

**TOWARD A TRADE INFRASTRUCTURE STRATEGY  
FOR THE SAN DIEGO/TIJUANA REGION**

*Briefing Paper*

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Prepared by:

Steven P. Erie  
Associate Professor of Political Science  
University of California, San Diego

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## **Executive Summary**

### ***Introduction***

This study continues the binational conversation initiated by San Diego Dialogue in the early 1990s concerning the trade infrastructure strategies, projects and institutional mechanisms best suited to improving the San Diego/Baja California region's global competitiveness. It assesses (a) the region's trade status and growth potential; (b) infrastructure, expansion plans and priorities; (c) economic development strategies; and (d) planning and governance mechanisms, including efforts at binational cooperation.

We also seek to reframe and reinvigorate the regional debate by highlighting the infrastructure strategies of other areas with similar trade and development aspirations such as Los Angeles, the Bay Area and Seattle. The focus is upon transportation--airports, highways, border crossings, ports and railways--rather than telecommunications, thus reflecting the region's comparative disadvantage and challenge.

To realize the cross-border region's trade and development potential, improvement of the region's airports, highways and land ports of entry must be made top priorities. International airports are critical for regions such as San Diego seeking to expand export-oriented high-tech sectors such as telecommunications, computer software, electronics manufacturing and biotechnology. Full international and air cargo service for the region could generate billions of dollars in new high value-added economic opportunity.

For Tijuana's export-oriented maquiladora sector, whose products primarily are shipped by truck to the Western states, the chief priority should be improving the region's highway system and border crossings. However, if the export market significantly expands, and rail linkages such as the San Diego and Arizona Eastern are re-opened, there may be future incentive to ship by rail.

Greater binational cooperation in infrastructure planning also should be made a top regional priority. Cooperative challenges are heightened by cross-border socio-economic disparities, sovereignty concerns and fragmented governance

mechanisms. Yet, given the region's strong trade potential and manifest infrastructure needs, what is needed now is a creative and sustained effort to develop the appropriate institutional mechanisms, insulated from the frequently shifting local political winds, needed to ensure long-term and effective binational infrastructure planning and possibly governance.

The study's major findings and recommendations are as follows:

### ***Major Findings***

- 1) The San Diego/Baja California region has significant unrealized trade potential. Exports—manufacturing and services—appear to account for only 8-10 percent of San Diego regional economic activity compared to 15 percent for Los Angeles and one quarter for the Bay Area and Seattle.
- 2) The San Diego/Tijuana area lags behind other West Coast trade centers both in infrastructure capacity and expansion plans. While Los Angeles has massively invested in its port, rail and airport system, the cross-border region has not, thus forcing heavy local reliance upon the Ports of San Pedro Bay and Los Angeles International Airport (LAX). For 1996-2000, the Los Angeles region is spending \$4.3 billion, the Bay Area \$3.2 billion and Seattle/Tacoma \$1.5 billion on port, rail and airport development to increase Pacific Rim trade. In contrast, the San Diego/Tijuana region is spending less than \$400 million.
- 3) Lindbergh Field's lack of adequate international, long haul and air cargo capacity results in significant opportunity cost to the region's economy. Even with \$238 million in new terminal, parking and ground-access improvements, Lindbergh Field's limited size and single runway make it unable to meet one-quarter of the region's current air passenger demand and between one-half and two-thirds of its air cargo needs. Most of this latent demand is met by the L.A. airport system, particularly by LAX and Ontario airports.
- 4) There are serious risks and costs to the cross-border in continuing to rely upon L.A. area airports, where expansion efforts are mired in controversy and delay. The \$8-12 billion LAX Master Plan faces strong community and environmental opposition as does a proposed international airport at El Toro. Increased freeway congestion will nearly double travel times to L.A. airports by year 2020. Furthermore, the large number of commuter flights from Lindbergh Field to LAX creates serious inefficiencies at both airports.

