead there is a third party that provides all the administrative services while the investor focuses on producing.”

In its more than 40 years of existence the model has seen key changes in BC, most importantly the fact that many investors are not afraid of having a legal presence in the state anymore. As such, investors often decide to form a legal entity, but still keep the shelter services for their convenience.

Normally, shelter contracts last from three to five years in line with facility-leasing contracts. Such models have been present in most sectors across BC and are mainly sought after by medium-sized companies ranging from $15m to $500m in annual sales, according DEITAC. However, recent market trends are showing a tendency to drift towards more integrated business models, meaning further consolidation of full production processes in the state, as shown by the presence of manufacturing facilities for leading global electronic companies such as Samsung, Toyota, Panasonic, JVC, Plantronics, Hitachi, LG Electronics and Sharp.

Contact manufacturing, on the other hand, is an intermediate entry model used for offshore production operations. In this model an external manufacturing service firm takes on part or all of the production.
processes, requiring in some instances specialised functions including engineering, product development and logistics. One of the most successful schemes includes electronic manufacturing services (EMS), with companies such as Foxconn already involved.

**WORKFORCE:** Interaction and cooperation between education and industry has been the name of the game in the sector. Most medium and higher education institutions have one or several programmes to train the local workforce in line with the manufacturing industry’s needs. Examples on the education side include Universidad Autónoma de Baja California, Centro de Enseñanza Técnica y Superior and Universidad Tecnológica de Tijuana, and, on the industry side, electronic manufacturer Foxconn and semiconductor manufacturer Skyworks, Josep Marce, materials director at Skyworks, told OBG, “Given the automated equipment we use, we seek operators with a technical background. In coordination with local technical schools and government, we try to ensure that there is new talent in the general labour workforce with the right skill sets for our industry. We also offer all our current employees the opportunity to become technicians, creating development and career paths not only for operators, but also for our professional staff who have master’s degrees or even PhDs,” he said.

**RE-SHORING:** The US financial crisis triggered in 2009 has brought high levels of unemployment in the states immediately north of BC’s border. Indeed, California has an unemployment rate of about 7.9%, while some of its counties, such as Imperial, have levels above 22%, according to the US Bureau of Labour Statistics in 2013.

This, combined with technological advances and a reduction in labour-intensive companies and other factors, has increased talk of re-shoring manufacturing operations from its overseas locations, primarily China or India. Some states in the US, including Texas and Georgia, have made significant efforts to offer companies incentives to re-shore. However, the process has not been seen as solely a US effort. Bi-national economic regions have also been considered. One such example includes the Cali Baja region, of which BC is part.

This project’s main objective is to bring together San Diego County, Imperial County and BC, with the idea of creating a more competitive region. Each of the three geographical areas offers different strengths. In numbers, the mega-region has a population of almost 7m, with a labour force of more than 3m and a total GDP of above $200bn. Access to consumer markers in the US, Latin America and Asia makes the project an interesting opportunity for the manufacturing sector and a strong candidate for re-shoring. Nevertheless, much needs to be done to fully integrate the three areas in order to place them as a prime candidate for new and returning manufacturing operations. This includes simplification of migration processes and further integration of infrastructure and educational systems.

**ELECTRONICS:** In the past 30 years, BC has become one of the most important regions in the world for manufacturing electronic products. The sector consists of more than 200 companies that manufacture a vast array of products, from high-tech microchips and semiconductors to home appliances and musical instruments. The electronics sector is currently one of the fastest growing, with some $250m in foreign direct investment (FDI) in 2013, as reported by the investment promotion agency ProMéxico, which represents more than 30% of the total FDI in the state.

From the companies that make up this cluster, around 60% are located in Tijuana, while Mexicali is home to a further 21%. The workforce numbers around 92,000 workers, according to a 2013 study by the Universidad Tecnológica de Tijuana, making the sector an important source of employment. One of the markets with the most potential, semi-conductor production, has a long history in BC. Skyworks’ Mexicali plant, which has been operating since 1969, employs more than 2800 people and specialises in semi-conductor module assembly and electrical testing.

In the consumer electronics sector, BC is considered a television manufacturing giant, producing more than 19m sets per year. Foxconn’s Tijuana EMS plant has more than 3800 permanent employees. The Taiwanese company is also planning to strengthen its product design operations in the state. In an interview with OBG, Edgar do Blanchet, VP of business planning and logistics operations at Foxconn, said, “The company is committed to strengthening the local design operations with more than 80 Mexican engineers designing products, given that Foxconn has noticed not only the current tendencies, but also the stability that exists in the region. If we had not seen such stability the company would not be searching for further local integration.” Currently Foxconn uses BC suppliers for many of its plastics, metals and paper/cardboard needs, but they are looking to further expand their local supplier base.

