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SEIZING CALIBAJA'S NEARSHORING OPPORTUNITY:

A BINATIONAL CALL TO ACTION

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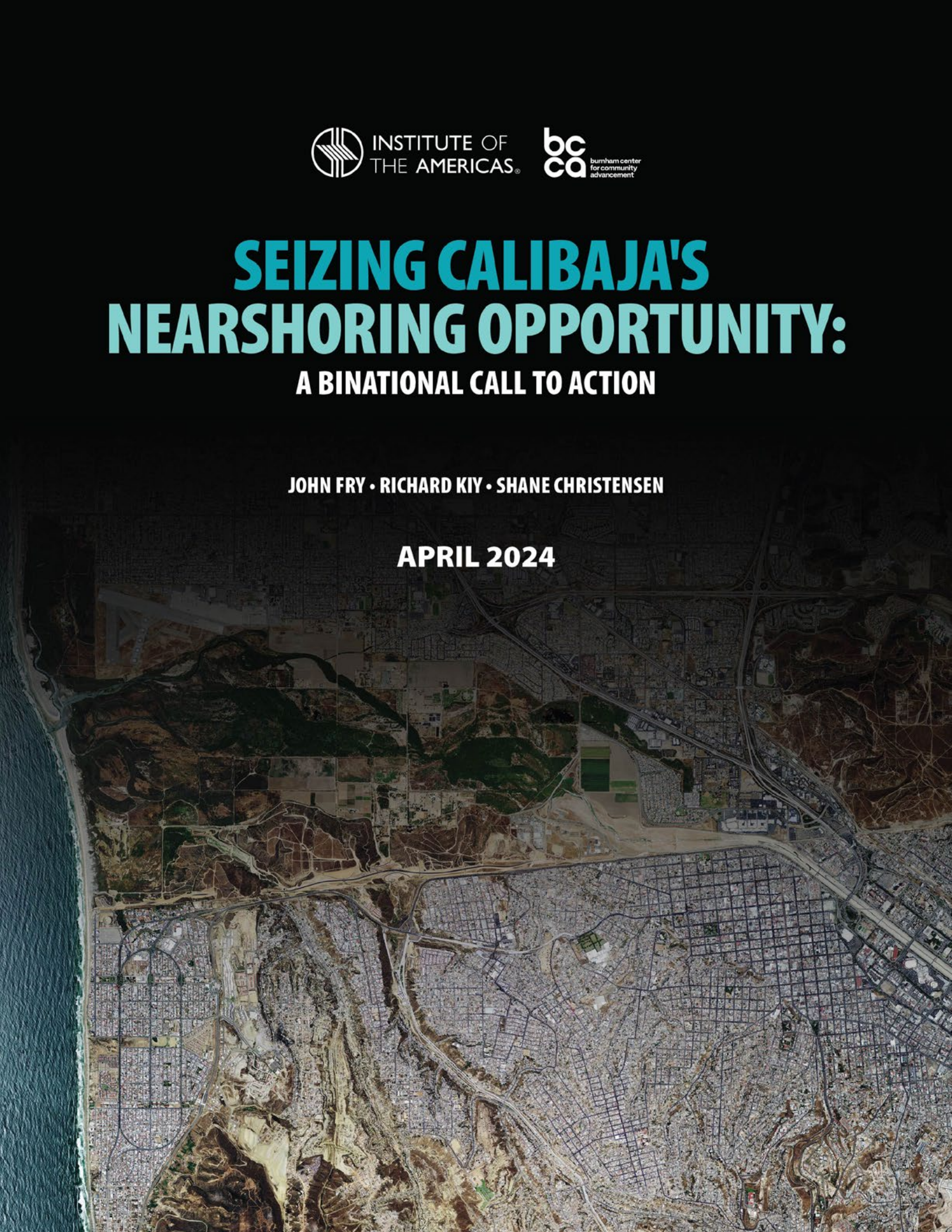
APRIL 2024



Acknowledgments

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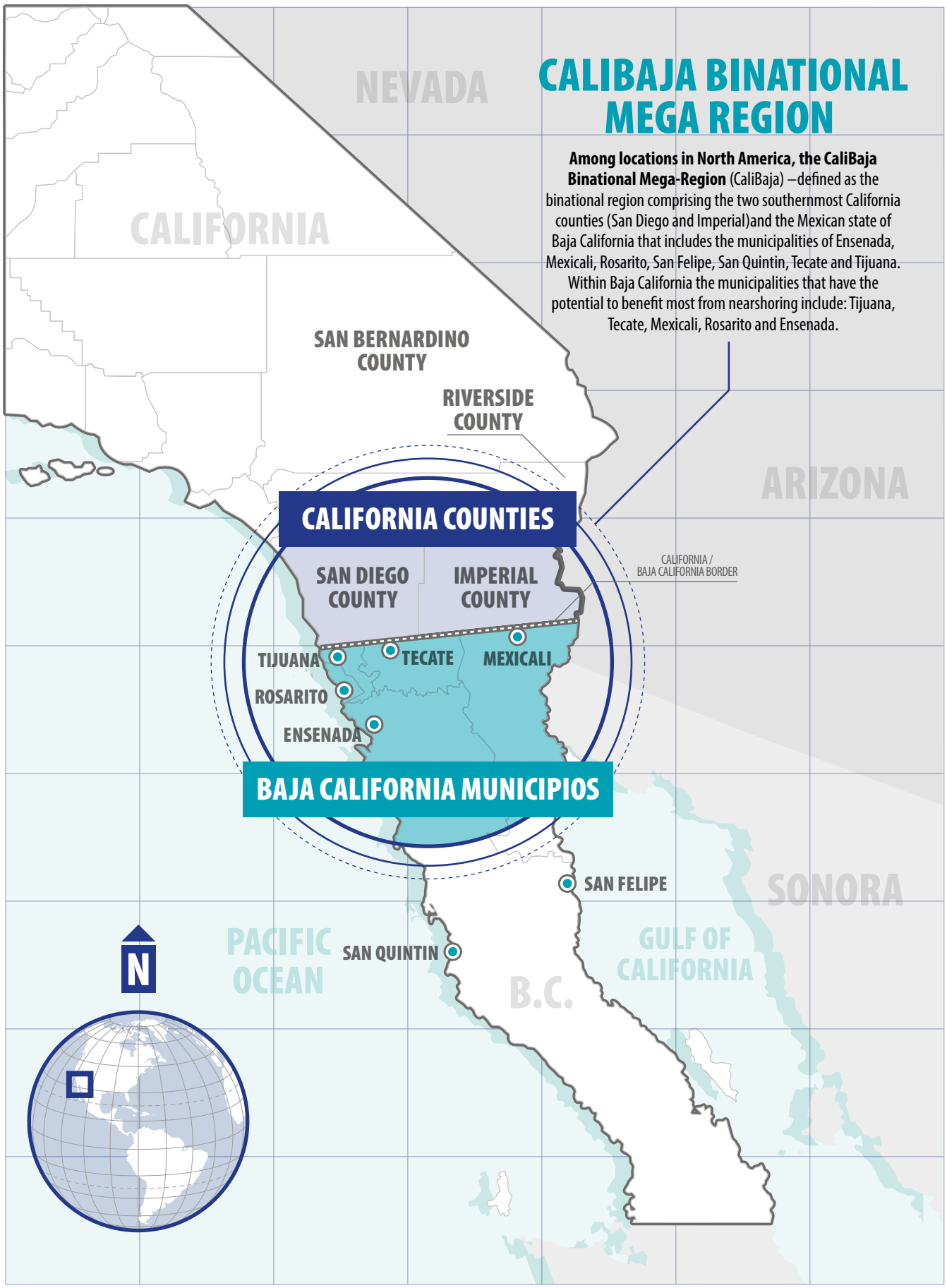


CALIBAJA BINATIONAL MEGA REGION

Among locations in North America, the CaliBaja Binational Mega-Region (CaliBaja) –defined as the binational region comprising the two southernmost California counties (San Diego and Imperial)and the Mexican state of Baja California that includes the municipalities of Ensenada, Mexicali, Rosarito, San Felipe, San Quintin, Tecate and Tijuana. Within Baja California the municipalities that have the potential to benefit most from nearshoring include: Tijuana, Tecate, Mexicali, Rosarito and Ensenada.

I. Introduction

COVID supply chain disruptions, changing geopolitics, as well as rising labor, logistical, and transportation costs have prompted a growing number of companies once largely reliant on manufacturing in China for the U.S. market to re-shore their production back to the United States or explore other nearshoring options in friendlier locales. Newly enacted industrial policies to promote national security objectives and strong, resilient supply chains **–including Executive Order 14017 on America's Supply Chain, the Inflation Reduction Act, the U.S. Chips & Science Act, and the National Forum to Secure America's Supply Chain for Essential Medicines–** have accelerated this generational shift of companies considering alternative nearshoring options.

Mexico is among the preferred nearshoring options for those companies focused on the North American market due to its close geographic proximity to the United States, signatory status to the USMCA (United States Mexico Canada Agreement) trade pact, and established supply chains with the United States and Canada dating back to the enactment of the North American Free Trade Agreement (NAFTA) in 1994. That said, Mexico competes with other friend-shoring options (including Malaysia, Indonesia, Thailand, Vietnam) where corporate supply chains are being redistributed based not only on cost and geographic proximity, but a variety of other factors including proximity to Asian markets; security; logistical reliability; speed to market; regulatory considerations; rule of law & political stability. and other incentives. Here, Mexico's challenge is not just its ability to maintain established supply chains but to attract and create the conditions for inbound investment to foster greater North American supply chain resiliency.

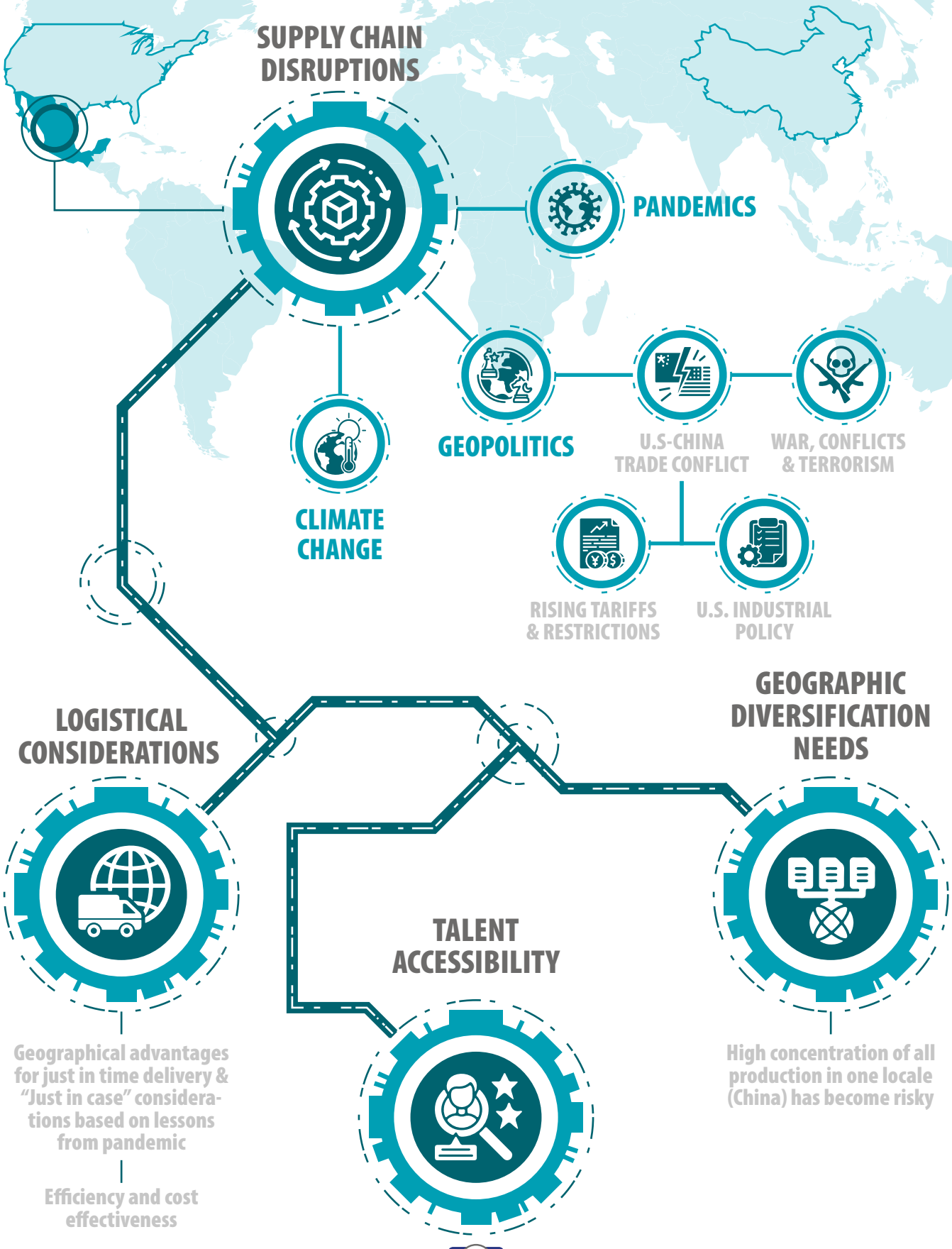
Based on current estimates, depending on how effectively Mexico responds to addressing key issues and concerns identified by prospective nearshoring companies, the country could expect up to a 33% growth in annual Mexican manufacturing exports to the United States, from $455 billion today to an estimated $609 billion within the next five years[I].

Among locations in North America, the CaliBaja Binational Mega-Region (CaliBaja) **–defined as the binational region comprising the two southernmost California counties (San Diego and Imperial) and Baja California–** is uniquely positioned to take advantage of this historic re-shoring/nearshoring opportunity for four critical high-value added supply chains, including medical devices, semiconductors, aerospace and lithium battery/zero emission vehicle manufacturing. Under the right conditions, the region also has an opportunity to become a destination for future generic drug and biosimilar manufacturing.

Whether Mexico, and more specifically the CaliBaja region, will take full advantage of this once-in-a-generation nearshoring opportunity remains an open question. A lot will depend on whether Mexico and the state of Baja California proactively address several critical issues to maintain the region's competitiveness, including strengthening their regulatory framework; improving security and rule of law; ensuring adequate water supplies; providing clean, reliable & affordable energy (distribution and supply); expanding infrastructure and improving efficiency (land ports of entry, seaports, rail); and providing a skilled workforce. Also, greater inter-jurisdictional collaboration will be necessary between San Diego & Imperial Counties with Los Angeles, Orange County, and the Inland Empire. Additionally, given the growing eco-system of semiconductor fabrication plants in neighboring Arizona, Baja California could also benefit from expanded cross-border ties with this adjoining U.S. state.

San Diego and Tijuana's joint selection as the first binational 2024 World Design Capital presents a unique opportunity for our region's key stakeholders to think boldly about how to seize this historic moment, which holds the promise not only to create tens of thousands of quality jobs and expand Baja California's regional economy, but also to improve the quality of life for residents on both sides of the border.