- 5) Yet if appropriate local infrastructure is built, forecasts for the cross-border region, 1996-2020, show a robust trade future. San Diego international air passenger demand is projected to grow by 250 percent, air cargo will increase nearly 400 percent and maritime cargo by 244 percent. For this period, U.S./Mexican trade through the California land ports of entry is projected to increase by 262 percent.
- 6) Rodriguez Field, Tijuana's soon-to-be-privatized airport, also forecasts strong growth. By 2020, with a projected 150 percent increase in domestic passenger demand, Rodriguez would serve 7.8 million annual passengers (MAP). Under the most optimistic growth scenario, the airport would feature a second runway, regular air service to Asian destinations and overflow passengers from Lindbergh Field. If these conditions were met, Rodriguez Field could provide service for nearly 700,000 Pacific Rim passengers and 12 million San Diego origin-and-destination passengers by 2020.
- 7) International airports are critical for regions such as San Diego seeking to facilitate the development of high-tech industries. Recent research in Orange County shows that the area's high-tech firms having among the highest air travel rates, airport travel time sensitivities and air cargo utilization rates of any industry. Knowledge-based economies depend upon three pillars: world-class research universities, superior quality of life and proximity to an international airport. The realities of global competition dictate that firms must develop systems of production and distribution that are highly synchronized, thus placing a premium on proximity to airports that effectively handle time-sensitive cargo.
- 8) Airports contribute more than nearly any other local investment to high value-added growth. The development of airport facilities needed to meet the San Diego/Baja California region's projected 2020 demand for air travel and cargo would generate \$4-5 billion in new regional economic opportunity and add 87,000 new jobs to the local economy. Greater international tourism could yield another \$350 million.
- 9) Highways and efficient land ports of entry are critical because the San Diego/Tijuana trade flow is predominantly "north/south." San Diego's exports are NAFTA-oriented, with 44 percent to Mexico and nine percent to Canada compared to only 23 percent to East Asia. Nearly all of Tijuana's export trade is with the United States. Thus for the cross-border region, the land ports-of-entry and connecting highways form the primary backbone of the trade transportation system.

- 10) Adequate highways and land ports of entry are the chief infrastructure needs of the maquiladora industry. Nearly 90 percent of the northbound freight originating in Mexico is carried by truck and this is likely to continue. Within 500 miles, trucks are a more economical mode of transportation than rail, and currently there are no direct rail infrastructure linkages to the maquiladora plants. Moreover, the San Diego and Arizona Eastern rail project continues to be stalled.
- 11) Highly fragmented governance systems on both sides of the border impede binational cooperation in infrastructure planning and management. In San Diego, port, rail and airport decision making is in the hands of multiple agencies with limited-purpose authority. In contrast, Los Angeles, Long Beach, San Francisco and Oakland feature infrastructure decision making by city agencies with comprehensive authority.
- 12) Keys to success in cross-border planning are a belief in a common regional destiny, adroit leadership and patience. Examples of successful cross-border planning such as the Regio-Basiliensis in Basil, Switzerland, where a tri-national airport was built and jointly operated, show that cross-border efforts appear to work best when done gradually. Informal meetings serve as an initial point of departure from which to construct long-term relationships culminating in the formation of more permanent cross-border institutions.

### ***Recommendations***

- Given the region's strong trade potential and manifest infrastructure needs, it is critical that policymakers sustain efforts to prioritize and coordinate the development of the region's trade infrastructure. In terms of binational cooperation, the creation of a local Binational Liaison Mechanism to examine border crossings and connecting highways, as well as the 1996 binational agreement to develop a joint cross-border transportation plan, are encouraging signs. However, a more sustained, systematic process specifically designed to overcome the obstacles to cross-border regional planning needs to be created. Piecemeal and episodic bursts of activity will not result in a binational region-state equipped with the infrastructure needed to compete in the twenty-first century global economy.
- The region's policymakers and stakeholders need to adopt a more comprehensive Southern California perspective as well as binational perspective on trade infrastructure. Port, rail, airport and highway projects

throughout the greater Southern California/Baja California region will define our competitive opportunities and constraints. Expansion plans for Los Angeles trade infrastructure are of particular importance because at present most San Diego/Tijuana Pacific Rim trade passes through the Los Angeles/Long Beach ports and LAX.

- Utilization of better data and analytic tools also is needed for more comprehensive and strategic infrastructure planning. Because institutional fragmentation is greatest in airport planning, policymakers should consider using analytic tools such as the Regional Airport Demand Allocation Model (RADAM), which provides air passenger and cargo distributions, and ground access and land use impacts for alternative airport sites. In addition, policy makers need to understand better the effects of trade on local employment, including estimates of the regional jobs generated by export-oriented industries and by specific trading partners such as Mexico or Japan. Such analyses are useful because they help to show the local employment vulnerabilities to trade shocks such as the Mexican peso devaluation or the Asian economic crisis. Policymakers also need to assess the relationship between globalization and inequality in the cross border region.