**MEDICAL DEVICES:** Another long established sector is medical device production, which has been present in the state for more than 20 years. The segment’s recent growth has been close to a steady annual 8%, according to the Medical Products Industry Cluster...
More than 50 companies produce a complete range of vehicles (MPIC). The industry comprises around 130 companies in the country, with BC hosting more than half of them, 67 companies in total. The sector has seen solid growth in employment generation from 27,000 in 2004 to roughly 45,000 jobs in 2013 just for BC.

The industry in BC covers more than 100 product families and has an import/export balance of $1.5bn and $4.9bn, respectively. The cluster organisation was born around eight years ago and seeks in its development goals to foster a local supply chain, incentivise local human capital formation, promote investment, innovation and technological development, and to facilitate government relationships, mostly in the form of compliance. As in most other manufacturing sectors, local integration and supplier development could offer investment opportunities in the near future.

However, a possible deterrent could be the pace of the sector, as Angel de la Campa, president of the MPIC told OBC. “One of the particularities of the medical industry is that it has specific complexity and timing,” he explained. “It is a sector with a lot of quality regulations and fulfilling all the requirements may take time because any change in suppliers or raw material requires a validation protocol, which can take time to develop depending on the specific component’s criticality. So procurement development is not simple, especially for suppliers without previous medical device manufacturing experience,” he added.

AUTOMOTIVE: With over 50 companies producing a complete range of light vehicles, heavy vehicles and auto-parts, BC is a strong competitor in the overall Mexican auto industry. Companies such as Toyota and Kenworth have been key participants manufacturing complete vehicles in the state. Kenworth, now part of the PACCAR Company, has been present in Mexicali since 1970. After its $70m expansion in 2006, the plant was recognised as the group’s best plant worldwide quality-wise in 2008. Other examples include parts companies like Prime Wheels, which received incentives in the form of tax reductions for the years 2012-13 totalling more than MXN1.6m ($124,320) for its $100m investment, and most recently Hyundai, which has announced the opening of second plant in the state with an investment of $130m. Hyundai’s Aluminium Die Cast Centre will play a part in a sector that employs more than 30,000 in the state, with its main markets being the US, Canada and Mexico.

RENEWABLE ENERGY: Boosted by changing energy policies both in Mexico and the US, one of the most recent developing economic areas has been the manufacture of renewable energy equipment. It has seen significant growth in recent years. One of the main developments has been the recent opening of Sunpower’s solar panel manufacturing facility in Mexicali. The plant has been operating for three years, employing around 1000 people. Sunpower’s decision to invest in Mexicali came almost directly after a Department of Energy (DOE) federal loan guarantee of $1.2bn for the construction of the California Valley Solar Ranch (CVSR) in San Luis Obispo County was not well received by some of the American public. Carlos Cordova, from the Industrial Development Commission of Mexicali, told OBC, “The city of Mexicali has a strong advantage having Imperial Valley as our cross-border counterparty. The Valley has become very strong in the field of renewable energy both solar and wind. We currently have agreements in which the goal is to attract renewable energy generation to Imperial and do the equipment manufacturing in Mexicali.”

In addition to Sunpower, SEDECO reports another sector participant in the region is Kyocera Solar.

In the immediate future, the sector will probably hit a bump due to the current fiscal reform, which could cause it to slow down. However, in a medium time frame as in other sectors, manufacturing shows two strong tendencies that should set the industry’s direction. The first is the need to develop reliable locally integrated supply chains. Such development needs bring, first, the possibility of direct investment in procurement and, secondly, if local procurement is achieved, the possibility of further companies investing in the area. If this development circle gains momentum, the state and the cross border region could see significant investments in the coming years, possibly becoming a major re-shoring destination.

The second tendency in BC is related to integration, but in this case refers specifically to knowledge. Many firms are looking to have their research and development centres close to their advanced manufacturing centres. Such proximity is not only to facilitate communications but also for cultural and geographic reasons. This aligns with BC’s development, since the state’s public and private sectors have focused on advancing on two fronts: the formation of a well-educated workforce and the development of strong cross-border relations with US regions where many of the research and development centres lie.

If the geographic knowledge integration tendency continues as it is, BC could move forward in its development towards more advanced manufacturing, design, engineering and integrated production of goods.
Smarter choices
Efforts to boost human capital can sustain growing foreign investment

Since having a prepared workforce is one of the main drivers of any economy, the skill levels available in a region can make or break an investment deal.

“We know that a decisive factor for the location of any company or investment is human capital availability in the region. In Baja California (BC) we have many higher education institutions, so there is a vast amount of scientific talent and resources for human capital formation, which is a key element in such decisions,” Felipe Cuamea Velázquez, rector of Universidad Autónoma de Baja California (UABC), told OBG.

However, as opposed to fiscal incentives, relatively low electricity costs, supply-chain integration and other similar advantages an economic region can provide, education and workforce skill levels tend to be less obvious, if not less important. BC has long been a centre for manufacturing goods, with almost 20% of the state’s active population directly employed in the sector. Nevertheless, there has been a recent shift towards design, engineering and creation. This transformation has required, and will continue to demand, more and more qualified professionals in each of the areas the state has historically participated in, as well as in the upcoming opportunity niches.