MEXICO NEARSHORING DRIVERS



II. Methodology

The Institute of the Americas' (IOA) strategy report involved qualitative research methods that included a comprehensive review of literature on global nearshoring trends with a specific focus on North America. Based on identified nearshoring trends, research focused on five key sectors with potential for the CaliBaja region: **medical devices; semiconductors and printed circuit boards (PCBs); lithium batteries and zero emission vehicles; aerospace; as well as genetic and biosimilar pharmaceutical manufacturing.**

In addition, between August 1 and November 30, 2023, IOA's research team undertook 37 in- person and telephone interviews with company and industry leaders in addition to 26 interviews with economic development, industry association and government agency leaders from the United States and Mexico. To respect the confidentiality, individual interviewees and their respective companies have been anonymized with conclusions highlighted on a sector specific basis.

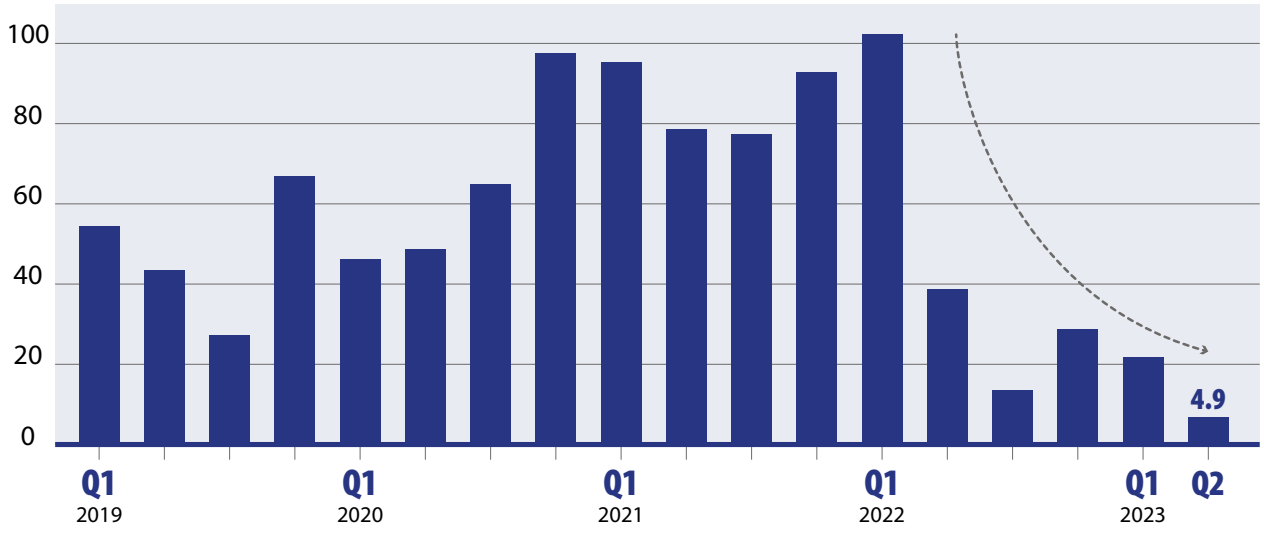
III. Nearshoring Competitive Landscape

During the first half of 2023, Mexico supplanted China as the #1 exporter to the United States. Today, Mexico and Canada provide over **20%** of total U.S. imports. Still, the United States increasingly relies on imports from the rest of the world, with total import volumes from outside North America growing by **9%** over the past decade (2011-2021) compared with North American gross output.

China will remain an important source of U.S. imports due to its dominant position in certain supply chain segments that are highly efficient. These will not be easily supplanted even though China's labor costs are on the rise with average hourly wages of $6.50 versus $4.82 in Mexico[II]. Still, the combined effect of Sino-U.S. trade tensions and U.S. industrial policy **–driven by the IRA and Chips Act–** has had a chilling effect on new foreign direct investment (FDI) to China. For Q2-2023, China in-bound FDI totaled $4.9 billion, an **87%** decrease for the year, and the largest drop since 1998[III]. See figure 1:

Figure 1

Net Foreign Direct Investment in China Tumbles
Unit: billion U.S. dollars



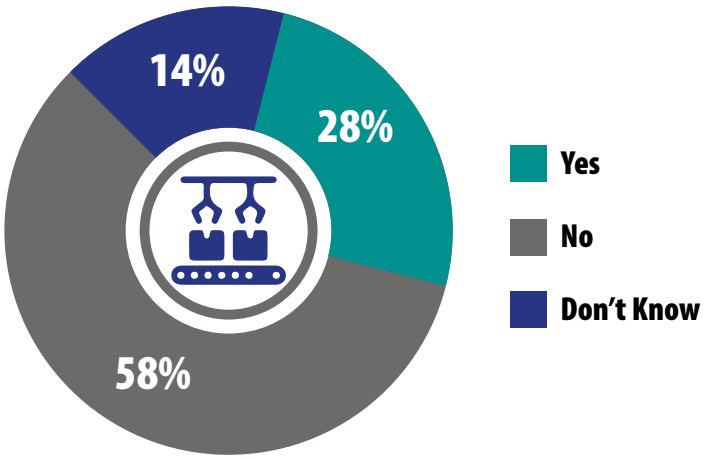
Source: State Administration of Foreign Exchange

While U.S. and other Western manufacturers are shifting production elsewhere, companies are not necessarily moving to Mexico. As an analysis by Deloitte highlights, while Chinese exports to the U.S. have declined by over **9%** between 2018 and Q1-2023, Mexico's share of this import substitution has increased by only **2%**, with other countries grabbing the rest of the share[IV].

According to McKinsey & Co., most U.S. companies exiting China are shifting operations to South East Asia **–in particular Vietnam, Malaysia and Thailand–** due, in part, to that region's competitive advantages (competitive costs, skilled workforce, relatively easy raw materials sourcing, existing free trade agreements, and government programs backing industries such as electronics) as well as the need to serve the fast-growing Asian consumer market.[V] A recent U.S. Chamber of Commerce survey revealed that among leading U.S. manufacturers operating in China, **58%** did not plan to leave Asia and were considering other locales in the region including India,[VI] while **28%** of the companies surveyed were making plans to move out of Asia. Figure 2.

Figure 2

Plans to move manufacturing out of Asia inthe next 5 years



Note: showing countries with a base size of N=20 or more

Base: Left: Does not manufacture in market currently; Asia (N=55); Mexico (N=83); South America (N=93); Europe (N=72); Central America & the Caribbean (N=95); Africa (N=102)Oceania (N=101) | **Right:** Manufacture in Asia currently (N=50)

Question text: In the next five years, is your company likley to move some of its manufacturing to any of the following markets? In the next 5 years, is your company planning to move some or all of its manufacturing outside of Asia?

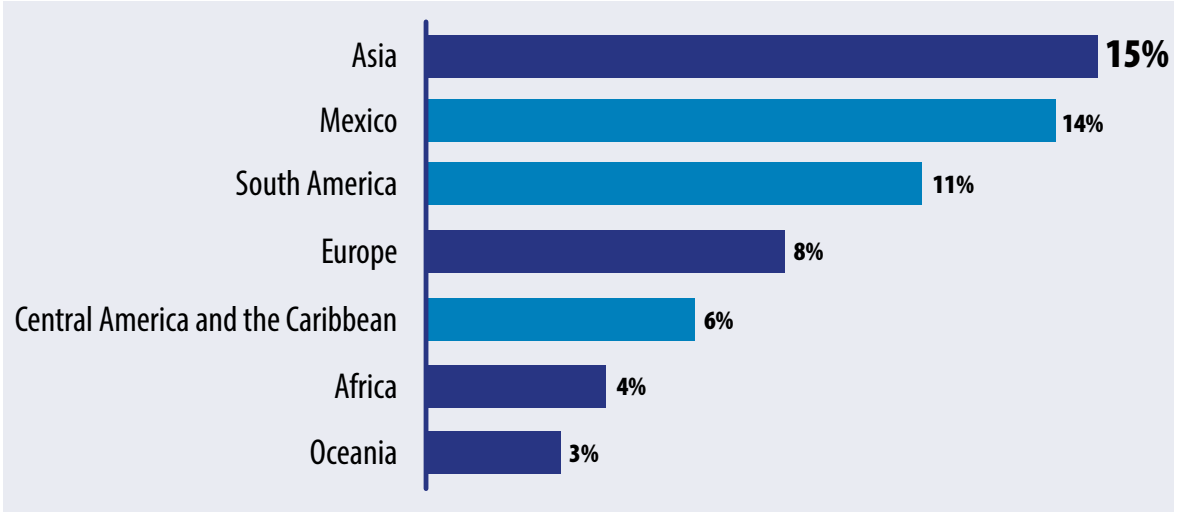
Source: U.S. Chamber of Commerce/Ipsos, 2023

Of those manufacturers planning to leave Asia over the next five years (2023-2027), **14%** were considering nearshoring options in Mexico followed by **11%** to South America and **6%** to Central America and the Caribbean[VII]. See Figure 3.

Figure 3

Plans to move some of manufacturing to [...] in the next 5 years

Over one in four businesses that manufacture in Asia plan to leave in the next five years



Source: U.S. Chamber of Commerce/Ipsos, 2023

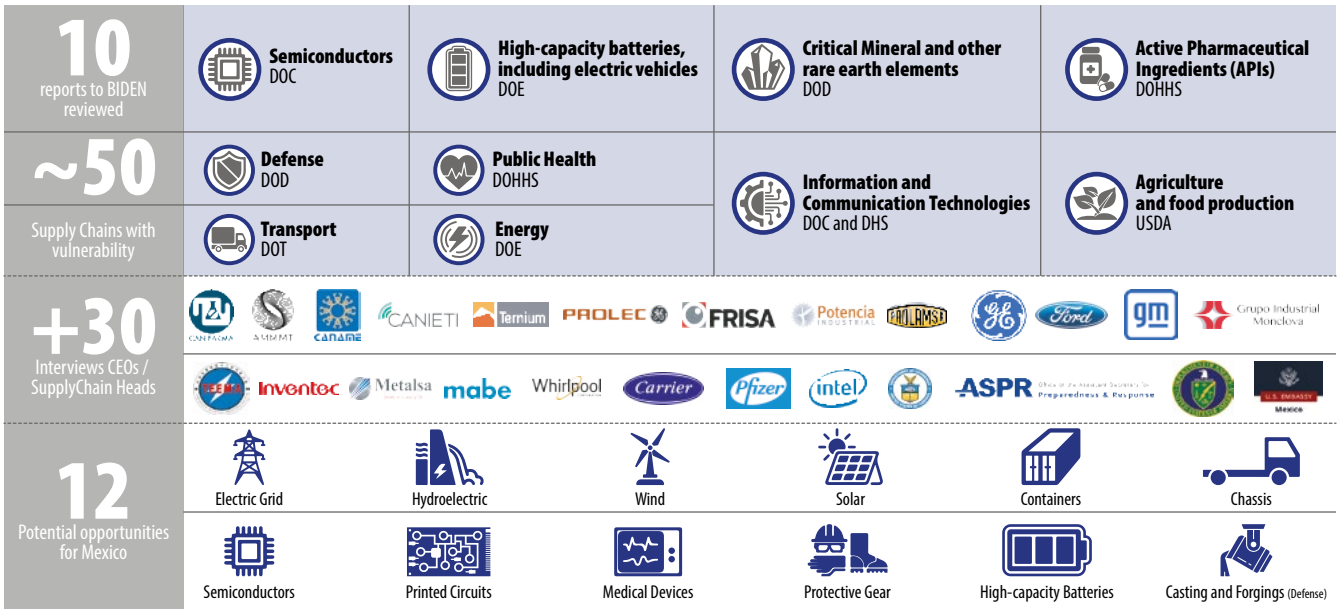
For companies reliant on the North American market and for those sectors with greater sensitivity to supply chain disruptions, a compelling case can be made for North American regionalization.

McKinsey & Co identified 10 industries for regionalizing part of their manufacturing and supply chain footprint in North America. These industries included: medical devices; semiconductors; electrical components; computers and electronics; pharmaceuticals; automobiles; electrical equipment; machinery & equipment; chemicals and mobile/communications equipment.[VIII] Because of its proximity to the United States and lower labor costs relative to the U.S. and Canada, Mexico is the preferred nearshoring North American destination.

Based on an analysis of over 50 critical supply chains with vulnerabilities vis-à-vis non-ally markets, the Investment Group of the U.S.-Mexico CEO Dialogue identified 12 potential opportunities for Mexico that could contribute to strengthened U.S. supply chains: Electric transformers; Containers and chassis; Casting and forging for large units for Hydropower, Wind energy, and Defense Equipment; Printed Circuit Boards; Medical Equipment; Protective Personal Equipment; Silicon Solar Cells; High-capacity batteries; and Semiconductors. See Figure 4:

Figure 4:

Opportunities to Strengthen North America's Supply Chain



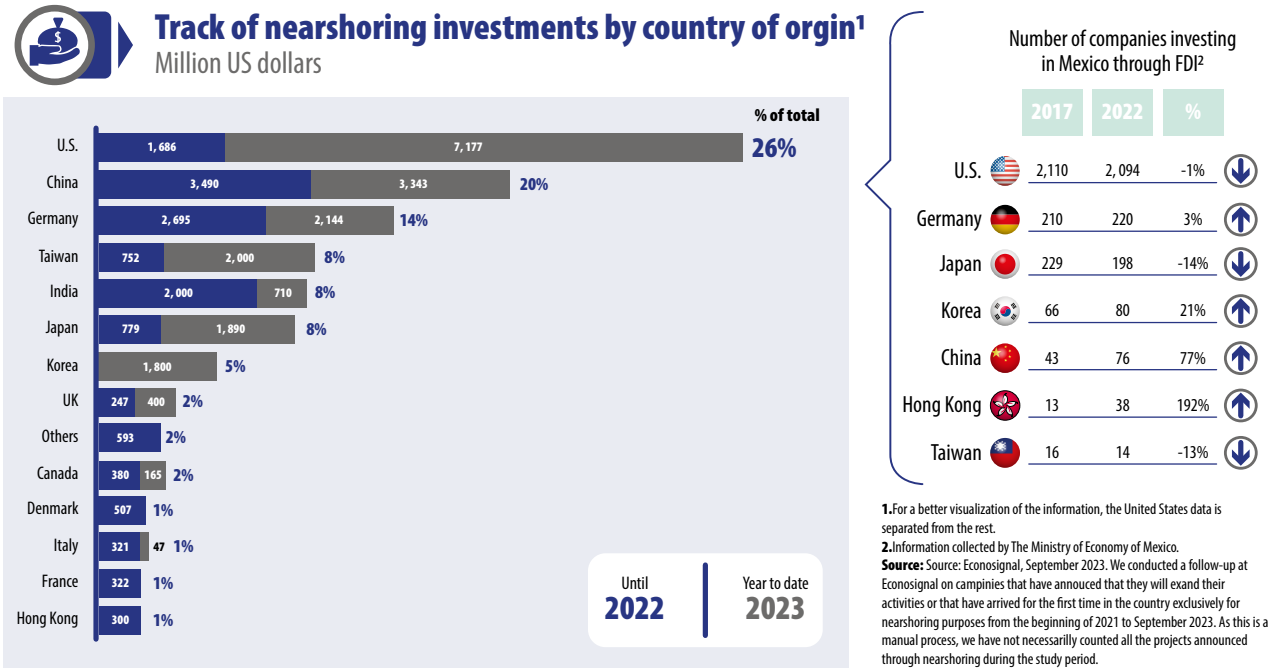
Source: The Investment Group of the U.S-Mexico CEO Dialogue and the CCE, Mexico's Business Coordinating Council, U.S. Representative Office, 2023.