## Introduction

This briefing paper continues the binational conversation concerning trade infrastructure strategies, projects and institutional mechanisms best suited to improving the cross-border region's global competitiveness. Initiated by San Diego Dialogue in the early 1990's, the conversation has been wide ranging. It has included discussions of a possible binational airport, a study of binational economic development and transportation infrastructure needs, and a proposed binational planning process and border development corporation. In June 1998, it involved a San Diego Dialogue program featuring Professor John Kasarda's presentation on the global business logistics revolution and the importance of air cargo airports to regional competitiveness. The workshop's briefing paper examined recent trade patterns in the cross-border region and assessed the status of local port, rail and airport projects and facilities. It concluded with a call for further research and dialogue concerning trade, infrastructure, development and binational planning in San Diego-Tijuana and other cross-border regions.<sup>1</sup>

With critical infrastructure decisions being made in the region, this is a propitious time to extend the dialogue. There are ongoing master planning efforts of the San Diego Unified Port District at Lindbergh Field and the Port of San Diego designed to guide airport and port development to the year 2020. The Port of Ensenada has been privatized, and Rodriguez Field is about to be auctioned. There are proposals for a trans-border passenger terminal at Rodriguez Field, and for an all-cargo airport at Brown Field. TEA 21, the recent federal transportation legislation, provides start-up funding for projects such as SR 905, linking the Otay Mesa port-of-entry and I-805, and for a rail yard for the San Diego and Arizona Eastern (SD&AE) railway. The Mexican portion of the SD&AE line has been auctioned, although the bidding process may be re-opened. Several of these projects offer opportunities for binational cooperation.

What is needed now is a more comprehensive trade infrastructure strategy for the cross-border region. Such a plan would (a) assess current trade flows and their value-added to the local economy; (b) project future trade growth; (c) inventory infrastructure facilities and projects in terms of their capacity to handle trade growth; (d) prioritize transportation modes and projects in terms of their ability to achieve the region's trade-related development objectives; and (e) identify the planning and institutional mechanisms --including various forms of binational cooperation-- needed to develop and manage these facilities.

This paper provides a baseline for such a strategy by synthesizing the state of our knowledge with respect to these issues. Based upon the author's research on international trade and port, rail and airport development in Southern California, the paper seeks to reframe and reinvigorate the local debate by asking a broader set of comparative questions concerning the linkages between regional trade, development, infrastructure and planning. To date, the binational conversation has

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<sup>1</sup> See San Diego Dialogue, *San Diego's Airport Options* (1991); *Planning for Prosperity in the San Diego/Baja California Region* (1993); and "Improving Trade Infrastructure for a More Competitive Binational Region," (June, 1998).

focused upon developments within the cross-border region. Yet, the San Diego/Tijuana dialogue can be enriched by understanding the infrastructure planning debates, strategies and institutional mechanisms of regions with similar trade and development aspirations or along cross-border frontiers.<sup>2</sup>

The paper is organized into three sections. The first section benchmarks the cross-border region's trade patterns and projected trade growth, and its infrastructure and expansion plans, with the major West Coast trade and transshipment centers--Los Angeles, the Bay Area and Seattle. Los Angeles's expansion plans and constraints are given particular scrutiny because at present most San Diego-Tijuana Pacific Rim trade passes through the Los Angeles/Long Beach ports and Los Angeles International Airport (LAX). Thus, the region's policymakers and stakeholders need to gauge other Southern California port, rail and airport projects because of their possible effects on the cross-border region.

The second section links the cross-border region's infrastructure priorities to its development strategies. The focus is upon San Diego's "Prosperity" or "New Economy" strategy and Tijuana's industria maquiladora sector. What infrastructure investments best support San Diego's export-oriented high-tech sectors? Here we focus on the value of an international gateway airport. What are the opportunity costs of the region's limited airport facilities and what economic benefits would a gateway airport bring to the cross-border region? What can we learn from airport debates in comparable high-tech regions such as Silicon Valley and Orange County? What are the substitution effects on air travel of emerging technologies such as telecommunications and high-speed rail? What trade infrastructure investments most benefit Tijuana's maquiladoras, particularly as NAFTA "rules of origin" requirements change in 2001? Here the analysis shifts to the relative value of highway, border crossing, port and rail investments.