**WORKFORCE:** According to 2012 figures from the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI), BC’s workforce of more than 1.4m is primarily concentrated in its two cities, Tijuana and Mexicali, which combined are home to around 1m workers.

In fact, BC currently has a lower unemployment rate than its US neighbour California, with the latest figures from INEGI indicating a 5.1% jobless rate for BC for the last quarter of 2013, as opposed to the 7.9% rate calculated for California by the US Bureau of Labour Statistics. The average daily wage in Mexicali for a direct employee was reported to be $9-11 in early 2014, according to Sada y Asociados, a Mexicali-based business consulting firm. This figure is slightly higher for Tijuana. For the export industry, meanwhile, the majority of employees receive higher wages depending on their positions.

The state’s active population is largely employed in the services sector, which accounts for approximately 42% of the workforce, followed by the commerce and manufacturing sectors with 21% and 19%, respectively. Mexico’s Federal Labour Law (MLFL) regulates employment relations, as well as establishes the country’s minimum wage, which varies by region.

In January 2014 the minimum wage for BC was set at a daily rate of MXN67.29 ($5.23). However, most industries in BC pay wages well above the minimum, with unskilled workers able to make between 70% and 120% more, depending on the sector.

As laid out under the MLFL, the working week extends to a total of eight hours per day for six days a week. In addition, it stipulates seven days of official holiday and six days of elective vacation, giving a yearly working time of 300 days or 2400 hours. Compared to most of Europe and a number of other countries that stipulate 20 days or more of official holiday, the Mexican working year is a relatively long one.

**EDUCATION:** BC was legally recognised as a state in 1952. In the early years, the main cities each had a population of fewer than 200,000 inhabitants, which made higher education in BC mostly non-existent.

More recently, however, the state has seen interesting and dramatic changes in its population’s attendance and performance levels in education. Of the group under 14 years of age, more than 95% are enrolled in education. For those aged between 14 and 24, meanwhile, the number in full-time education rose from 29% in 1990 to more than 42% some 20 years later, according to INEGI. This indicates a stronger focus on education.

The educational make-up includes more than 20 public and private universities. The four most important ones are UABC, Centro de Enseñanza Técnica y Superior (CETYS), Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE) and

Unemployment in BC is significantly lower than in neighbouring California, with a jobless rate of 5.1% in the last quarter of 2013 as compared to 7.9% north of the border.

The services sector accounts for around 42% of the local workforce, followed by the commerce and manufacturing sectors with 21% and 19%, respectively.
The state’s population continues to grow, with a large number of migrants from other parts of Mexico, as well as re-patriates from the US, moving to Baja California.

Universidad Tecnológica de Tijuana (UTT), with each institution ranked highly in its respective specialty. **HIGHER EDUCATION:** In addition to improved attendance levels, BC has seen its higher educational segment grow, diversify and specialise over the years.

UABC is the oldest and largest higher education institute in the state, with an enrolment figure of more than 50,000 students. Covering all of BC’s main cities – Tijuana, Mexicali, Tecate and Ensenada – UABC’s study programmes have historically focused on engineering, while the university has also forged cooperation with technology companies including Skyworks and Honeywell, among others.

Also concentrated on engineering, but with an administrative focus, CETYS is a private university set up by a group of local businessmen in the 1960s. As the only university outside of the US to be accredited by the Western Association of Schools and Colleges, CETYS’ cooperation programmes include working with local industries in the aerospace, electronic and automotive sectors, including with groups such as Honeywell, Gulfstream, Skyworks and Kenworth.

“In the past 10 years, higher education institutions have opened programmes to address the state’s specific needs. A business development policy has been defined by the finance sector and new programmes have focused on supporting industries identified as key in BC, such as aerospace, semiconductors, bioengineering, nanotechnology, renewable energy, wine and gastronomy,” Cuamea told OBG.

Today, 57 years after the institution was opened, more than 40% of UABC’s funds come from such cooperation programmes. Indeed, most higher education institutes in the state have achieved similar numbers. **TECHNICAL EDUCATION:** Alongside economic growth, the state has seen its population grow. The most recent census numbers by INEGI show that almost 60% of Tijuana’s population is composed of migrants from other states in the country. In addition BC receives an average of 80,000 re-patriates (Mexicans returning from the US) every year. This type of migration has caused a lot of people to settle in BC.

Industrial growth and efforts to attract investment to the state have also created a viable employment market, as evident with an unemployment rate of just over 5% in 2013. Nevertheless, the industry often requires specific skills for its workers, even at entry-level positions. This has created a challenge and one that has seen a variety of education institutions being set up, including the National College of Professional Technical Education (Colegio Nacional de Educación Profesional Técnica, Conalep) and UTT.