If Mexico seizes this once-in-a-generation nearshoring opportunity, it has the potential to supercharge its economic growth, adding close to 3% to its GDP and creating an additional 1.1 million jobs over the next five years.[IX]

Despite Mexico's nearshoring potential, its comparative advantages relative to competing nearshoring destinations are complicated by a host of challenges, including regulatory uncertainty and issues related to security and rule of law, water, energy, infrastructure, and the availability of skilled labor. Mexico's rising labor costs have also deterred some recent in-bound investment. For this reason, Mexico has yet to realize its full nearshoring potential. Still, since the beginning of January 2021 through September 2023, a total of $33 billion of Foreign Direct Investment (FDI) to Mexico appears to be associated with nearshoring, representing 36% of FDI.[X] Of Mexico's total nearshoring investments, **43%** have been announced, **24%** are under construction, and **33%** are now operational.[XI]

Among nearshoring investments, there are two main groups of companies. The first group represents U.S. companies with existing operations in Mexico and expanding their presence there, which accounts for **26%** of announced nearshoring-related FDI. The second group consists of mainly Asian based companies from China, Taiwan, India, Japan and Korea looking to reduce their labor costs and minimize supply chain disruptions. Collectively, Asia accounts for **49%** of total nearshoring investment to Mexico, or $9.7 billion. Among Asian nearshoring related investment, Chinese companies represent the largest share with FDI totaling nearly $7.2 billion through September 30, 2023 **(20% of recent nearshoring FDI).[XII]** See Figure 5:

Figure 5:



Source: Deloitte-Mexico/ Galaz, Yamazaki, Ruiz Urquiza, S.C, November 2023

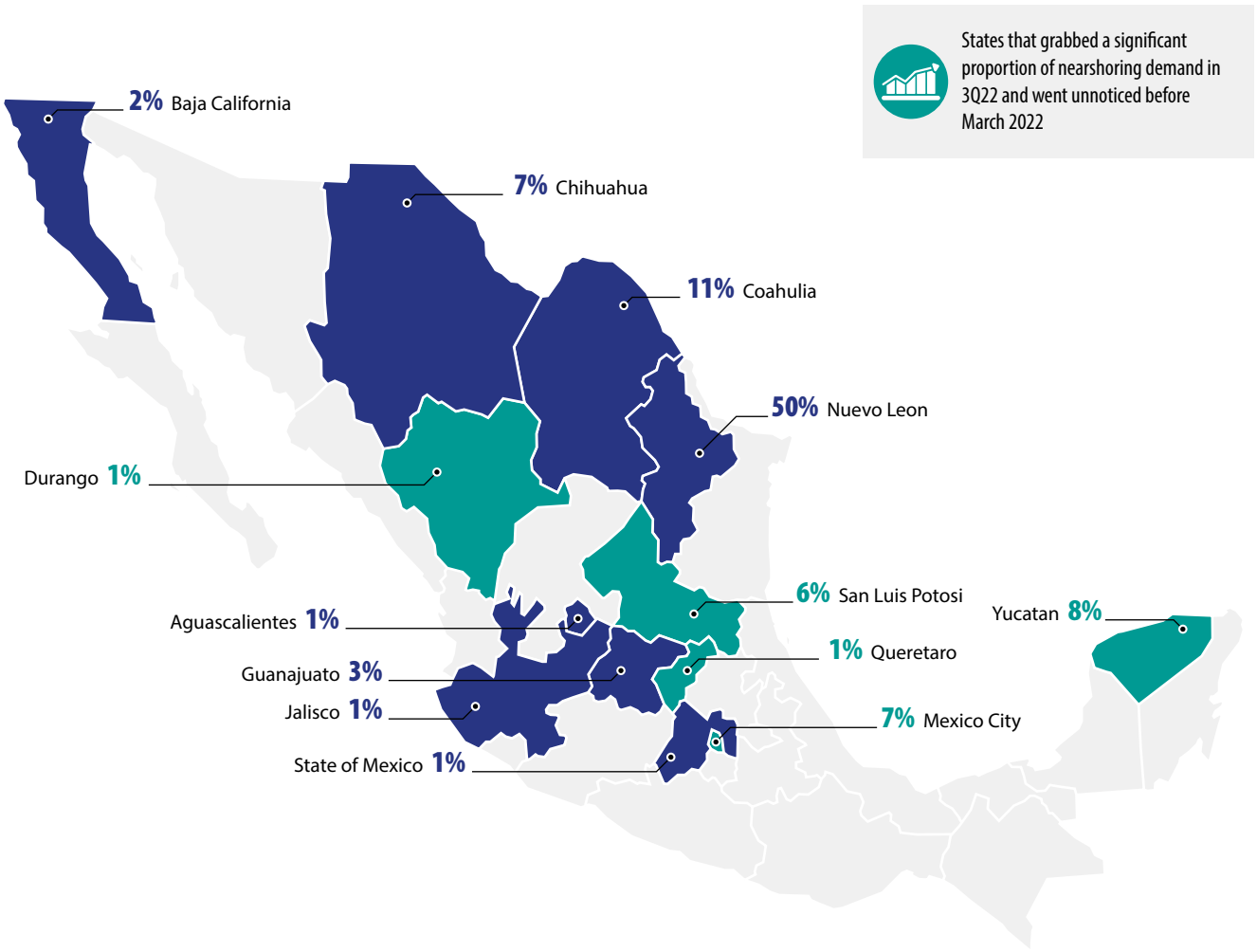
Multiple typos in following: "Econosignal. We conducted a follow-up at Econosignal on campinies that have annouced that they will exand their activities or that have arrived for the first time in the country exclusively for nearshoring purposes from the beginning of 2021 to September 2023. As this is a manual process, we have not necessarilly counted all the projects announced through nearshoring during the study period."

Nuevo Leon has received the highest concentration of new nearshoring investments to Mexico, totaling over **50%** through September 2022, followed by Coahuila **(11%)**, Yucatan **(8%)**, Mexico City **(7%)**, Chihuahua **(3.9%)**, San Luis Potosi **(6%)**, Guanajuato **(3%)**, and Baja California **(2%)**[XIII]. Figure 6.

Figure 6:

Through September 2022, 13 of the 32 states in Mexico accounted for 99% of nearshoring demand (vs. 8 in 1Q22).

-% of foreign firms that relocated their production to Mexico by state (Jan.-Sept. 2022)



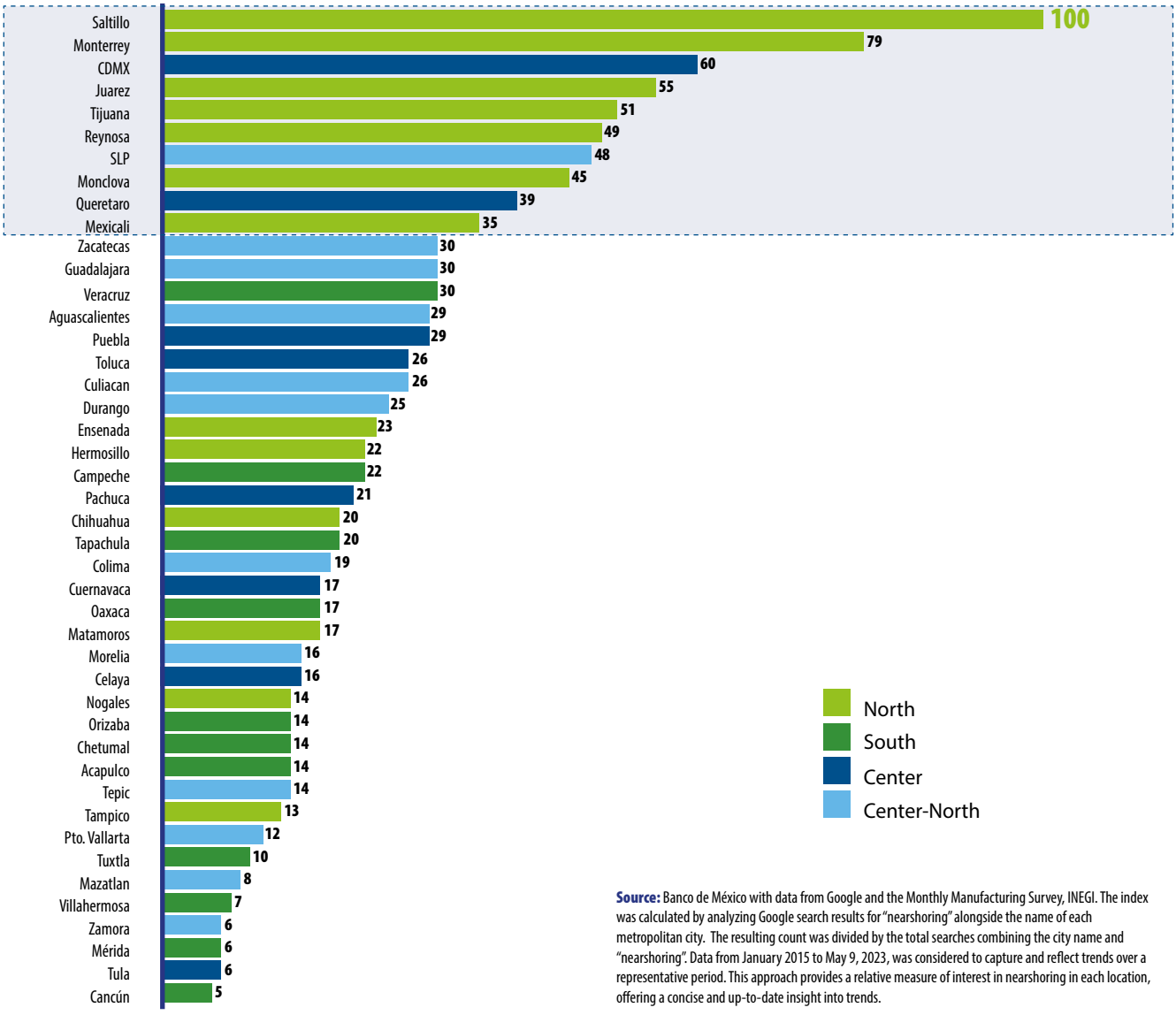
Source: GBM, 2023[XIV]

Among Mexico's major metropolitan regions with the highest propensity for nearshoring related investment, Saltillo and Monterrey lead the nation with Tijuana (#5) and Mexicali (#10) ranked among the top 10 destinations based on data from the Banco de Mexico. See Figure 7:

Figure 7:

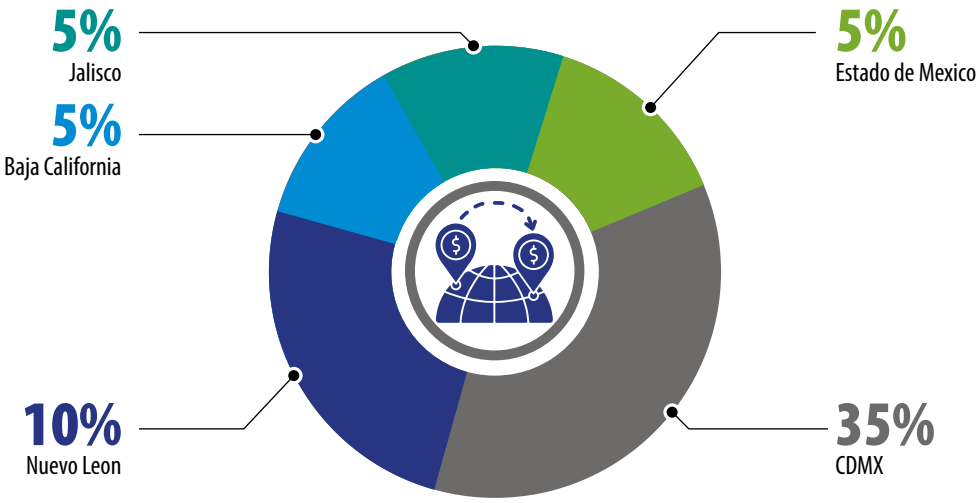
Propensity to nearshoring Index.

Metropolitan areas of Mexico, maximum propensity = 100



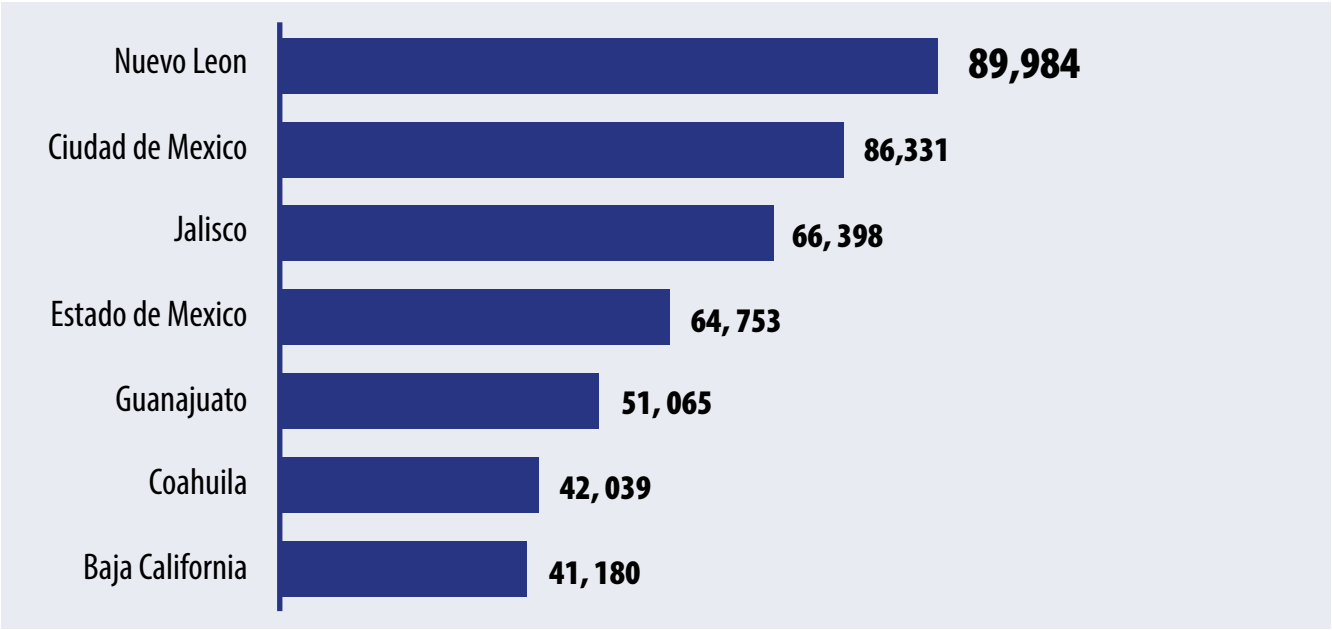
Source: Banco de México with data from Google and the Monthly Manufacturing Survey, INEGI. The index was calculated by analyzing Google search results for "nearshoring" alongside the name of each metropolitan city. The resulting count was divided by the total searches combining the city name and "nearshoring". Data from January 2015 to May 9, 2023, was considered to capture and reflect trends over a representative period. This approach provides a relative measure of interest in nearshoring in each location, offering a concise and up-to-date insight into trends.