The third section examines the planning and governance mechanisms for infrastructure decision-making in the cross-border region, and assesses the prospects for greater binational cooperation. We identify the kinds of planning data and tools needed, and evaluate current planning and governance mechanisms. In particular, the coordination problems created by the region's highly fragmented system of infrastructure decision making are considered. We also survey the limited research on transborder infrastructure planning. Although transborder planning and facility management are still in their infancy, we identify the conditions under which cross-border institutions have been created and highlight the predominant mechanisms. The Appendix furnishes a detailed status report on the San Diego/Tijuana region's airport, highway, border crossing, port and rail facilities and projects.

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<sup>2</sup> See Steven P. Erie, *International Trade and Job Creation in Southern California: Facilitating Los Angeles/Long Beach Port, Rail, and Airport Development* (Berkeley: The California Policy Seminar, 1996); "Facing the Challenges of Expanding Southern California's Global Gateways," (with Edward Rodriguez), in Gregory F. Treverton and Abraham F. Lowenthal, eds., *Making the Most of Southern California's Global Engagement* (Los Angeles: Pacific Council on International Policy, forthcoming); and *A New Orange County Airport at El Toro: An Economic Benefits Study* (with John Kasarda and Andrew McKenzie) (Irvine: The Orange County Business Council, 1998).

In terms of trade infrastructure, the focus here is upon transportation systems--airports, highways, border crossings and railways--rather than telecommunications. This choice reflects the author's competencies as well as the region's comparative advantages and disadvantages. While San Diego is on the cutting edge of the telecommunications revolution, it remains at a disadvantage with its limited port, rail and airport facilities. Given recent NAFTA-related telecommunications developments such as Leap Wireless's acquisition of Qualcomm's joint-venture and equity interests in a wireless phone system for Mexico in partnership with a subsidiary of Mexico's Televisa (the world's largest Spanish-language broadcaster), telecommunications' trade potential is a topic worthy of an extended regional conversation. Also meriting separate discussion are other important regional infrastructure issues, such as water and energy development, which vitally affect the cross-border economy. These topics will be addressed in future Forum *Fronterizo* programs of San Diego Dialogue.

### **Benchmarking the Cross-Border Region's Trade and Infrastructure**

**Trade:** What role does international trade play in the cross-border economy--at \$100 billion, the world's 36th largest--compared to other West Coast regions? Comparisons are difficult to make because there has been little input-output modeling of trade's role in the San Diego economy, let alone for the cross-border region. However some rough order-of-magnitude estimates can be made with available data. Despite impressive international export growth in the 1990's, the \$90 billion San Diego County economy is more insulated from the global marketplace than other West Coast trade centers. The best estimates are that foreign exports--merchandise trade and services--appear to account for only 8-10 percent of the San Diego economy, compared to 15 percent for the five-county Los Angeles economy, and one-quarter for the export-oriented, high-tech Bay Area and Seattle economies.

While this implies that San Diego is a trade laggard, it also suggests that the region has significant unrealized international trade growth potential. In addition, it underscores the continued importance of San Diego's domestic exports to other regions of the country. In the early 1990's, San Diego's inter-regional domestic exports were three times as large as its foreign exports, and Los Angeles was a bigger trading partner than Mexico. Yet given the substantial growth in Mexican trade in the 1990's, new research needs to be conducted on the current roles of foreign and domestic trade in the San Diego economy, and on their respective trade infrastructure requirements.

Reliable data on the size of the Tijuana/Tecate economy and the relative role of exports is difficult to obtain. The best estimates suggest that the Tijuana economy is one-tenth the size of San Diego's--or \$9 billion--and is highly export-oriented. The two leading export sectors are the

maquiladoras and the large service industry which consists of tourism, medical services, etc. The export share of the Tijuana/Tecate economy appears to approach 70 percent.<sup>3</sup>

More work is needed to determine the value of foreign trade to various sectors of the cross-border economy. Professor Lisa Grobar of CSU Long Beach has developed a potentially useful methodology, based upon regional input-output analysis, for estimating direct and indirect export-related local employment impacts, both for manufacturing and service (including travel) exports. The model furnishes an estimate of the regional trade jobs generated by industry category and by export trading partners such as Mexico or Japan. The trading partner analysis is useful because it shows the local employment vulnerabilities to trade shocks such as the Mexican peso devaluation or the Asian economic crisis. For example, Grobar shows for Los Angeles that a 15 percent drop in exports to Asia could cost the region 50,000 jobs. While the model has been applied to Los Angeles, it could be used to analyze the San Diego/Tijuana economy.<sup>4</sup>