These institutes relate to those niches in a very specific manner: the educational model is designed to provide technicians and engineers with professional competences in accordance to market requirements. Study programmes are designed in conjunction with firms to achieve the quickest and most pertinent integration to the workforce possible. An institute which has seen encouraging results is the UTT. Formed 19 years ago, the institute mostly offers technical programmes called técnico superior universitario, or TSU, which include units aimed at both engineers and technicians. Today, 70% of TSU graduates find jobs within their fields less than six months after graduating, while this number is above 80% for UTT engineers.

Israel López Zenteno, UTT’s industrial cooperation secretary, told OBG, “Hyundai’s decision to open its recently announced motor plant was strongly influenced by the fact that BC could provide the required human resources. Hyundai came to us for education programmes and we have been working with them in parallel as they install the new production lines,” he said. “A similar case is happening with Plantronics and other companies that ask for special order education programmes.”

Additionally, the institute has worked with companies such as Toyota, Samsung, Panasonic, Foxconn and Honeywell, offering customised educational services for its future and existing employees. In effect, the courses are apprenticeships in another guise.

Also on the technical side is Conalep, an educational institute that is part of the National System of Technological Education. Created in 1978, BC’s state university branch began operations as a decentralised public agency in 1999. Within BC, Conalep has six campuses located in four municipalities and one at the Centre for Assistance and Technology Services in Tijuana. The institution’s principal objective is focused on training high school graduates as technical professionals. In addition, the institute offers services in employment training, inter-sectoral linkages, community support, as well as providing advice and assistance to technology companies. Within BC, Conalep currently trains more than 8000 students and 64% of its graduates are placed in the labour market in their study area within the first year.

**RESEARCH:** As Arturo Serrano Santoyo, a researcher at the Directorate of Innovation and Development Drive at CICESE, told OBG, “The role of technical education institutions is the generation of human...
resources for industry’s needs today. In the research field, we want to develop what the industry will need in five to 10 years so that existing industries stay, as well as to attract further attention from other industries which can see that BC’s workforce possesses the talent to change the environment, design and do research,’ he told OBC. “We want to align ourselves with the production elements of our state, specifically industry clusters such as medical devices, software and aerospace, and to find synergies for our graduates to further connect with them,” he added.

CICESE has in fact expanded to other cities, even beyond BC’s borders. Ensenada has long been known as Mexico’s knowledge capital and has the highest number of researchers per capita in the country; CICESE has been an integral part of the process, being host to more than 2000 of them. Today the institution is an important research centre, working mostly in the fields of earth and ocean sciences, but also in experimental biology – mainly at the request of biotech companies – and information technology (IT). The centre is currently working on large projects with two state companies: oceanographic research for Petróleos Mexicanos and energy research in geothermal generation with the Federal Electricity Commission. In addition, collaboration with firms such as Honeywell (aerospace), Plantronics (medical devices) and Silanes (pharmaceutical/biotech) have been conduits for transferring the institution’s research efforts to industry. Indeed, a CISESE-Silanes joint venture produced a technology transfer centre responsible for the granting of nine patents and 10 others pending in both Mexico and the US. At the same time, UABC has 32 patents pending in Mexico, demonstrating the success in turning education and research in BC into a key product.

**INNOVATION:** As it is a crucial step in the productive chain, innovation has historically been kept insourced. Nonetheless, there is now a worldwide trend for knowledge process outsourcing (KPO). The main worldwide destinations for KPO are India and Central and Eastern Europe, but BC is also starting to establish itself as an important destination. Direct investment figures in the state rose 42.3% from $542m in 2012 to $771m in 2013, and such growth could very well be innovation driven.

Serrano told OBC, “Recently we have seen as an indicator of innovation that master and doctoral degree graduates are being hired by local industries. This shows the manufacturing industry is no longer only assembly, but tends towards advanced manufacturing, development and innovation.”

UTT’s Lopez, meanwhile, said UTT have seen innovation projects in a wide number of segments, although the ones that have raised the most interest are IT, mechatronics, industrial maintenance, renewable energy and environmental technologies.

Two examples of innovative developments in the state involve Baja’s Innovation and Technology Center Tijuana (BitCenter) and Bajalnova. BitCenter is a 5000-sq-metre work and knowledge exchange centre in which around 25 large, medium and small companies and independent developers collaborate. It was built with the support of the National Council of Science and Technology, the Secretariat for Economic Development and private sector collaboration, including the National Chamber of Electronics, Telecommunications and Information Technology, and the education sector. Of note, BitCenter recently hosted the innovation event Startup Weekend Tijuana, which is essentially aimed at developing ideas and turning them into profitable businesses.

One of BitCenter’s tenants serves as the second example of innovation. Bajalnova is a business incubator formed by CICESE, the Centre for Biological Research of the North-west and ACAD, a consulting company. It aims to be an accelerator for knowledge transfer by providing support to existing and future companies for research and development and commercialisation of high-tech products and services. The incubator is currently working on projects related to IT, notably service virtualisation, computing processing and connectivity, as well as biotech initiatives including biodegradable bioplastics production from marine bacteria and biofuels from bacteria.