Source: Deloitte-Mexico/ Galaz, Yamazaki, Ruiz Urquiza, S.C, November 2023



From the standpoint of job creation.

Nuevo Leon leads the pack.



CALIBAJA NEARSHORING OPPORTUNITY & REGIONS TO BENEFIT

MEDICAL DEVICES
(SOCAL/BC)

CHIPS

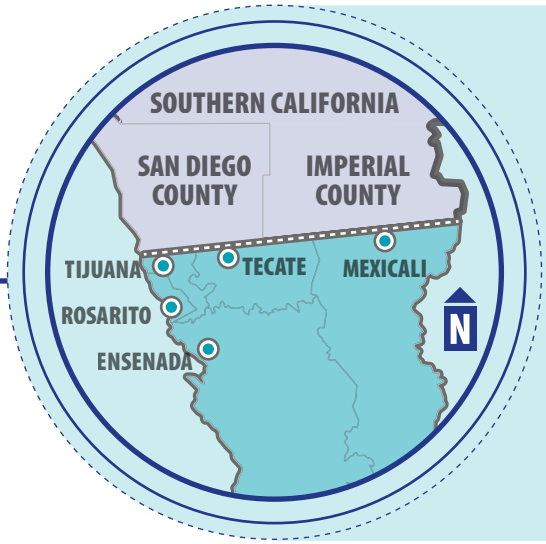
AEROSPACE
(SOCAL/TJ-MEX)

PRINTED CIRCUIT BOARDS -PCBS.
(TJ/MEX; SD/OC)

ASSEMBLY, TESTING & PACKAGING-ATP
(TJ/MEX; SD/OC)

GENERIC PHARMA AND BIOSIMILARS
(SD/TJ/TEC/ENS)

EV BATTERIES & AUTOMOBILES
(IV/ TJ & MX)



COMMUNITIES TO BENEFIT GLOSSARY:

- TIJUANA/ROSARITO: TJ-R
- TECATE: TEC
- ENSENADA: ENS
- MEXICALI: MEX
- BAJA CALIFORNIA (BC)
- SAN DIEGO COUNTY: SD
- IMPERIAL COUNTY: IC
- SOUTHERN CALIFORNIA INCLUDING: SD, OC, RIVERSIDE, LA (SOCAL)

Nuevo Leon's comparative advantage for nearshoring relative to other Mexican states lies in its proximity to the Texas border, direct links to key U.S. markets via two main rail lines and the I-35 highway corridor, and its ready supply of local talent. Additionally, Nuevo Leon has been open to offering selected companies, including Tesla, financial incentives with a focus on investment in basic infrastructure.

To date, the majority of Nuevo Leon's new nearshoring investment has been concentrated in the automotive, electronics (including computer manufacturing), home appliances, IT software, aerospace, and food & beverage sectors. The recent decision by[XVII] Tesla to potentially expand to Nuevo Leon with its proximity to new EV manufacturing operations in the Southeastern United States has prompted other auto parts suppliers to re-locate to the state. Additionally, Nuevo Leon has actively courted Chinese companies, including computer manufacturer Lenovo, to nearshore their operations to take advantage of the USMCA's more favorable tariff treatment for export to the United States.

Still, Nuevo Leon's nearshoring-related growth is not pre-ordained. Growing public safety concerns,[XVIII] a shortage of skilled labor[XIX], nearshoring-related, and the future risk of water shortages[XX] in the Monterrey Metropolitan area[XXI] could dampen Nuevo Leon's future nearshoring-led expansion.

IV. CaliBaja's Comparative Advantage

As the largest integrated economic zone along the U.S.-Mexico border with 7 million inhabitants, a regional GDP of $250 billion, and $70 billion in cross-border trade flows[XXII], Cali Baja sets itself apart from other regions of North America. Due to the binational nature of its regional economy, Cali Baja is more than a sum of its parts.

When the combined productive capacities of San Diego County, Imperial County, and Baja California are considered along with the potential synergies of greater alignment with Los Angeles, Orange County, and the Inland Empire, the CaliBaja region is strategically positioned to take advantage of nearshoring investment opportunities due to the region's comparative advantages that include:

- **Established life sciences (medical devices/biotechnology, pharmaceuticals, and genomics), wireless communications, and defense/aerospace clusters in Southern California with expanding cross-border potential;**
- **Strong manufacturing base in Baja California, particularly in the areas of medical devices, audio-visual manufacturing (Tijuana) and aerospace (Tijuana and Mexicali);**
- **Baja California's fast growing IT services sector that serves Southern California's life science cluster;**
- **Improved infrastructure, including the construction of the Otay Mesa East port of entry for trucks and commercial vehicles;**
- **Best-in-class universities and research institutions with cross-border R&D as well as professional development and vocational training opportunities;**

- **Skilled cross-border STEM workforce;**
- **Cross border natural gas inter-connections offering a reliable source of energy;**
- **Potential renewable energy resource expansion (solar, wind, geo-thermal);**
- **Lithium deposits in the region of Imperial Valley and Mexicali that have the potential to catalyze expanded electric vehicle battery and zero emissions vehicle manufacturing in future years.**

Among the critical supply chains where Mexico has future opportunities for growth, there are four key sectors where the CaliBaja region is uniquely positioned to compete. These include an expansion of **medical device manufacturing** into more complex, highly regulated consumables and equipment; increased complexity and volume of **semiconductor assembly, test and packaging (ATP) and printed circuit board (PCB) manufacturing; global aerospace supply;** and **lithium battery/zero emission vehicle manufacturing.** Additionally, the region has a potential further opportunity to become a future destination for **generic and biosimilar drug manufacturing.**

Yet, nearshore-related investments in CaliBaja are not guaranteed. To seize this opportunity and maintain the region's economic competitiveness, steps must be taken in the immediate future to address issues related to regulatory obstacles; security; water; clean, reliable & affordable energy; infrastructure (ports of entry, seaports, rail); and the availability of a skilled workforce.

For its part, San Diego must strengthen cross-border public, private, philanthropic and academic institutional cooperation with Baja California to catalyze economic development and investment and help address emerging trans-boundary challenges of water, infrastructure, workforce development, and community empowerment. The Strengths-Weaknesses-Opportunities and Threats (SWOT) analysis of CaliBaja's nearshoring potential highlights this point:

SWOT Analysis

Strengths

- Largest binational metroplex along U.S.-Mexico border
- Expanding U.S.-Mexico cooperation to facilitate travel and legal trade
- Proximity to California consumer market
- Established life sciences, wireless and defense/aerospace clusters in San Diego
- Baja California's strong manufacturing base, including the majority of Mexico's operational semiconductor ATP and PCB facilities
- Proximity to Port of Los Angeles/Long Beach and regional cargo airports (LAX, Ontario and San Bernardino)
- Best in class universities and research institutions on both sides of the border
- Skilled labor
- Availability of low-cost and reliable natural gas
- Recent investments in cross-border infrastructure (Otay Mesa East Port of Entry, CBX)
- Vibrant cross-border community of private, public, academic, and philanthropic institutions and civic leaders
- San Diego-Tijuana 2024 World Design Capital

Weaknesses

- Strength of Mexican Peso relative to the US Dollar
- Rising Labor Costs in San Diego and Baja California
- Insufficient skilled labor to meet growing demands
- Regulatory uncertainty (Federal, State, Local)
- High electricity costs in Baja California (the highest in Mexico)
- High housing costs in both San Diego and Tijuana relative to other locales in their respective countries
- Public insecurity and extortion impacting small & medium sized businesses in Baja California, some which supply the maquiladora sector
- Current limited capacity of existing seaports (San Diego, Ensenada)
- Over-dependence on water from the Colorado River, periodic water shortages, lack of investment in water infrastructure, and energy distribution, current lack of policy and regulatory framework for water re-use in Mexico.
- Cross-border sewage flows from Tijuana River straining cross-border relations
- Labor shortages in strategic industrial sectors where Baja California has the highest potential for growth

Opportunities

- Nearshoring expansion opportunities in medical devices; semiconductor design, assembly, testing & packaging (ATP), printed circuit boards (PCBs); aerospace, lithium batteries and zero emission vehicles
- Present clean energy alternatives for Baja California to incoming Mexican President.
- Establishment of a national and regional cross-border strategy for attracting ATP facilities and component production to Cali-Baja, leveraging the region's proximity to chip fabrication facilities in Arizona & California
- Potential cross-border generic drug, active pharmaceutical ingredient (API) and biosimilar manufacturing solutions to improve North American essential medicine resiliency
- Cross-border lithium extraction opportunities (Imperial Valley/Mexicali) that have the potential to accelerate expanded investment in EV battery manufacturing in the region due to the proximity of California, accounting for 43% of all U.S. EVs (electric vehicles) sold
- "One-Stop Shop" to reduce regulatory delays (federal, state, local) for potential
- Classification of Medical Equipment, essential medicines, and PCBs as essential economic activities in the U.S. and Mexico in case of public emergencies
- Potential expanded clean energy options (solar, wind, geothermal, hydrogen) in Baja California with regulatory reform
- Development of Port of Colonet and cross-border rail links to expand import/export opportunities for manufacturer
- Expanding cross-border integration of Inland Empire's logistics hubs linked to the San Bernardino and Ontario International Airports
- Improvements in cross-border inter-connections and infrastructure, including the proposed binational trolley and Ensenada-San Diego ferry projects.
- Potential Mexican regulatory framework for water re-use in water scarce regions of the border, including Baja California.
- Potential future cross-border investments in water resource management solutions including water conservation and water re-use
- Specialized cross-border workforce development initiatives undertaken between universities and technical colleges on both sides of the border
- Community based solutions to counter narco-violence and provide meaningful educational and vocational alternatives to at-risk youth and adults
- Pool of arriving migrant labor that can be trained to meet the region's skills gaps.

Threats

- Nationalistic forces in either the United and/or Mexico undermine North America cooperation
    - Potential USMCA non-renewal
- Insecurity and narco-violence worsen
- Rule of law further weakens
- Mexico's next President does not make clean energy a priority
- Climate-change related impacts (drought, sea level rise, wildfires, biodiversity loss)
- Insufficient investment in basic infrastructure & maintenance (water, energy, roads, etc.) impacts future growth.

Source: GBM, 2023

V. CaliBaja's Nearshoring Sectoral Opportunities

A) Medical Devices

San Diego is home to numerous medical device companies dedicated to developing innovative medical technologies that improve patient care and outcomes. These companies specialize in a wide range of medical devices, including diagnostic tools, surgical instruments, implantable devices, and medical software. Notable medical device companies in San Diego include Illumina, Dexcom, ResMed, QuidelOrtho and NuVasive. These companies are known for their innovative research and development, state-of-the-art manufacturing facilities, and commitment to quality and safety. With a highly skilled workforce and a thriving life sciences ecosystem, San Diego is a hub for medical device innovation and entrepreneurship[XXIII], ranking sixth among U.S. bio-pharm clusters based on several criteria including NIH funding, VC (venture capital) funding, patents issued, lab space, and jobs.[XXIV] When San Diego is combined with Los Angeles/Orange County, the overall Southern California life sciences cluster ranks first in the U.S. in terms of jobs and third in NIH funding and VC funding.

Baja California ranks first in medical device manufacturing in North America and is the eighth largest exporter of medical devices in the world and leading supplier to the U.S. There are more than 100 companies, employing over 85,000 with an average age of 30 in the manufacture of a wide range of class I, II, and III devices including surgical instruments, orthopedics, and advanced imaging devices. Some of the notable medical device companies in Baja California include BD, Medtronic, and Stryker.

A substantial benefit of manufacturing in the region is the combined strength of these two bi-national communities working together. Proximity has allowed companies to establish operations on both sides of the border to leverage the unique strengths of each community. Historically, these companies have leveraged highly skilled research and development teams in San Diego in combination with large-scale, regulatory-trained, cost-advantaged operations in Baja California to optimize their company value proposition. Companies with an existing presence in Baja California are now increasing the complexity of products produced and adding new centers of excellence including new product introduction, research & development, and software.

For companies looking to near-source their medical device supply chains, the CaliBaja region offers several paths to establish operations: contract manufacturing, shelter (a firm that handles a client's permitting and licensing, regulatory compliance, administration, staffing, legal issues, and facility leasing) and the establishment of legal entities. As of this writing, there are over 80 medical device contract manufacturers producing medical devices today as well as third-party sterilization services that are available on both sides of the border[XXV]. Collectively, these medical device manufacturing companies provide the state of Baja California with over 74,000 jobs. Of these, **90%** are certified under ISO-13485, FDA or other equivalent standards and regulations.

Given the CaliBaja's region's comparative advantages on the medical device front, there is an opportunity for the region to mitigate vulnerabilities in the U.S. supply chain given 128 types of medical devices and surgical equipment[XXVI] for which the United States depends on foreign entities, exposing supply chains to geopolitical, economic, and climate shocks. Towards this end, on August 6, 2020, President Biden issued an Executive Order on Ensuring Essential Medicines, Medical Countermeasures, and Critical Inputs Are Made in the United States (E.O.-13944) which includes a list of essential medicines, active pharmaceutical ingredients (APIs), and medical devices that need to be prioritized for reshoring/nearshoring.[XXVII]

E.O-13944 directed the U.S. Food and Drug Administration (FDA) to identify a list of essential medicines, medical countermeasures and critical inputs that are medically necessary to always have available in an amount adequate to serve patient needs and in the appropriate dosage forms. The medical device countermeasure list includes diagnostic testing kits and supplies for rapid test development and processing, personal protective equipment, active vital sign monitoring devices, devices for vaccine delivery, and devices for management of acute illnesses such as ventilators, among others.[XXVIII]

The U.S-Mexico High Level Economic Dialogue (HLED) seeks to facilitate trade and investment in medical devices, representing another opportunity for the region. Through a collaborative Medical Device Regulatory Convergence Project (MDRC) with Mexico's Federal Commission for the Protection Against Sanitary Risks (COFEPRIS), the two governments support increased alignment of Mexico's medical device regulatory system with international standards to streamline processes and reliance on FDA decisions.[XXIX]

Furthering the goals of the E.O, the Investment Group of the U.S.-Mexico CEO Dialogue identified five critical technologies/processes where greater capacity in Mexico is necessary for medical equipment manufacturers producing devices for MRIs, tomography, surgery, and ultrasound. These technologies/processes include mechanical assembly, forming processes, fabrication of sheet metal, casting & foundries, and precision machining.[XXX] To build greater medical equipment resiliency for North America, the CEO Dialogue proposed undertaking a pilot project with North American medical device companies to help them develop the capabilities of a small group of Mexico-based medical device suppliers manufacturing key technologies for MRI, tomography, surgery, and ultrasound equipment. Here, the idea is to help Mexican companies already supplying major U.S. medical device companies to reach their full potential, thereby reducing the dependence on Chinese-made medical equipment components. As a compliment to the pilot project, the CEO Dialogue proposed inviting a select group of foreign suppliers to launch operations in North America. For both proposed initiatives by the CEO Dialogue, the Cali-Baja region is well positioned.