Similarly, Professor Manuel Pastor, Jr. of UC Santa Cruz has developed a methodology for determining regional trade winners and losers. While exports generate trade winners, import substitution and local production displacement create trade losers. Pastor's model uses national-level export share or trade balance data for various industries applied to employment patterns at the neighborhood level to examine the localized labor market effects of trade and industrial mixes. Neighborhoods are categorized as relative trade winners or losers on the basis of whether they fall above or below the region's trade and industry averages. Applied to 58 neighborhoods in Los Angeles County to test the relationship between globalization and inequality, Pastor's model could be employed in the cross-border region to test the effects of NAFTA.<sup>5</sup>

The San Diego/Tijuana region has a different foreign trade profile than other West Coast trade centers, and this difference has implications for regional infrastructure planning. In terms of exports, San Diego's trade is NAFTA-oriented--44 percent goes to Mexico and 9 percent to Canada, and only 23 percent is shipped to East Asia. In contrast, Los Angeles, the Bay Area and Seattle chiefly export to the Pacific Rim. (These regional export differences suggest different local vulnerabilities to trade shocks from Mexico compared to East Asia.) For Tijuana, the primary export market is the United States, with a majority of exports being shipped to the Western states. In terms of imports, San Diego's chief trading partner is Mexico. Yet, San Diego is a transshipment center more than an import destination. Most Mexican imports are trucked through San Diego to other destinations, particularly in California. In contrast, other West Coast trade centers chiefly import from the Pacific Rim, with a majority of imports transshipped to

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<sup>3</sup> See Kathryn Kopinak and Gustavo del Castillo V., "Economic Linkages Across the U.S.-Mexico Border: Tijuana-San Diego and the World Economy." Paper delivered at the 1998 Meeting of the Latin American Studies Association, Chicago, Illinois, September 14-15, 1998.

<sup>4</sup> Lisa M. Grobar, "Estimates of Export-Related Employment for Southern California," (Long Beach: Office of Economic Research, CSU Long Beach, January 1998).

<sup>5</sup> Manuel Pastor, Jr., "Advantaging the Disadvantaged Through International Trade," in Treverton and Lowenthal, *Making the Most of Southern California's Global Engagement* (forthcoming).

Eastern destinations. As for Tijuana, its chief import partners are the Pacific Rim--roughly one-half of maquiladora core components are shipped from East Asia--and the United States.

While San Diego/Tijuana trade flows predominantly are north/south, for other West Coast trade centers the flows primarily are east/west. Thus for the cross-border region, the land ports-of-entry and connecting highways form the primary backbone of the trade transportation system. For Los Angeles, the Bay Area and Seattle, however, port, rail and airport facilities represent the chief import/export platform.

The cross-border region appears to have a robust trade future. With the current master planning processes at Lindbergh Field and the Port of San Diego, and SANDAG's ongoing study of cross-border transportation impacts, the region is beginning to generate the long-term trade forecasts required for proper infrastructure planning. Recent forecasts from the Lindbergh Field and Port of San Diego Master Plans suggest that if adequate facilities are built, there will be strong trade-related growth in the region. Table One shows projected San Diego international air passenger, air cargo and maritime cargo growth, 1996-2020.

	Actual	Forecast			Projected Increase
	1996	2000	2010	2020	1996-2020
<b>International Passengers</b>					
to Canada (existing routes)	19,096	22,000	31,000	39,000	
to Mexico (existing routes)	85,298	102,000	156,000	219,000	
to Europe (existing route)	9,842	12,000	17,000	23,000	
to New Destinations	0	10,000	50,000	119,000	
<b>Total International Passengers</b>	<b>114,236</b>	<b>146,000</b>	<b>254,000</b>	<b>400,000</b>	<b>250%</b>
<b>Air Cargo (tons)</b>	<b>72,725</b>	<b>98,942</b>	<b>187,474</b>	<b>355,241</b>	<b>388%</b>
<b>Maritime Cargo (metric tons)</b>					
Container Cargo	107,000			2,158,000	1917%
Non-container Cargo	1,206,000			2,353,000	95%
<b>Total Maritime Cargo</b>	<b>1,313,000*</b>			<b>4,511,000</b>	<b>244%</b>
* FY 1997/1998					

<sup>6</sup> Air passenger and air cargo data from the Executive Summary of the *San Diego International Airport Master Plan: Working Paper Two – Aviation Forecasts* (December 1998), pp. 12-15. Maritime cargo data from the Port of San Diego and Booz-Allen & Hamilton.