If trends continue, BC’s expanding industry will continue to require an equally expanding workforce. However, as opposed to previous regional development, the specific skill requirements of the aspiring labour force will need to shift gradually to new demands. The current tendency for KPO added to ongoing innovation initiatives in the state will require greater talent and more highly skilled and competent workers. The search for manufacturing supply-chain integration will primarily require technicians for semi-conductors, high-precision machining, materials and similar fields. While upcoming technology clusters, such as IT or biotech will require high-level researchers and engineers, if educational efforts continue to focus on cooperation and research and innovation, BC could be well positioned to benefit from increasing global demand for high tech industry and new talent.
The border between the US and Baja California experiences over 30m inbound crossings from the US each year, not including visitors arriving at air and sea ports.

Proximity with the US, particularly California, has made Baja California (BC) an historical access point for tourists seeking everything from beaches to extreme sports to retirement tranquillity.

Every year BC’s border sees around 30m inbound crosses from the US. That influx does not include those coming through its airport and seaports, and the state receives more than 16m visitors from abroad each year. The final ingredient of the total is another 11m from within Mexico, according to the Secretariat of Tourism (Secretaría de Turismo, SECTUR). Tourism accounts for about 12% of the state’s GDP, according to the ministry, and the domestic investment agency, ProMéxico, indicates that this translates into a value of MXN51bn ($3.96bn), making tourism an important source of income for the state.

In the years before 2007, a boom in investment for tourism saw much construction activity on condos, hotels and retirement homes, however, the economic crisis brought many of these projects to a halt. Notwithstanding, the sector has been recovering and has been among the top growers since 2010.

VARIED OPTIONS: BC’s tourist offer is diverse. With access to both the Pacific Ocean and the Sea of Cortez, its geography also includes mountain ranges, valleys, deserts and national parks. BC is home to the second-most-visited touristic port in the entire country, Ensenada, attracting approximately 800,000 visitors a year, according to the tourism secretariat.

The state’s waters also have a rich variety of species for sports fishing. Some 38% of the state’s area is dedicated as a national reserve, with parks such as Parque Nacional Sierra de San Pedro Mártir, Parque Nacional Constitución de 1857 and Valle de los Cirios.

BC accounts for more than 90% of all the wine produced in Mexico, mostly in the Valle de Guadalupe region, and other lesser known ones like San Vicente and Santo Tomas, which in recent years have become important agro-tourism destinations, with wine tasting, boutique hotels and festivals. In addition to wine, the region’s gastronomy is aided by several productive agricultural valleys, such as Valle de Mexicali and the San Quintín region.

INVESTMENT OPPORTUNITIES: Having the US as a neighbour, more specifically California, BC not only has geographical proximity to an extremely vast market, but it also has proximity to tough competition. Prime destinations, including San Diego, Los Angeles, Disneyland, Palm Springs and Hollywood, are just a few hours’ drive north. This fact brings an enormous need for infrastructure in the area to be able to compete with the attractions to the north.

Oscar Escobedo, BC’s secretary of tourism, told OBG, “The state’s activity is a very dynamic one... and we are pushing multiple projects in the tourism sector, always with a focus on sustainability.”

Included in the many tourist industry projects under way in the area are two marinas, one on the Pacific side and the second 30 km from the tip of the Sea of Cortez. These projects try to exploit the fact that California and Arizona are two of the US states with the highest numbers of registered boats.

Other examples include construction of the Tijuana Airport-US bridge, the expansion of the Otay border crossing and the Coastal Railway System.

In addition to those projects, the construction of the Ensenada/Ojos Negros Airport, as well as the addition of several smaller runways – such as Cataviña – are trying to attract private airplane owners to explore the more remote southern regions of the state, such as Bahía de los Ángeles.

MICE: As an organised segment, meetings, incentives, conferences and exhibitions (MICE) existed more in theory than in practice until 2013.

Other than investments made for conference facilities within privately owned hotels, few specific efforts were made from the public sector to encourage the growth of MICE. This changed in 2013 with the opening of the Baja California Centre. The centre was built on 10 ha of a 200-ha land plot, with an overall
MXN600m ($46.62m) investment for the first phase. The remaining area will be developed according to a master plan that is being prepared by the Urban Land Institute, a non-profit organisation responsible for many sustainable urban development projects.

The entire development will create investment opportunities that include hotels, a golf course and further real state and infrastructure. The conference centre hosted more than 150,000 visitors in its first year and is looking to top the 200,000 figure in 2014.

Appropriately, the MICE sector 2013 annual nationwide congress was hosted in the centre. This congress, organised by SECTUR, was aimed at promoting specialised tourism products for the sector, developing value chains and encouraging networking.

HEALTH TOURISM: The health tourism sector in BC has been active since the 1940s, although the term was not yet in use then and the sector was not properly organised. It was not until the formalisation of the segment began during the beginning of President Enrique Peña Nieto’s administration in 2012 that the term has been widely applied in BC.