A third area of opportunity relates to medical device connectivity. As the technology sector in Tijuana has grown, companies began establishing software centers of excellence in Tijuana to centralize and enhance software development capabilities, promote collaboration, and drive innovation. Multinational companies such as Telmex, Grupo Carso, and Thermo Fisher became key drivers of the region's capability and several Life Science companies, such as Insulet, Dexcom, Xiltrix, Luna DNA, Curemetrix, and QuidelOrtho found in iTj,[XXXI] a key strategic partner to start up their stand-alone Software and Engineering Centers of Excellence, connecting the investment from R&D to real-time lab operations.

The combined bi-national strength of the region with a proven track-record of producing regulated medical devices will enable established companies to expand their operations with an increasing level of complexity and give confidence to new companies near-sourcing their supply chains to the region.

B) Semiconductors

Semiconductors (also known as integrated circuits, microelectronic chips or computer chips) are essential for all electronic devices in our modern economy. During the COVID-19 pandemic, supply chain shutdowns from China and Taiwan led to shortages of semiconductors that directly impacted North American automaker's supply lines.[XXXII] Semiconductors are also vital to protect U.S. national security interests as they are the building blocks for several emerging technologies including AI, autonomous systems, 5G communications and quantum computing.[XXXIII] Semiconductors are also essential in all electronic appliances and devices used by consumers today.

While the United States accounts for the largest share of global semiconductor sales **(totaling over 42% or USD$232 billion in 2021),** in 2020 only **13%** of semiconductor manufacturing capability was physically located in the United States, with the majority now located in **Taiwan (35%) and China (23%).**[XXXIV] Ironically, at one time California supplied **43%** of the global market for chips. Yet, no new facility has been built there since the late 1990s.[XXXV] Today, California's share of the chip manufacturing is **12%**[XXXVI] with some 600 fabrication facilities – more than any other U.S. state.[XXXVII] California is also home to numerous chip R&D and design facilities including several in San Diego (Qualcomm, Micron, pSemi, NXP, Media Tek and Infineon)[XXXVIII]. For its part, neighboring Arizona has 115 chip manufacturing operations.[XXXIX]

In an effort to promote greater North American supply chain resiliency for semiconductors, the United States passed the 2022 CHIPS and Science Act (Chips Act) providing $39 billion in financial assistance over five years to incentivize private sector investment in the fabrication, assembly, testing, advanced packaging, production, or research and development of semiconductors, materials used to manufacture semiconductors, or semiconductor manufacturing equipment.[XL] The CHIPS Act also provides an investment tax credit equal to 25% of the qualified investment by an "eligible taxpayer" (which will exclude Chinese-owned or controlled companies) in a facility for which the primary purpose is the manufacturing of semiconductors or semiconductor manufacturing equipment. Thanks in large part to the incentives provided by the CHIPS Act, four new semiconductor fabrication or "fab" plants are now under construction in Arizona, with Taiwan Semiconductor Manufacturing Company (TSMC) set to invest $28 billion in two new factories in Phoenix[XLI] and Intel planning to invest $20 billion in two chip factories in Chandler.[XLII]

Also, under the CHIPS and Science Act, the U.S. Defense Department (DOD) recently announced an award of nearly $240 million dollars to eight regional "innovation hubs" around the United States which will be a part of the Microelectronics Commons, and which will benefit both the DOD and the United States by spurring development of a domestic microelectronics manufacturing industry.[XLIII] "The Microelectronics Commons is focused on bridging and accelerating the 'lab-to-fab' transition, that infamous valley of death between research

and development and production," said Deputy Defense Secretary Kathleen Hicks. According to Hicks, "while America is a world leader in the innovative research and design of microelectronics, we've lagged in the ability to prototype, manufacture and produce them at scale. That's what the CHIPS Act is meant to supercharge." With the Microelectronics Commons, novel technology developed domestically will have a better chance of making it from lab to market entirely inside the United States. To ensure the success of the Microelectronics Commons, DOD plans to spend about $2 billion over the next five years on the initiative.[XLIV]

DOD's investment in U.S.-based defense capability through the Microelectronics Commons is an opportunity for San Diego's defense electronics cluster. Already, the UC San Diego Jacobs School of Engineering will serve as a key member of the Microelectronics Commons project securing $27 million in funding to support activities through the NANO3 laboratory on campus that houses the Qualcomm Institute, the UC San Diego Division of Calit2.[XLV]

Beyond the Microelectronics Commons, last year the Biden Administration published its National Security Strategy[XLVI] highlighting the need for greater North American resiliency in chip manufacturing, a topic that was discussed at the 2003 North American Leaders Summit and which led to the convening of the first North America Semiconductor Conference (NASC) held in Washington, DC, on May 18–19, 2023.

The NASC convened high-level industry, government, and academic representatives to identify trilateral opportunities to increase regional competitiveness in semiconductor manufacturing and enhance semiconductor supply chain resilience. Among the NASC findings was that packaging and advanced packaging constitute a major gap in North American semiconductor supply chains and present a significant opportunity for the three USMCA partners.[XLVII] Also, the NASC recommended that to improve North America's supply chain visibility, the U.S., Canada, and Mexico should develop shared standards and regulatory cooperation to promote expanded semiconductor investment in the region.

Through the U.S-Mexico High Level Economic Dialogue (HLED), the United States and Mexico established an action plan on semiconductor supply chains with the following objectives: 1) supporting the integration of regional semiconductor supply chains; 2) scaling existing activities in the region by improving the investment climate, and attracting new investments in assembly, testing, and packaging (ATP); 3) promoting the diversification of investment towards activities not yet present in the region or which could have an expanded presence; 4) fostering state and local-level dialogues to promote investments in the semiconductor industry; and 5) supporting workforce development efforts in the region's semiconductor industry.[XLVIII]

Over the years, Mexico has gradually increased its presence in the global semiconductor manufacturing industry and developed competitive advantages in specific semiconductor manufacturing processes including assembly, testing, and packaging (ATP), otherwise referred to as "back-end" chip manufacturing. Yet today Mexico has a mere 3% of the global semiconductor ATP market share, with only four ATP facilities currently operating across the country. Of these ATP facilities, one is operated by chipmaker Texas Instruments in Aguascalientes and the remaining three are in Baja California: Skyworks (which operates two such facilities[XLIX] in Mexicali[L]) and Infineon with a facility in Tijuana. Infineon also recently announced plans for a second site in Guadalajara.[LI]

By contrast, **81%** of the global semiconductor ATP activity is in Asia, with 38% in China. China accounts for **80%** of global printed circuit board production (PCB). Given this reality, there may well be a desire for U.S. companies to continue ATP operations in Asia (Southeast Asia, China, Taiwan, and South Korea) due to the region's economies of scale and cost competitiveness. Still, the tenuous U.S.-China relationship and proximity of semiconductor fabrication plants in California and the Phoenix metropolitan area (located less than 240 miles from Mexicali) could make Baja California an attractive location for expanding ATP facilities.

Though Baja California's semiconductor manufacturing footprint is still nascent, there is an opportunity for the Cali Baja region to fully leverage its electronics and semiconductor presence by closing gaps in the North American semiconductor supply chain, particularly in semiconductor ATP and PCBs. Also, given Baja California's skilled workforce, opportunities exist for expanded cross-border investment in chip R&D facilities similar to one recently announced by San Diego-based Qualcomm to locate a 500-person facility in Tijuana for chip design.[LII]

To attract ATP investment to the Cali Baja region, it will take a well-coordinated, binational economic development group to demonstrate a regional commitment to the semiconductor industry. The marketing effort will involve discussions with fabless semiconductor companies that design chips, integrated device manufacturers (IDMs) that design & develop chips, and the leading Outsourced Semiconductor Assembly & Test (OSAT) companies that will ultimately make investments. While not at the scale of foundry investments, new factories for ATP can exceed $100M and will not be built without demand commitments from these customers as well as financial incentives from the region. While ATP and PCB capacity is available today, investment decisions to support future demand, including foundry capacity under construction, will be made in the very near-future.

Baja California is home to an established network of over 180 manufacturers engaged in producing a wide array of electronic devices, from medical instruments to televisions. This robust ecosystem is poised for further growth as an increasing number of these manufacturers start to develop their own semiconductor chips.[LIII] Tijuana, in particular, is becoming a hub for chip design — a development that holds promise for the region's electronic companies. By tapping into this burgeoning design capability and bringing more of their supply chain closer to home, these manufacturers can seize new opportunities and enhance their competitive edge in the global market.

With a strong defense electronics cluster in San Diego, the region stands to gain through a unified private-public approach. It is even more important for the region to develop a clear strategy to close existing supply chain gaps downstream of chip foundries in facilitating ATP and PCB manufacturing in Cali Baja and ultimately leverage its scale in audio visual electronics and medical equipment assembly into a greater number of electronics.

C) Aerospace

Given evolving geopolitics, the aerospace industry is among those sectors where U.S. and European companies now invested in China (due to that country's own growing commercial aircraft market) have begun exploring de-risking their operations through nearshoring. U.S. aerospace companies with a presence in China include Boeing, Raytheon, Pratt & Whitney, Collins Aerospace, as well as a variety of aviation component suppliers.[LIV]

According to Grety Hayes, CEO of Raytheon Corporation, his company has 2,000 direct employees and "several thousand suppliers in China, so decoupling…is impossible"[LV]. He adds, "if we had to pull out of China, it would take many years to re-establish the capability either domestically or in other friendly countries."[LVI]

The aerospace industry's dependence on China goes beyond its own domestic market. Many Western aerospace companies are, after all, still highly dependent on China for rare earth minerals, with more than 95% either from or processed there.[LVII]

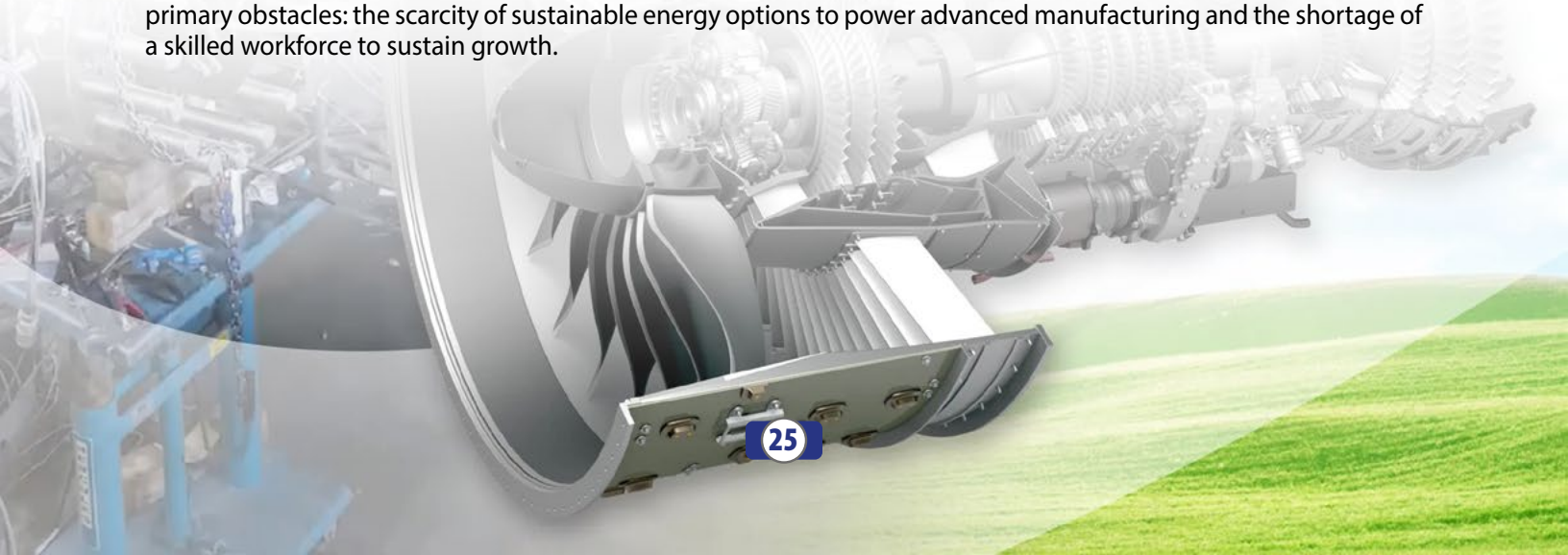
Though operational de-coupling may prove difficult for some companies, new geopolitical realities combined with the United States' decision to supply weapons systems to Taiwan has resulted in China slapping trade sanction on Raytheon and Lockheed Martin.[LVIII] For the time being, the sanctions have been surgical and restricted only to the sale of military equipment to China[LIX] but this could change over time.

Though tensions have slightly diminished since the November 15, 2023 meeting between President Biden and Chinese President Xi on the heels of the Asia-Pacific Economic Cooperation (APEC) meeting in San Francisco, regional experts highlight the need to manage expectations as the United States and China navigate a range of unresolved issues[LX]. Given these geopolitical realities, nearshoring may eventually become a necessity for a growing number Western aerospace companies not currently considering moving from China.

Among those aerospace companies that are now or may in the future consider nearshoring, the CaliBaja region is an attractive destination. After all, San Diego and the broader Southern California region is one of North America's leading aerospace hubs. Accounting for a fifth of the region's innovation employment, San Diego's aerospace industry has evolved rapidly, creating new industry ecosystems, talent demands, and collaborative efforts within the region. [LXI] For its part, Baja California has over 67 established aerospace manufacturing companies (such as Rockwell Collins, Safran Aerospace, Eaton Aerospace, Honeywell Aerospace, Lockheed Martin, Goodyear Aerospace, GKN, Parker Industrial and Cubic)[LXII], a strong labor base consisting of more than 17,000 workers, and more than 3,000 thousand engineering degrees conferred a year, making it one of Mexico's leading states for aerospace manufacturing.[LXIII]

Among Baja California cities, Mexicali has the highest concentration of aerospace firms and thousands of employees in the aerospace product and parts manufacturing industry (6,953).[LXIV] Among the Mexicali based aerospace companies, Collins Aerospace and Raytheon Technologies are planning new investments there.[LXV]

Despite Baja California's significant nearshoring prospects for the aerospace industry, industry experts point to two primary obstacles: the scarcity of sustainable energy options to power advanced manufacturing and the shortage of a skilled workforce to sustain growth.