While SANDAG projects a 39 percent population increase for San Diego County, 1996-2020, the Airport Master Plan's unconstrained forecast (which assumes needed aviation facilities will be built) to year 2020 is that air passenger demand will double, from 14 million annual passengers (MAP) to 28 MAP. However, international air passenger demand--which includes service exports such as business travel and tourism--is expected to grow by 250 percent. Over 40 percent of the increase will be to new destinations in Europe, Asia and Latin America. At the same time, air cargo tonnage is forecast to grow 388 percent. While no separate estimate for San Diego international air cargo growth is available, projections for the rest of Southern California are that global air cargo demand will grow two and one-half times faster than domestic air cargo, rising from the current one-third share to one-half of total air cargo shipped by 2016. Whether this will be the case for San Diego is not known. The port master plan also forecasts a robust growth scenario--a 244 percent increase in vessel cargo tonnage, 1996-2020, assuming that needed facilities are built. Container cargo is projected to generate nearly two-thirds of total port cargo growth, 1996-2020, and will require a direct eastern rail connection such as the SD&AE line.

There also are strong population and trade growth projections for Baja California. While Baja California's population is forecast to grow by 160 percent, 1995-2020, the Tijuana/Tecate/Playas de Rosarito area will experience the State's highest growth rates--230 percent, from 1.1 million to 3.6 million. By 2020 Ensenada's population is projected to increase by 150 percent, while Mexicali is forecast to grow by 64 percent. For the Port of Ensenada, which is focusing upon container cargo, the number of containers is projected to increase by 200 percent, 1998 to 1999, as a new 300-meter berth is completed and two quay cranes are placed in service. Longer-term cargo forecasts should be available in 1999.<sup>7</sup>

Rodriguez Field, which soon will be privatized, also forecasts strong growth. At present, the airport is a 3.2 MAP facility with limited international service to Los Angeles and Havana. San Diego travelers represent one-third of Rodriguez's current passenger load. By 2020, domestic passenger demand is expected to grow to 7.8 MAP--a 150 percent increase. International passenger growth is much more difficult to estimate. In the most optimistic growth scenario--featuring a second runway, regular air service to Asian destinations, and Lindbergh Field capacity constraints--Rodriguez Field could provide air service for nearly 700,000 Pacific Rim passengers and 12 million San Diego origin-and-destination (O&D) passengers by the year 2020. Should any of the three assumed conditions fail to materialize, however, growth in these markets could be much less. At present, air cargo service is provided by private charters and there are no air cargo projections. However, as part of the auction process, teams bidding for the airport concession are expected to provide master plans detailing passenger and air cargo forecasts.

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<sup>7</sup> INEGI, *Baja California: Tabulados Basicos del Censo de Poblacion y Vivienda 1995* (1996); and maritime data from the Port of Ensenada.

Most current U.S./Mexican trade relies upon surface transportation, particularly the highway system. Table Two shows the projected growth in U.S. merchandise trade with Mexico moving through all California ports by mode of transportation, 1996-2020.

<b>Table 2</b>					
<b>Growth in U.S. Merchandise Trade with Mexico<sup>8</sup></b>					
<b>All California Ports by Mode, 1996-2020</b>					
<b>(In billions of 1996 dollars)</b>					
	Actual	Forecast			Projected Increase
	1996	2000	2010	2020	1996-2020
<b>Exports</b>					
By Truck, Rail & Pipeline (89%)	\$6.85	\$10.13	\$17.71	\$29.19	
By Air & Sea (11%)	0.85	1.25	2.19	3.61	
<b>Total Exports</b>	<b>7.70</b>	<b>11.40</b>	<b>19.90</b>	<b>32.80</b>	<b>326%</b>
<b>Imports</b>					
By Truck, Rail & Pipeline (88%)	9.12	11.75	18.39	28.78	
By Air & Sea (12%)	1.24	1.60	2.51	3.93	
<b>Total Imports</b>	<b>10.40</b>	<b>13.40</b>	<b>20.90</b>	<b>32.70</b>	<b>214%</b>
<b>Total Merchandise Trade</b>	<b>18.10</b>	<b>24.80</b>	<b>40.80</b>	<b>65.50</b>	<b>262%</b>