The local sector originated with dental care, which covered more than half of the entire health tourism market. The main centre is the town of Algodones, considered by some as the town with more dentists per capita than any other in Mexico. In recent years, dentistry’s market share has decreased and it now comprises slightly over 30% of the total.

The total number of tourists who visit BC for health treatments of some kind is difficult to pin down. Each study seems to have a different figure, a phenomenon noted by the health tourism cluster.

However, BC’s SECTUR figures show that more than 500,000 patients visited the state in 2013, accompanied by a further 600,000 people. The sector has seen a sharp decrease in the early 2000s for various reasons, including the economic crisis, the swine flu pandemic and security concerns. Recent conditions have improved, showing annual growth of between 4% and 15%, depending on the source.

According to the local Secretariat of Tourism, the sector’s economic benefit was estimated at over $100m in 2013, with some 800,000 visitors forecast for 2014. Tijuana typically keeps a market share of more than 80%. The profile of visitors has also changed: before the early 2000s most patients were Anglo-Saxon, while in the later years the market has seen mainly Hispanic visitors. Cluster leaders, in collaboration with SECTUR and the Mexican Consulate in Los Angeles, have been visiting the main Mexican and Latino associations to promote the sector. These and other efforts have resulted in the approval of various companies that sell US-approved medical insurance to Latino workers, for whom medical treatment is then offered in BC.

In addition to these, companies such as Blue Shield and MetLife provide products in which it is stipulated the client can opt for a payment for treatment that can be applied in either Mexico or in the US, without discrimination. Karim Chalita, the health cluster president, told OBG, “The most required services include plastic surgery, bariatric treatment, ophthalmology, oncology and, of course, dentistry.”

INNOVATION & CHALLENGES: The sector has seen its fair share of innovation in recent years. One of the main examples that BC (and Mexico for that matter) has to offer is stem cell therapy. Such treatment is not commercially available in the US and Canada, making Mexico and particularly BC the closest destination for patients in North America.

The sector has encountered a barrier due to the novelty of the niche, however, this drawback has been attenuated by the creation of the Health Tourism Directorate under SECTUR, charged with promoting it. Another development barrier has been the border crossing times, which can be inconveniently long for patients. To avoid them a “medical line” has been created, which caters specifically for patients getting treatment in BC and works as a fast-pass that can be issued by the physician to expedite the patient’s return home.

Finally, as has been seen with the MICE sector, one of the main challenges to health tourism relates to overcoming the market loss resulting from the 2008 economic and social crisis, in which patient numbers dropped from more than 1m to less than 500,000 in just a couple of years.

The tourism sector has always been one of BC’s strengths. If the state manages its affairs well and continues to fight the problem of external perception, the sector’s growth will continue.

However, in the short term, tourism is expected to be affected by the federal government’s recent tax policy change. This raised the level of value-added tax from 11% to 16% at the beginning of 2014 for cities within 20 km of the US border, and the policy is most likely to be a deterrent for some travellers, particularly those day-trippers who cross into BC from California in pursuit of inexpensive food, pharmaceuticals and alcohol, among other things. If this bump in the road is smoothed, the sector could be poised for growth, especially in the MICE and health tourism niches.

Approximately 500,000 patients visited the state in 2013, accompanied by roughly 600,000 supporting visitors. Annual growth is pegged at 4-15%, depending on the source.
Competitive advantages

OBG talks to Carlo Bonfante Olache, Secretary of Economic Development for Baja California (BC)

For which sectors is BC seeking further investment?
BONFASTE: Several strategic sectors have been identified based on industry size, cooperation among companies and institutions, and global economic trends, among other things. Most efforts have been focused on aerospace, automotive, medical devices and electrical-electronic industries, clean energy, information technology (IT), mining, medical and business tourism, as well as agroindustry, biotechnology and aquaculture. We are also planning to participate at various trade shows in 2014 and 2015, including Farnborough Air Show, Heli Expo, ILA Berlin Air Show, AeroCon, AeroDef, MRO Americas, MD&M West and East, WIND-POWER, Intersolar, Solar Power International, Consumer Electronics Show, Prospects and Developers Association of Canada Mining Investment Show, and more.

How can BC utilise its competitive advantages to increase foreign investment?
BONFASTE: There are some states in the north and central part of Mexico that pursue the same strategic sectors that we do. To be competitive we have tried to exploit BC’s natural advantages, including competitive power rates, low natural gas prices, access to water from the Colorado River, close proximity to the US border, IT accessibility, a large concentration of manufacturing operations in free zones, and diversified exports. We also have a growing, skilled, educated and cost-competitive labour force, a non-unionised environment, and a pro-business community. Other advantages include having the largest concentration of industrial parks in Mexico and international airports with direct flights to Narita, Japan and Shanghai, China. Taken together these factors allowed BC to attract $5.1bn of foreign direct investment from 2008 to 2013.