D) Lithium batteries and Zero Emission Vehicles (ZEV)

Passage of the 2022 Inflation Reduction Act (IRA) (offering a clean vehicle tax credit of up to $7,500 for the purchase of each new electric vehicle) has spurred investment in a growing number of EV battery and Zero Emission Vehicle (ZEV) manufacturing plants across the United States. The tax credit has two key elements: The first is a $3,750 tax credit applicable to the value of critical minerals contained in the battery, which must be either extracted or processed in the United States or a country with which the U.S. has a free trade agreement, starting with a minimum requirement of 40% in 2023 and increasing to 80% by 2027. The second element of the tax credit is tied to battery components, which must be manufactured or assembled in North America beginning with a content requirement of 50% in 2023 and increasing to 100% by 2029.[LXVI] As a signatory to the USMCA, EV manufacturing companies in Mexico can qualify for the referenced IRA tax credits.

Since the IRA's passage, there have been several announcements of EV manufacturers relocating to Mexico including Tesla[LXVII], GM, Stellantis, Kia, BMW, Ford and Navistar.[LXVIII] Several of these new EV manufacturing facilities as well as operations for their suppliers are being sited in Nuevo Leon given the state's access to major North American transportation hubs (rail links, I-35) and its skilled workforce, and the state's relative proximity to lithium mines in Arkansas. Lithium is an essential raw material for EV battery production.

While current attention is focused on Nuevo Leon and its capital city, Monterrey **–currently dubbed Mexico's electromobility hub [LXIX]–** expanding availability of lithium resources in North America could shift the geography of EV manufacturing in Mexico over time.

A unique opportunity exists in California's Imperial County given that work is underway to apply an innovative geothermal lithium extraction technology to rich lithium brine deposits in the Salton Sea (leading the region to be dubbed "Lithium Valley").[LXX] Now in its R&D phase of development by three companies **–Controlled Thermal Resources, Energy Source Minerals and Berkshire Hathaway Renewables–** commercial scale is expected by 2025. If successful, Lithium Valley could become the single largest source of sustainably sourced lithium in North America with the capacity to produce 300,000 tons of battery grade lithium per year,[LXXI] offering the potential to meet all the U.S. future lithium demand plus 40% of the world's demand.

Statevolt also recently announced plans to construct a 54GWh Gigafactory in Imperial Valley with an expected CapEx of $4 billion. To launch the new facility, Statevolt has also signed a Letter of Intent (LOI) with Controlled Thermal Resources. Under the terms of the LOI, CTR will deliver sustainable, locally produced lithium and geothermal power from the company's future, to-be constructed Hell's Kitchen Lithium and Power development facility.

It is worth noting that Mexico's Cerro Prieto Geothermal field is located just across the border in Mexicali and is one of the oldest, most reliable geothermal systems in the world.[LXXII] Given the geophysical similarities between the geothermal resources of both the Imperial Valley and Cerro Prieto, Mexico has the potential to extract lithium. That said, in the past year Mexico nationalized lithium mining and established a new state-owned company, LitioMX. Given that geothermal lithium extraction is a new proprietary technology which has required substantial investment in R&D, it may prove difficult for LitoMX to exploit Cerro Preito's lithium potential without providing the proper incentives.

While there are no automakers currently establishing EV facilities in Baja California, it is important to highlight that the state has two major auto manufacturers: Toyota with operations in Tijuana and Kenworth located in Mexicali. Toyota recently upgraded its facility to produce a hybrid version of the Tacoma. As such, the development of lithium deposits in the Lithium Valley could be a potential game changing event, shifting the geography of some EV manufacturing towards the Southwestern United States and Northwest Mexico. Here, Baja California could be a net beneficiary as a neighbor to California, the single largest consumer market of EVs in the United States with over 43% of the market.[LXXIII]

Beyond EVs, it is worth noting that Toyota and Kenworth recently announced a strategic partnership to produce hydrogen fuel cell trucks with the first deliveries as early as 2024 and 2025.[LXXIV] Given this development and their established footprint in Baja California, both companies are well-positioned to investigate the potential of ZEV manufacturing within the state in the coming years.

E) Generic & Biosimilar Drugs

Over **90%** of medicines consumed by Americans are generic drugs and biosimilars.[LXXV] During the past few years the United States has experienced a growing prevalence of generic drug shortages for many essential medicines, some of which were attributed to COVID-19 supply chain disruptions. In fact, according to a report by the U.S. Senate's Committee on Homeland Security, between 2021 and 2022, the United States experienced drug shortages for more than 15 essential medicines.[LXXVI] These included heart medications, cancer treatments, and ADHD medications like Adderall.

The United States faces another key challenge. The country has become over reliant on lower cost overseas sources, principally from China and India, for most generic drugs and a growing number of the active pharmaceutical ingredients (APIs) and key starting materials (KSMs) required for many essential medicines. In fact, between **90-95%** of generic sterile injectable drugs for critical acute care in the U.S. currently rely on APIs from China and India. This overreliance on China for not just generic drugs but also mission-critical APIs and KSMs raises obvious national security concerns.

In response to persistent shortages and generic and biosimilar drug market dynamics in the United States, the Biden Administration established the National Forum to Secure America's Supply Chain for Essential Medicines (Forum) that identified 86 essential medicines critically needed for acute patient care. The Forum's recommendations, outlined in a White House issued report, included expanding domestic onshore and nearshore production capacity for essential medicines, emphasizing the critical importance of "fostering greater international cooperation" and the need to "partner with allies." While the report did not specifically call out any country, Mexico's close proximity to the United States **–coupled with the fact both countries are the main partners of the USMCA trade agreement–** make America's southern neighbor a logical choice.

Like the United States, Mexico faces its own challenges in obtaining critical supplies of essential medicines. The volume of generic drugs consumed in Mexico is also higher than the U.S., with over **90%** of Mexican consumers relying on generic drugs for their medical needs.[LXXVII] That said, among the volume of drugs produced by the Mexican pharmaceutical industry, only **12.1% are generic, with 74.7% being patented.**

When the combined productive capacities of San Diego and Baja California are considered, the Cali Baja region is strategically positioned to offer solutions, under the right conditions and leadership, as a potential destination for future generic and biosimilar drug manufacturing. Unique cross-border comparative advantages include:

• Established life sciences and bio-pharmaceutical clusters in Southern California (San Diego and Los Angeles) with expanding cross-border potential.

• Strong manufacturing base in Baja California, particularly in the area of medical devices.

• The existing ecosystem of Southern California-based life science companies that are establishing information technology-focused subsidiaries in Tijuana to respond to growing data management needs.

• Skilled cross-border STEM workforce with best-in-class universities, technical colleges, and research institutions on both sides of the border.

• Access to skilled labor in Baja California at lower labor costs relative to California and the United States.

Given the majority of FDA-approved biosimilars are made in the United States, there is no near-term case to be made at present. Still, the opportunity exists for Cali-Baja to emerge as a future locale for the production of biosimilars given the region's leadership in the life sciences. After all, a key driver in the siting of both biopharmaceutical and biosimilar manufacturing companies is the ready availability of a skilled life sciences workforce which the Cali Baja is well positioned to provide.

To help catalyze biosimilar manufacturing in the CaliBaja region, a non-profit private/public partnership should be considered that leverages the region's strengths, especially given California's recent commitment to invest in building in-state generic drug manufacturing capacity through the legislative mandate under SB- 852 and the establishment of the CALRx Biosimilar Insulin Initiative.

Although Southern California is a more expensive location for pharmaceutical manufacturing compared to other locales, such as Raleigh-Durham, San Diego is one of the country's leading life science clusters, with over 500 operating live science companies, top research institutions (Burnham Institute for Medical Research, Salk Institute for Biological Studies, Sanford Burnham Prebys Medical Discovery Institute, Scripps Research and the J. Craig Venter Institute) and UC San Diego. Leveraging the innovative process knowledge necessary to produce complex biosimilars in combination with Baja California's regulatory-trained, highly skilled and economically competitive workforce, the region has the opportunity to add biosimilars to the successful life sciences sector in the mega region.

To date, there are four generic drug manufacturers in Baja California: Genetica Laboratories, Laboratorios Baja Med, SBL Pharmaceuticals, and Victory Enterprises. Building upon this base, established Baja California generic manufacturers could leverage the Government of Mexico's recently announced export-encouraged incentives to increase their production capacity. Also, the State of Baja California could attract inward foreign investment, particularly among Indian pharmaceutical manufacturers that are already investing in Mexico. For would-be biosimilar investors, there is also an opportunity to establish binational operations to leverage the well-established biotech community in San Diego and the emerging life science IT cluster in Tijuana.

VI. Regional Challenges & Opportunities

CaliBaja is uniquely positioned to take advantage of potential nearshoring-related investments, but seizing this opportunity will require the region to proactively address several cross-border challenges: security, regulatory impediments; water; clean, reliable energy; infrastructure (land ports of entry, seaports, rail); attracting and retaining a skilled workforce; and expanding access to affordable housing. Leveraging its diverse and committed community of cross-border public, private and civil society stakeholders, the CaliBaja region can proactively turn many of the most pressing challenges into opportunities.

A) Security

Challenges:

Among U.S. companies operating in Mexico, security is a top concern and remains a major obstacle for companies considering nearshoring investments across the country. That said, for most companies, security issues are effectively managed.

According to a U.S. State Department, "Transnational criminal organizations compete in the [Baja California] border area to establish narco-trafficking and human smuggling routes. Violent crime and gang activity are common. Of particular concern is the high number of homicides in the non-tourist areas of Tijuana. Most homicides were targeted; however, criminal organization assassinations and territorial disputes can result in bystanders being injured or killed. U.S. citizens and residents have been victims of kidnapping in Tijuana.[LXXVIII]

Crime takes place in an environment of public distrust of authorities, due to concerns regarding corruption and capacity. Organized crime groups, such as the Jalisco New Generation Cartel (CJNG) and the Sinaloa Cartel, are involved in a wide range of criminal activities, including extortion, kidnapping, money laundering, counterfeiting, and drug trafficking. Tourists are not targeted by cartel violence but can get caught in the crossfire. Small business owners in popular neighborhoods are especially vulnerable to extortion and racketeering. Although prevalent in these areas, most cases go unreported. Small business owners who have the means often seek private security, a sign of a dysfunctional security system.

The situation is different for larger U.S. companies and multinational firms, which tend to have robust physical security for their facilities and are effective at tracking insider threats. These companies import well-established best practices from corporate headquarters, including comprehensive security plans, employee training programs, and security assessments of facilities and operations; they use video surveillance and alarm systems, hire trusted security companies, and conduct due diligence on business partners and employees. As a result, while it is an ongoing concern, insecurity does not seem to be a driving factor in corporate decisions about whether to invest in Baja California (other factors such as the regulatory environment, water, energy, and infrastructure are often more significant).

Extortion by organized criminal enterprises does not target maquilas or multinational companies. Despite the prevalence of violent crime and high murder rates (which relate to Sinaloa v. CJNG violence), security is much better in Tijuana than it was in early 2000s, and Tijuana compares favorably with other Mexican border towns. Rapid economic growth and the large U.S. corporate presence there reflects this reality.

Still, U.S. companies remain concerned with the security of their personnel visiting or working on the Mexican side of the border. Employees of maquilas and multinational companies can be targets because they are seen as having more wealth than the general population. Although not prevalent, virtual kidnappings and the 'blind mule' phenomenon are risks for people crossing the border.

Opportunities:

Though security issues must be considered, the risk can be effectively managed by prospective nearshoring companies. In fact, expanding nearshoring investment in Baja California offers the state one of the best ways to counter the negative impacts of narco-trafficking by catalyzing economic growth and job creation.

One effective way to combat organized crime is to decrease the ability to recruit new members.[LXXIX] This starts by not only expanding vocational opportunities for Mexico's at-risk youth but also investing more in community-based programs to offer at-risk youth and adults meaningful alternatives to illicit activities.

While there is no one-size-fits-all solution, several community-based strategies have shown promise across Latin America **–including the Colombian cities of Bogota, Medellin, and Cali–** to promote greater community-based resiliency and offer meaningful alternatives for vulnerable youth. Such programs could include strengthening the capacity of Baja California's state and local governments as well as area nonprofits to offer youth educational and outreach programs (including after-school programs), community centers, conflict resolution and mediation training, community-based rehabilitation, education and awareness campaigns and community policing.

The state of Baja California and, in particular Tijuana, can do more to invest in better pay and training to professionalize their respective police forces as Monterrey has done.[LXXX] Also, the investment and adoption of body cameras by police and Baja California can go a long way towards reducing the number of officer involved shootings and increasing the level of trust that members of the community have in their police forces, as demonstrated by progress made on this front in Rio de Janeiro, Brazil.[LXXXI] As Stanford criminology researcher, Beatritz Magaloni points out, "without local police who work alongside communities, I don't see how we can ever solve the problem of violence."[LXXXII]

Additionally, the CaliBaja region could benefit from expanded cross-border cooperation to reduce the risk and influences of the drug cartels. Drug trafficking, narco-related violence and organized crime in Baja California is a transnational issue driven by firearms, often imported from the United States. For this reason, greater cross-border cooperation, including investment in social programs and sharing of best practices to address root causes of narco-related violence is critical.

The proposed community-based programs, capacity building and professionalism of the police forces in the region requires a sustained investment. Here, expanding nearshoring-related investments in Baja California offers the best hope for an increased tax base, and corporate philanthropy could work to expand the number of occupational training programs available to at-risk youth, providing meaningful alternatives to the drug trade and organized crime.

B) Regulatory Impediments & Lack of Incentives

Challenges:

Despite Mexico's significant nearshoring potential, many U.S. and international companies cite regulatory constraints and uncertainty as impediments to investing there. Regulatory constraints include sectoral restrictions to foreign investment, especially those related to energy and electricity, as well as bureaucratic complexity, weak rule of law, and corruption (Transparency International's 2022 Corruption Perceptions Index ranked Mexico 126th of 180 countries). Other obstacles relate to labor laws, intellectual property protection, data privacy, taxation, and resolving contract disputes. Government procurement rules can lack transparency. Investors also face uncertainty from regulatory and policy inconsistency. Mexico's inconsistent regulatory environment impedes economic growth, particularly in the energy sector, which is the subject of a USMCA trade dispute.

Companies highlight the importance of the USMCA in promoting investment but recognize the need to resolve trade disputes and for Mexico to address security concerns and meet infrastructure, water, and energy needs. They also lament the generalized lack of economic incentives, especially when compared with other countries that are actively seeking to relocate supply chains and court nearshoring investment. The Mexican government has been reluctant to offer details about how it intends to address security challenges, develop its workforce, or meet infrastructure, water, and energy needs – all crucial to reassuring would-be investors who are considering expanding operations or relocating to Mexico.

There is a broad recognition that the Mexican government says the right things when it comes to nearshoring but has offered few tangible actions or details, including with respect to simplifying regulations or offering tax or other economic incentives. These incentives simply have not materialized under Mexico's current Administration and sometimes seem to have backtracked. For example, the current government cancelled some of the special incentives given to maquiladoras through the IMMEX program. In 2020, the government eliminated the VAT exemption on imported goods for maquiladoras, and in 2021, it eliminated the tax exemption on profits reinvested in Mexico. These changes were made to increase tax revenue and encourage maquiladoras to produce more goods domestically. Mexico's Tax Administration Service (SAT) has often delayed approving value-added tax reimbursements, which contributes to investor uncertainty and is affecting the semiconductor industry, in particular. Other regulatory bodies may be understaffed and underperforming, leading to permitting delays that impede corporate planning.

As an example, COFEPRIS faces a huge backlog in approving medical devices, in large part, due to staffing cut backs under the current Lopez Obrador Administration.

Despite these challenges, U.S. and other international companies are still expanding or newly investing in Mexico, just not as quickly or significantly as they would in a more favorable regulatory environment. Many companies have reported to IOA that investment is happening despite (and not because of) current Mexican government policies and regulations; Mexico remains attractive because of its proximity to the United States and its established, high-quality manufacturing base, particularly in states with industrial zones. The maquiladora industry, which has successfully attracted foreign investment, created jobs, and manufactured goods for the North American market for decades, represents an established ecosystem that U.S. and international companies have longtime experience with, and cross-border synergies are significant and growing. Still, by remaining complacent Mexico risks losing a once-in-a-generation opportunity to capture critical supply chains to other countries, especially in Asia, that are offering aggressive incentive packages.

Although the Mexican government has laid out a vision for attracting new investment to the poorer south-southeastern region with the Corredor Interoceánico del Istmo de Tehuantepec (CIIT) **–a major infrastructure project to develop a multimodal transportation corridor connecting the Atlantic and Pacific Oceans across the Isthmus of Tehuantepec–** there have been few nearshoring incentives targeting other parts of the country.

Opportunities – Newly-enacted Mexican Incentives:

In October 2023, the Mexican government issued a presidential decree establishing nationwide incentives for companies investing in and exporting from Mexico, covering 10 sectors including semiconductors, electric vehicles and batteries, medical devices and pharmaceuticals.[LXXXIII] The decree permits investors to claim an up-front deduction of between **56% to 89%** of the total investment value in fixed assets and income tax payments during the fiscal year in which companies make an eligible investment. The decree also includes a **25%** deduction for investments in workforce training.[LXXXIV]

Mexican states have the ability to offer localized incentives, as well. Such incentives might include local tax breaks, land concessions, water and/or energy cost reductions, workforce development plans, and regulatory facilitation. However, as of the time this paper was published, we were not aware of specific incentives or support that the state of Baja California was offering to attract nearshoring investment to the region.

C) Water

Challenges:

The state of Baja California is highly dependent on the Colorado River with over **90%** of Tijuana's water resources coming from this only source.[LXXXV] Over the past two years, Mexico's share of the Colorado River water was slashed by **7%**.[LXXXVI] Under the terms of Minute 323 of the U.S.-Mexico Water Treaty, Mexico could lose up to **18%** of its portion of Colorado River if water levels in Lake Meade dip below 1,025 feet (about 312.42 m) directly impacting the state of Baja California.

Given expected water shortages, it is essential that Baja California take proactive steps to become more water resilient. For many of the strategic industrial sectors that Baja California is looking to attract to the state for future nearshoring investment **–including semiconductors & electronics manufacturing, pharmaceuticals, automobiles, aerospace, and data centers for IT services–** a ready availability of water is absolutely critical. It is worth noting that the construction of new manufacturing facilities will require significant amounts of water for concrete mixing, dust control and compaction.

Currently, **81%** of Baja California's allocation from the Colorado River is being tapped by its agricultural sector with the remaining **19%** for residential and commercial uses.[LXXXVII] Combined with all water sources, Baja California's agriculture sector consumes **87%** of the state's water supply.[LXXXVIII]

While Baja California's agriculture sector contributes nominally to the state's regional economy yielding approximately US$202 million in economic output, the sector represented a mere **0.42%** of the state's total economic output in 2019. By comparison, manufacturing accounted for **42.75%** of the state's gross regional product that year, totaling US$20.5 billion in economic output annually.[LXXXIX] This sectoral comparison is relevant as growers in the Mexicali Valley currently benefit from subsidized water allocations leading them to dedicate the majority of their production to water intensive crops such as wheat, cotton, alfalfa,[XC] as well as lettuce[XCI] –all crops that are not sustainable in an arid, water scarce region such as CaliBaja. Given growing drought conditions in the U.S. Southwest and Northwest Mexico, Baja California will require a re-thinking of the allocation of the state's water resources in the future with a focus on reducing water allocation to the agricultural sector in the Mexicali Valley despite the potential political and social impacts involved.

Tijuana's explosive growth over the past four decades has also contributed to another problem: trans-boundary sewage discharges that are overwhelming the South Bay International Wastewater Treatment Plant (SBIWTP), that has an operational capacity of 25 million gallons a day (MGD).[XCII] Over the past year, sewage flows into the SWITP have averaged over 30 million gallons (113.6 million liters), exceeding the plant's capacity and resulting in partially treated sewage to flow into the Pacific Ocean.[XCIII] Tropical Storm Hilary (that hit the CaliBaja border region between August 20-21, 2023) further exasperated the SBIWTF, resulting in excess water flows of over 80MGD for a six-hour time frame[XCIV] and resulting in damage to pumps and electrical systems.[XCV] Recently, the Biden Administration issued an emergency funding request to the U.S. Congress for additional $310 million to fix and expand the SBIWTF to a capacity of 50MGD;[XCVI] however, as of this writing this funding has not yet been Congressionally approved. This request serves as a supplement to the original $300 million secured in 2021 as part of the USMCA to support upgrades to the plant.

In addition to the overcapacity of the SBIWTF, the rupture of Tijuana's wastewater pipeline at Matadero Canyon in July 2022 resulted in the loss of capacity for the municipality's wastewater treatment capacity of 25MGD, with that excess wastewater flowing directly into the Tijuana River untreated.[XCVII] These untreated discharges are directly impacting coastal communities across the border in San Diego's South County, including Imperial Beach and Coronado, with resulting cross-border environmental health consequences.[XCVIII]

Opportunities:

While the CaliBaja region faces serious future challenges with water scarcity, this issue can be addressed through effective water resource management on both sides of the border. In the case of Baja California, before opting for costly and energy intensive desalinization facilities, steps should be taken to invest in improved water infrastructure projects that will repair municipal leakages and expand availability of potable water to underserved communities without direct access.

For Baja California's agriculture sector, particularly growers in the Mexicali Valley, alternative crops that are less water intensive should be considered. Investments could also be made in drip irrigation technologies, but farmers will not be incentivized to do so until they pay the actual cost of water. Presently, Mexicali Valley growers pay a mere USD$20 per acre foot of water due to grandfathered subsidies they receive from the Mexican government. To provide a more equitable distribution of water for the state of Baja California, changes in national policy will be required.

The municipality of Tijuana and the state of Baja California could transform current sewage discharges to the Tijuana River by reusing this valuable water resource through a tertiary wastewater treatment or groundwater recharging solutions. Here, Tijuana could benefit from the experience of regional solutions developed across the border in Southern California. This includes the City of San Diego's Pure Water Project which has a goal to provide half of San Diego's water supply by the end of 2035 through a proven tertiary water purification technology that produces safe, high quality drinking water.

Another noteworthy case study for review by Baja California policymakers is the Orange County Water District's Groundwater Replenishment System (GWRS), which is the world's largest water purification system for indirect potable reuse. Through GWRS, OCWD takes highly treated wastewater that would have previously been discharged into the Pacific Ocean (as is currently occurring with Tijuana River's wastewater discharges) and purifies it using a three-step advanced treatment process consisting of microfiltration, reverse osmosis, and ultraviolet light with hydrogen peroxide. The process produces high-quality water that meets all state and federal drinking water standards.[XCIX]

For Tijuana to effectively pursue opportunities for water re-use either for potable water or irrigation, it would first need to regulate illegal heavy metals and chemical discharges into the Tijuana River. Advanced tertiary wastewater treatment solutions do exist[C] that could effectively remove heavy metals from the Tijuana River's wastewater, but such technologies are costly and any proposed solution would require innovative financing and expanded binational cooperation. Addressing this issue would not only help reduce Tijuana's dependency on the Colorado River but also minimize the cross-border environmental health impacts and legal/political tensions with neighboring San Diego County.[CI]

D) Clean, Reliable & Affordable Energy

Challenges:

For companies considering nearshoring investments, reliable and affordable electricity supply is essential. Increasingly, due to corporate net zero commitments, there is a desire to procure renewable energy sources.

Currently, Baja California's power sector consists of imported natural gas and renewable power plants (solar, wind, geothermal) with publicly financed transmission lines and two main border-crossing areas that are connected to the WECC. The state's electrical generation capacity is provided by 14-utility scale power plants operating with a combined installed capacity of 4,049MW.

Baja California has among the highest levels of energy access and coverage (99.11%) in Mexico, with industrial users accounting for 56.3% of total power consumption followed by 34.3% with residential users.[CII] Given the state's population and economic growth, future energy consumption and maximum hourly demands are set to grow by 24% and 26%, respectively, by 2025 compared to 2018. According to CANACIINTRA, the industrial chamber for manufacturers, Baja California's current energy production is already about 500MW short for peak demands hours. If this gap continues to be unaddressed (including investment in expanded electrical distribution, industrial users face the risk of total or partial blackouts by CFE in order to curtail demand.[CIII]

Owing to Baja California's isolation from the national grid, the state demands substantial amounts of natural gas to power its electrical generation plants and to ensure grid reliability. Baja California does not produce any of its own natural gas and relies on imports, from the United States. Also, Baja California has among the highest electrical rates in Mexico compared to other states.

Opportunities:

Baja California is among the Mexican states with the highest potential for renewable energy generation capacity via solar, wind, geothermal and even tidal power, yet current Mexican energy policies limit this potential. With presidential elections in 2024, Mexico's next president will have the chance to revisit the country's energy policy and promote investment in renewable energy projects, including in the state of Baja California.

E) Transportation Infrastructure

Challenges:

The CaliBaja region's transportation infrastructure is extensive and supports 7 million residents and a combined economy of over $230 billion. Key infrastructure within the territory includes two deep seaports (San Port of San Diego & Port of Ensenada), three international airports, seven international ports of entry for passenger vehicles and pedestrians, and three for cargo vehicles.[CIV] The region also includes the Cross Border Xpress (CBX) bridge, a unique binational passenger terminal connecting San Diego to the Tijuana International Airport.[CV]

The already significant interactions between California and Baja would become more efficient and costs could be reduced with investments that improve the flow of people, products, and information across the border. The recent completion of critical transportation linkages in Otay Mesa connecting south-bound State Route 125 (SR 125) to the eastbound State Route 905 (SR 905) and State Route 11 (SR 11) required over $1 billion, more than two decades, and intense collaboration between the U.S. and Mexican governments at the federal, state, and local levels. Continued infrastructure investments of this nature **–including the construction of the Otay Mesa East port of entry for trucks and commercial vehicles–** are urgently needed to enable the Cali Baja region to contribute to economic growth in the coming decades.[CVI]

Despite CaliBaja's existing transportation infrastructure, the region would benefit from improved cross-border connectivity, including trans-boundary rail service linking Baja California with San Diego County and also logistics and distribution centers of the Inland Empire of Riverside and San Bernardino Counties. Given recent bottlenecks at the Ports of Long Beach and Los Angeles, CaliBaja would also benefit from an additional deep-water port to service the region's industrial demands.

By 2045, California's new EV regulatory mandate will require that all medium and heavy-duty trucks (trucks and buses) sold in California be ZEVs (Zero Emission Vehicle) where feasible.[CVII] 100% of all drayage trucks would also need to be ZEV by 2035.[CVIII] ZEVs include electric vehicles and those with hydrogen fuel cells. Given these regulatory realities, cross-border investments will be required for not just ZEV trucks but also EV charging infrastructure on both sides of the border. Absent that, California's regulatory mandate could, in the future, hamper cross-border trade and commerce.

Opportunities:

While currently in the planning phase and subject to approval, the proposed port of Punta Colonet has the potential to provide the state of Baja California with improved cross-border rail transport linkages to Southern California. If and when Punta Colonet is completed, the port could also help capture a share of the market between the U.S. and Asia and triple Mexico's cargo handling capacity. For this reason, Baja California's governor is seeking to reactivate the project in cooperation with the federal government and has advanced work on its environmental impact.[CIX]

Improving cross-border rail linkages is also a priority. Presently, there is a critical need to restore the 70-mile stretch of the dilapidated 1907-era Desert Line, connecting Tecate, Baja California to Plaster City. While the project has experienced a series of delays and political complications, once completed, Desert Line can catalyze billions in additional cross-border commerce.

Opportunities also exist for Baja California, in the coming years, to promote expanded investment in EV charging infrastructure for cross-border commerce. Similarly, the state should help catalyze financing from the multilateral development banks, in particular the IDB-Invest, IFC and CAF, to incentivize the transition of the border region's drayage trucks to EVs.

Additionally, to facilitate cross-border commuting the development of an expedited pedestrian border crossing at San Ysidro could be considered, cross-border trolley project pursued and San Diego-Ensenada ferry service should be undertaken.

F) Skilled workforce

Challenges:

Among companies now considering Mexico as a nearshore destination for their manufacturing operations, ready access to a skilled workforce remains a top priority. A survey of the Banco de Mexico[CX] of prospective nearshoring manufacturers to Mexico reveals that the availability of qualified skilled workforce ranked third in importance behind only the country's proximity to the United States and labor costs.

According to a July 2023 survey by Mexico's business association, Coparmex, 85% of employers in Mexico's manufacturing sector, report trouble finding qualified workers.[CXI]

These shortages are particularly acute in Baja California. Interviews with Baja California industry leaders indicate that the lack of a sufficient number of skilled workers is an impediment to future growth, particularly in key growth sectors like medical devices, semiconductors, electronics, and automobile sectors.

Across Baja California, 383,186 workers were employed in the state's maquiladora sector as of June 30, 2023. Of this total, 339,188 or close to 89% were workers focused on production and technical trades. Tijuana accounts for 263,594 of these workers, representing close to 69% of the state's total maquila workforce. Thanks in part to nearshoring, 31,668 new jobs were created across the state of Baja California during the first quarter of 2023. [CXII] That said, the lack of available labor and turnover remain ongoing challenges for the state's maquiladora industry.