Regarding competition with the southern states of the US, rather than compete with them, we can build alliances to collectively promote the region. The Calibaja region provides access not only to markets in California, but also to the wider North American market, as well as to the markets of Latin America and the Pacific Rim. The government understands the importance of attracting new investment as it will increase our workforce and improve the quality of living. Thus, our role is to encourage and facilitate the arrival of new companies that will enrich the economy.

As the US economy recovers and the world’s energy map shifts west, how will BC’s role change?
BONFASTE: As a result of the boom in fracking and exploitation of unconventional oil and gas, the outlook for the energy market has changed. Just 10 years ago few expected natural gas prices to be as low as they are now. Indeed, to become more attractive, BC will need to use its competitive advantages such as its location, skilled human resources and energy infrastructure. Having electricity and natural gas interconnected to the US market gives BC an advantage over the whole country, thus enabling lower costs for the manufacturing sector. Energy reform will contribute to the region’s economic development by growing the energy sector’s supply chain and increasing the market share of products manufactured in BC in the California market.

What different factors must be considered in any renegotiation of the North American Free Trade Agreement (NAFTA)?
BONFASTE: While NAFTA has had a positive impact on the Mexican economy for the past 20 years, particularly in the manufacturing segment, Mexico and BC must continue to promote cooperation agreements with the US and Canada. High Level Economic Dialogue is a key example of commitment between Mexico and the US, and it aims to boost competitiveness and connectivity, foster more economic growth and innovation, and build a partnership for global leadership. Trade and labour market integration, security, the development of strategic projects, energy cooperation, innovation and technology exchange, are the most important issues NAFTA must consider in any new agreements.
Wine and fish on the table
Diverse agricultural and fisheries products provide rich opportunities

Unlike many states in Mexico, Baja California (BC) has historically had a commercially-driven agriculture sector, mainly focused on exports. According to Manuel Valladolid Seamanuras, secretary of agriculture and livestock production promotion in BC, “The current federal administration is implementing public policy seeking productive agriculture, separating self-consumption and subsidies from any evaluation of the sector,” he told OBG. BC’s primary industry, agriculture and fishing, represents 3.2% of its GDP, according to figures for 2012 from ProMéxico, the national investment promotion agency. The state’s total agricultural production was worth MXN11.4bn ($885.8m) in 2012, an increase of more than 6% over 2011, according to the Secretariat of Agricultural Promotion (Secretaría de Fomento Agropecuario, SEFOA). Two main agricultural areas exist in the state: Mexicali Valley and the Coastal Zone.

Mexicali Valley: A 200-ha irrigated area in the north of the state, Mexicali Valley is close to the US border in the municipality of Mexicali. Its products consist mainly of wheat (85 ha), livestock fodder (60 ha), cotton (30 ha) and vegetables (8 ha). In addition to agriculture, the valley is home to four federally-certified meat production facilities owned by companies such as SuKarne and Bona Carne, where more than 280,000 head of cattle are processed each year. One of the main advantages of the Mexicali Valley is that, although it is in the middle of the desert, the Colorado River provides a constant source of water. A bi-national treaty signed in the 1940s guarantees both the quantity and the quality of the water received from the river.

Coastal Zone: Covering the municipalities of Tijuana, Rosarito and (mainly) Ensenada, and with a year-round moderate climate, the Coastal Zone contains several different agricultural models, from an array of highly-technified agriculture in San Quintín to the more traditional wine region of Valle de Guadalupe. However, even with its excellent climate, the Coastal Zone has an important development barrier, the availability of water. Most of the water for the coastal areas of Tijuana and Ensenada is made available by the aqueducts that carry it from the Colorado River and transport it hundreds of kilometres across and over the 1000-metre heights of the Rumorosa mountain range. The water from the aqueducts is only for human consumption and not considered for agricultural use.

Originally, the Coastal Zone was able to exploit local groundwater reservoirs, but these have little-to-no recharge, causing access to end either in the form of dry wells or through saltwater infiltration. As such, the Coastal Zone has seen the need to apply technologies such as water desalination to cover its agricultural water needs. The land for exploitation and its productivity will be closely connected with investments in water desalination in the area. One place where high productivity has been achieved following the completion of a desalination project is San Quintín.

San Quintín: An important part of the Coastal Zone, this valley consists of about 3 ha of protected agriculture - greenhouses - which produce around 30% of BC’s tomato exports and a variety of berries including strawberries, raspberries and cranberries, in addition to other products such as onions and cabbages. San Quintín’s water supply depends heavily on desalination plants and other technological advances.

Local Markets: Even though BC has a strong agricultural industry, there are still multiple opportunity niches, not only in the form of exports but also for local consumption. The state produces only 22% of its egg consumption, and most of its pork meat, around 25,000 tonnes a year, is imported from Sonora and the US.