Opportunities:

While a shortage of skilled labor remains a challenge for Baja California manufacturers, academic institutions on both sides of the border are providing a ready pipeline of graduating students to fill some of the region's critical skills gaps in strategic sectors. In 2018, Baja California-based universities awarded 18,800 degrees, of which 38% were in STEM fields. Of STEM-related graduates, 3,671 earned engineering degrees. Key Baja California academic institutions with STEM conferring degrees include the Universidad Autonomia de Baja California (UABC), CEYTS Universidad CECESI and UNAM-Ensenada campus.

To compliment academic offerings in Baja California, a growing number of students in the Cali Baja region cross the border to enroll in classes in California colleges and universities. According to a study undertaken by the University of San Diego (USD), in 2018 there were a total of 10,923 cross-border students with 6,986 from Tijuana and 3,937 from Mexicali[CXIII] enrolling in courses in the region's colleges and universities ranging from UC San Diego, USD, and San Diego State University to area community colleges including Southwestern Community College (SWCC), San Diego City College, and El Centro Community College. Each of these institutions have active programs catering to trans-border students.

For its part, Chula Vista-based Southwestern College has formalized an academic partnership with UABC to expand cross-border academic curriculum offerings and allow low-income UABC students to attend SWCC and pay California in-state tuition rates.[CXIV] SWCC's pilot program has been expanded thanks to California Assembly Bill 91 (AB 91), legislation introduced by Assembly Member David Alvarez in early 2023,[CXV] that was signed into law in October 2023 by California Governor Newsom. The law formalizes the referenced pilot program to extend in-state California tuition benefits to Baja California students living within 45 miles of the California-Mexico border who wish to attend community colleges in San Diego & Imperial Counties, with a cap of 150 cross-border students per institution annually.[CXVI]

In the state of Baja California a close working relationship has already been developed between the State government, industry and academic institutions to develop workforce development training programs tailed towards the needs of companies in the region.

Beyond recent developments in cross-border educational access, expanded private sector-supported curriculum development programs should be encouraged with Baja California area academic institutions. This is something already being done by Aspen Medical Devices to support STEM-related educational programs at CETYS Universidad, but more such programs need to be developed.

To cultivate semiconductor-specific talent, Skyworks established its first endowed academic chair at the University of California, San Diego's (UCSD) Jacobs School of Engineering 20 years ago to create opportunities for students and faculty to work collaboratively with Skyworks engineers to develop new semiconductor technology.[CXVII] More recently, Arizona State University (ASU) announced it will collaborate with higher education institutions in Mexico, along with industry partners, to boost the production of semiconductors in North America. Here, ASU President Michael Crow signed a memorandum of understanding with Esteban Moctezuma Barragán, the Mexican ambassador to the U.S., to seal the partnership.

Because it is not feasible for all semiconductor manufacturing to move into the U.S., the CHIPS Act includes $500 million for international cooperation. The ASU agreement with Mexico will pave the way for a binational alliance of universities, plus microelectronics manufacturers, to focus on training workers and building production capacity in the northwest border states, which could include institutions in Baja California. As Ambassador Moctezuma noted, Mexico is perfectly situated to partner with the U.S. on the initiative, which is crucial to the interests of all of North America. It will take more of these industry/academic partnerships to address the estimated semiconductor technical workforce gap of 67,000 forecasted by 2030.[CXVIII]

ASU's expanded cross-border partnership in Mexico on the semiconductor front is relevant as this Arizonian public university has plans to expand its footprint in the CaliBaja region. In particular, ASU has committed to constructing a new building on the campus of Chula Vista-based SWCC to enable students to stay there to earn their four-year undergraduate degree.[CXIX] The ASU-SWCC partnership mirrors similar programs already offered at SWCC through SDSU, Point Loma Nazarene University and National University.[CXX]

Finally, one potential solution to addressing Baja California's shortage of skilled labor is to invest in workforce development training programs for the growing number of migrants arriving to the state from other parts of Mexico and Latin America. Given the difficulties migrants now face in receiving asylum in the United States, a growing number of migrants have opted to stay in Mexico and pursue employment opportunities there in the country's manufacturing sector.[CXXI]

Given the benefits that such a workforce development program could have for the United States, Mexico, and migrant-sending countries, an opportunity exists to pursue funding from the U.S. Agency for International Development (USAID) as well as the multilateral development banks including the CAF-the Latin American Development Bank and the Inter-American Development Bank (IADB).

G) Affordable Housing

Challenges:

Among the biggest challenges facing the CaliBaja region is that of affordable housing. A 2023 U.S. & World Report survey ranks San Diego as the most expensive city in the United States to live with the average cost of a home now close to a million dollars[CXXIII], over double the national average. While other major metropolitan areas of Mexico –such as Mexico City, Guadalajara, Monterrey, Cancun and Los Cabos–[CXXIV] have higher housing costs than in the rest of the country, **Tijuana remains among the more expensive cities in Mexico to live.**

In the past year, Tijuana and Mexicali ranked seventh and tenth nationally among Mexican cities with the highest net increase in housing costs with increases of 15.6% and 15.2% respectfully.[CXXV] This compares to net housing price increases in other key Mexican nearshoring destinations such as **Guadalajara (13.2%), Queretaro (13.1%), Monterrey (11.5%), Cd. Juarez (11.1%).**[CXXVI] As Baja California seeks to compete for future nearshoring investment, the cost of housing and overall cost of living relative to other locales will remain a challenge. A key driver of the increase in Tijuana's housing prices is a growing demand of San Diegans that have moved south of the border to find more affordable housing.[CXXVII]

Opportunities:

San Diego's lack of affordable housing remains a barrier to its ability to attract and retain talent. Proximity to the border provides a growing number of San Diegans with the option of living in neighboring Tijuana where, according to recent estimates, average rents are 680% lower than in comparable units in San Diego and the average price of a home is almost 670% lower.[CXXVIII]

Today, an estimated 80,000 daily cross border commuters travel back and forth from Tijuana to San Diego.[CXXIX] While some daily crossers with SENTRI and Global Entry cards can expedite their commute, the majority still endure long wait times at the border. Improvements to border infrastructure and added staffing at the ports of entry will go a long way to reduce wait times and make Tijuana a more viable option for those San Diegans priced out of the local housing market.

The selection of San Diego-Tijuana as the 2024 World Design Capital presents the region with a unique opportunity to examine innovative approaches to affordable housing on both sides of the border as well as solutions to improve cross-border commuting, including the proposed binational trolley and San Diego-Ensenada ferry projects.

CALIBAJA NEARSHORING OPPORTUNITY: WHAT WILL MOVE THE NEEDLE?

MEXICO'S RE-OPENS ENERGY MARKETS TO PRIVATE SECTOR
Baja California takes lead with new clean energy investments

Mexico prioritizes investments in basic infrastructure
(water, energy, roads)

Mexico provides greater regulatory certainty
(at all levels of government)

Mexico strengthens rule of law and security

The region establishes a cross-border industry council to prioritize and coordinate workforce development initiatives in the CaliBaja region.

VII. Seizing Cali Baja's Nearshoring Opportunity

Challenging geopolitical developments **–influenced by U.S.-China tensions, Russia's invasion of Ukraine, and the conflict between the State of Israel and the Hamas terrorist organization–** have focused U.S. policy more sharply on national security (rather than free trade) interests, leading to increasing calls for friend- and nearshoring. The shift in U.S. policy has resulted in a historic decline in foreign direct investment to China as manufacturers redirect investments closer to home.

Given CaliBaja's unique comparative advantages, our binational region is well-positioned to not only contribute to U.S. national and regional security interests but also help catalyze trade and investment, regional economic prosperity, and cultural vitality.

Whether the CaliBaja region will take full advantage of this once-in-a-generation nearshoring opportunity remains an open question. A lot will depend on whether Mexico and the state of Baja California proactively address several critical issues to maintain the region's competitiveness, including strengthening its regulatory framework for nearshoring; improving security and rule of law; ensuring adequate water supplies; providing clean, reliable & affordable energy; strengthening infrastructure (ports of entry, seaports, rail); and providing a skilled workforce.

Given the shifting regional trade flows and investment driven by the IRA and CHIPS Act, the CaliBaja region also needs to look beyond its own pre-defined geographical boundaries to explore greater inter-jurisdictional collaboration with Los Angeles, Orange County, and the Inland Empire. Additionally, Baja California would be well-served expanding its level of cross-border engagement with Arizona given the growing number of semiconductor fabrication plants now under development in that state.

New geopolitical, economic, and technological realities require new ways of thinking about our ever-changing Binational Mega-Region. Here, San Diego and Tijuana's joint selection as the first binational 2024 World Design Capital presents a unique opportunity for our region's key stakeholders to think boldly about how to seize this historic moment through innovative design solutions to respond to our region's most serious challenges, including security, clean energy & energy efficient buildings, water, transportation infrastructure and affordable housing. Such design innovation holds the promise not only help create tens of thousands of quality jobs and expand the Baja California regional economy, but also to improve the quality of life for residents on both sides of the border.

VIII. Recommendations

As highlighted in this report, in the coming years the CaliBaja region is uniquely positioned to take advantage of the historic re-shoring/nearshoring opportunity in four critical high value added supply chains, including medical devices, semiconductors, lithium battery/zero emission vehicle manufacturing, and aerospace. Under the right conditions, the region also has an opportunity to become a destination for future generic drug and biosimilar manufacturing. To seize this generational opportunity, regional leaders in business, government, civil society and academia from San Diego & Imperial County and Baja California should consider the following actions:

Government of Mexico

Energy:

• Revisit the country's energy policy to promote expanded investment in renewable energy projects, including throughout the state of Baja California (solar, wind, geothermal) to provide prospective nearshoring manufacturers the clean, reliable energy they expect (and increasingly, require) to do business in Mexico including investing in expanded energy distribution.

Water:

• To address Baja California's emerging water scarcity issues, promote future cross-border investments in water resource management solutions including water conservation and water re-use.

• Prioritize reduction of croplands in the Mexicali Valley to reduce water scarcity risks. Consider the application of a water use augmentation tax to incentive water conservation and help finance future water re-use projects.

Investment Promotion:

• Revive Pro Mexico, establishing a "One-Stop Shop" to reduce regulatory delays (federal, state, local) for potential nearshore investors.

Baja California

Investment Promotion:

•Medical Device: Leveraging CaliBaja's comparative advantages, identify and invite medical device companies to manufacture medical devices and surgical equipment deemed vulnerable in the U.S. supply chain.

• Printed Circuit Boards (PCBs): Partner with the Mexican Business Council in establishing a pilot program in Baja California to incentivize the manufacturing of basic PCBs based on design capabilities already available in Mexico to incentivize foreign suppliers, particularly from Taiwan, to locate in the state.

• Semiconductor Assembly, Test & Packaging (ATP): Establish a regional cross-border strategy for attracting ATP facilities and component production to Cali Baja, leveraging the region's proximity to chip fabrication facilities in California and Arizona.

• Promote cross-border integration of the Inland Empire's logistics hubs linked to the San Bernardino and Ontario International Airports.

• Pursue opportunities to strengthen the availability of Baja California's skilled workforce, such as establishing cross-border academic partnerships and a vocational training program for incoming migrants with the support of USAID and the multilateral development banks.

Infrastructure:

• Develop the Port of Colonet and cross-border rail links to expand import-export opportunities for manufacturing.

• Invest in CaliBaja's commercial EV charging infrastructure to prepare for California's new EV regulatory mandates. Also, respond to other challenges (including new vehicle financing) related to the readiness of Mexican drayage vehicles to legally cross into California when the state's regulatory mandates go into effect after 2035.

Security:

• To counter organized crime and the lure of cartels, promote community-based solutions, including providing meaningful educational and vocational alternatives to at-risk youth and adults.

• Invest in better pay, capacity building and the professionalism of state and local police forces in Baja California and consider the adoption of body cameras to be adopted by police in the state to re-build trust and accountability with the community.

U.S. Government

• Classify medical equipment, essential medicines and PCBs as essential economic activities that must take place in the U.S. or Mexico to ensure crisis preparedness in the case of a U.S. national emergency. This would spur investments to promote supply chain resiliency.

California

Biosimilar Manufacturing:

• To leverage San Diego's unique life science cluster, consider incentivizing the establishment of a biosimilars manufacturing facility in San Diego County.

• Establish a cross-border industry council to prioritize and coordinate workforce development initiatives in the CaliBaja region.

San Diego & Imperial Counties

Biosimilar Manufacturing:

• To catalyze the potential of biosimilar manufacturing in the Cali Baja region, consider establishing a not-for-profit public benefit company leveraging the cross-border region's strengths and incentives offered by the State of California under SB-852 and CALRx.

Workforce Development:

• Promote expanded cross-border workforce development opportunities for critical industries (electronics, life sciences, advanced manufacturing) and encourage expanded enrollment of Baja California students in San Diego & Imperial County area community colleges leveraging the in-state tuition benefits of AB 910.

Sustainable Transportation:

• Improve mobility for cross-border commuters through the proposed binational trolley, San Diego-Ensenada ferry projects and expedited border crossings for pedestrians.

Cali Baja

• Promote innovative design through the San Diego-Tijuana World Design Capital 2024 to improve livability in the San Diego-Tijuana border region in the areas of affordable housing, green building design, transportation infrastructure, and water resource management with an emphasis on water re-use innovations for Baja California.

IX. Conclusion: A Regional Call for Action

Supply chain disruptions caused by the global pandemic and U.S.-China tensions have prompted a growing number of U.S. and third country manufacturers to actively pursue investments in the United States and Mexico. If key Cali Baja government, business, and civic leaders come together to address the binational region's emerging challenges and proactively seize this window of opportunity, the region has the potential to get more than its fair share of nearshoring capital flows expected to come to North America over the next five years.

To realize CaliBaja's full economic potential, a cross-border call for action is required to catalyze long-range thinking and planning, collaboration, engagement, and additional investment. As a next step, we recommend establishing a CaliBaja 2030 Task Force consisting of business, civic and academic leaders from across the CaliBaja region with specific work groups focused on economic development, workforce & human capital development, natural resources (water and energy), transportation, security, and urban & regional planning (including green building design). To promote efficiency and avoid duplication, the proposed task force should seek to leverage existing workgroups and task forces in the CaliBaja region.

Near-term, an effort should be made to position Baja California's maquiladora trade association, INDEX-Zona Costa B.C. to partner with the U.S. CEO Dialogue and Mexico's Business Coordinating Council (CCC) in order to include Baja California as part of their planned pilot programs. Doing so will catalyze nearshoring investment in medical devices and PCBs. The re-establishment of one-stop-shop organizations to facilitate these initiatives should also be a priority, by the next President of Mexico.

To promote innovative cross-border design & technological solutions focused on best-in-class manufacturing, facility construction, housing, transportation, civic spaces, and water resource management, the San Diego-Tijuana World Design Capital-2024 Conference should be leveraged to inspire innovators from around the world to promote lasting and transformative change in the CaliBaja region. North America's once-in-a-generation nearshoring wave of investment is now upon us. The question remains, will CaliBaja seize the opportunity?

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[VI] Supply Chain Strategies and Nearshoring Opportunities in the Americas, U.S. Chamber of Commerce/IPSOS, October 2023, page 3
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