Wine: The wine industry in BC dates back to 1888 when Bodegas de Santo Tomás was founded. However, until the 1970s there were only four or five wine-makers in the region. Much of the grape harvest was focused on brandy production. An oversupply of grapes in the 1970s encouraged companies such as Domecq and L.A. Cetto to take a greater interest in wine production. The International Organisation of Vine and Wine chose Mexico for its international congress in 1980

Baja California’s total agricultural production was $885.8m in 2012, an increase of 6% year-on-year over 2011. Mexicali Valley and the Coastal Zone are the two main agricultural centres in the state.

The state’s rich climate supports the production of a variety of goods, including wheat, cotton, vegetables, tomatoes, grapes and berries, among others.
In addition to Asia, the US is an important market for BC fisheries, with the majority of products going to San Francisco and Las Vegas. Most of the live product is packed in Ensenada and then shipped by truck to Los Angeles, where it is flown to its various destinations and is, in the main, delivered within 24 hours of being caught. Processed products, whether canned or frozen, are mostly prepared in Ensenada and shipped from the port or in some cases shipped from Long Beach.

**AQUACULTURE:** One of the main goals for fisheries under the current administration is to support the development of aquaculture and mariculture. Although these segments are young, the MXN335m ($276.6m) accrued in 2012 represented around 31% of BC’s fishing industry, according to SEPESCA. There are three mariculture companies in operation in BC and they deal mainly with bluefin tuna and oysters. Additionally there are investments in upcoming projects for production of species including seabass, corvina and jurel. In contrast, aquaculture sees its best opportunities in places such as the Mexicali Valley, where inland shrimp and salmon projects are feasible. Although investments in infrastructure and dredging would be required to make such projects a reality, both sectors could find a major market for their products in top-shelf US restaurants.

**REGULATION CHALLENGES:** Recent regulatory adjustments brought the Mexico-US export of bivalve shellfish to a halt. Authorities from the US Food and Drug Administration (FDA) demanded an eight-month halt to Mexican imports due to adjustment of administration differences with Mexico’s Federal Commission for Health Risk Protection (Comisión Federal para la Protección contra Riesgos Sanitarios, COFEPRIS). A similar situation also happened in 2000. BC is aiming to avoid such situations by getting two FDA-approved laboratories operational for early quality compliance checks and any preventive measures deemed necessary.

The agricultural industry in BC has strong potential owing to its climatic and geographical proximity to a market of more than 50m consumers (California, Arizona, BC and Baja California Sur). If barriers such as the availability of water in the Coastal Zone are overcome in a profitable manner, there could be an increase of production and exports. On the other hand, the local BC market offers exploitable potential for products such as pork meat and eggs. The fishing industry in BC is going through a significant transformation in an effort to ensure it stays sustainable. However, opportunities in the aquaculture and mariculture fields could make the industry grow if efforts in the areas of research, infrastructure and regulation continue to be taken forward.

### Agricultural production, 2010-12 (MXN m)

<table>
<thead>
<tr>
<th>Municipality</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensenada</td>
<td>5903.41</td>
<td>4307.14</td>
<td>5426.49</td>
</tr>
<tr>
<td>Mexicali</td>
<td>4430.45</td>
<td>5584.71</td>
<td>5901.67</td>
</tr>
<tr>
<td>Playas de Rosarito</td>
<td>63.74</td>
<td>55.72</td>
<td>0.00</td>
</tr>
<tr>
<td>Tecate</td>
<td>53.64</td>
<td>38.55</td>
<td>38.40</td>
</tr>
<tr>
<td>Tijuana</td>
<td>32.18</td>
<td>26.25</td>
<td>25.72</td>
</tr>
</tbody>
</table>

**SOURCE:** OEIDRUSBC, SAGARPA

The aquaculture and mariculture segments brought in almost MXN28bn in 2012, equal to roughly 31% of the local fishing industry. Access to large markets north of the border, particularly California, presents an opportunity for expansion.
Access to a wide variety of local and regional supplies from cost competitive region.

Next door to California's industrial clusters and markets.

The lowest turnover rate and operating costs in the Northwest Mexico.

Closest near shore manufacturing center for the US west coast.

Connection with 64 harbors in 28 countries around the world.

Proximity to the United States, Canada, and the Pacific Rim markets.

Best regional security conditions.

City with the best "Quality of Life" in Northwest Mexico.

www.investinensenalda.com
Mail: info@investinensenalda.com
Phone: +52 (646) 153 20 38

“TECATE AN EXCELLENT OPTION FOR YOUR INVESTMENTS”

www.copretec.com.mx
Doing business in Mexico?

Baja California
Experience You Can Trust

- Aerospace
- Automotive
- Medical Devices
- Electric-Electronic
- Renewable Energies
- Medical Tourism
- Information Technology
- Mining
- Agribusiness
- Aquaculture

Baja California State Government
Secretariat of Economic Development
www.investinbaja.gob.mx
www.bajacalifornia.gob.mx
+52 (686) 558 1013 / 558 1048
+52 (664) 682 9191 / 682 8201