U.S. exports by value are expected to grow a robust 326 percent while Mexican imports are projected to grow by 214 percent. These trade forecasts will place an enormous strain on the surface transportation system in Southern California and Mexico. For both exports and imports, nearly 90 percent of the value of goods moving between California and Mexico is transported by surface mode--truck, rail, or pipeline--via California's four commercial border ports: Otay Mesa, Tecate, Andrade and Calexico. Between 1996 and 2020, the projected value of total surface trade through the four border ports is expected to grow by 262 percent, from \$16 billion to \$58 billion. Truck traffic may grow at an even faster rate than rail and pipeline shipments. The Southern California Association of Governments (SCAG) has projected a 300 percent increase in Mexican origin-and-destination truck traffic in their six-county planning area (Los Angeles, Orange, Ventura, San Bernardino, Ventura and Imperial Counties), 1992-2015.<sup>9</sup>

**Infrastructure:** While the conventional wisdom holds that international trade flows are driven by global trade agreements, international currency markets, national trade and fiscal policies, and corporate sourcing decisions, new understandings are emerging of the potent stimulus provided by a superior import/export infrastructure. In an era of growing free trade and just-in-time manufacturing and delivery, regions are becoming multimodal transportation centers speeding the flow of people, goods, information and finance throughout the world economy. Metropolitan

<sup>8</sup> Data from SANDAG, *State Route 94 Corridor Tecate Port of Entry: Trade and Truck Traffic* (July, 1997), Table 14.

<sup>9</sup> See SCAG, *The NAFTA Transportation Impacts in SCAG Region Study* (July 1996).

areas which build a world-class transportation infrastructure enormously strengthen their competitive advantage in the global economy and raise hurdles to the entry of competing regions.

In terms of its trade infrastructure, the cross-border region is at a comparative disadvantage. While the San Diego/Tijuana region's 20-year trade growth potential compares favorably to Los Angeles, the Bay Area and Seattle, this potential may not be realized because of the region's infrastructure deficiencies. Despite encouraging signs, the cross-border region seriously lags behind other West Coast regions both in infrastructure capacity and expansion plans. Building upon already extensive port, rail and airport facilities, the other trade centers are engaged in massive expansion programs. For 1996-2000, the Los Angeles region is spending \$4.3 billion, the Bay Area \$3.2 billion and Seattle/Tacoma \$1.5 billion on port, rail and airport development to increase Pacific Rim trade. In contrast, the San Diego/Tijuana region's capital spending on such projects has been less than \$400 million.

The cross-border region's trade infrastructure facilities and projects are discussed in the Appendix and will not be examined in detail here. In the case of port, rail and airport development, the region's ongoing planning efforts need to be placed in a broader Southern California context. The Los Angeles/Long Beach port, rail and airport system serves as the Pacific Rim transportation hub not only for the L.A. region but also for San Diego and Imperial Counties and northern Baja California. Owing to its physical constraints--limited size, a single 9,400 foot runway--Lindbergh Field is unable to meet one-quarter of the region's current air passenger demand and between one-half and two-thirds of its air cargo demand. A significant share of San Diego's international passenger needs and most of its global air cargo demand is met by LAX. Approximately 90 percent of the vessel cargo shipped to and from the cross-border region goes through the Ports of San Pedro Bay. For example, the maquiladora industry has its component parts shipped from East Asia through the Los Angeles/Long Beach ports, which then are transported in-bond by truck to border plants. Lacking a direct rail connection to the East, the cross-border region's rail shipments are routed through Los Angeles, which has three transcontinental lines linking its ports with the rest of North America.

One could argue that the cross-border region's reliance on the Los Angeles port, rail and airport system is efficient. These are world-class facilities offering a breadth of service unavailable locally. Accessible to this region, these facilities have reduced the need for sizable local capital investments in port, rail and airport facilities. The Ports of Los Angeles and Long Beach are the nation's two largest container ports; combined, they are the world's third busiest facility, handling one-quarter of the nation's international waterborne commerce. L.A.'s rail lines, with the best connections on the Pacific Coast, handle nearly 70 percent of total West Coast vessel cargo shipped by rail. LAX is the world's fourth busiest airport and second busiest air cargo facility.

The incentives for cross-border port, rail and airport development and collaboration are likely to be affected by Los Angeles's ambitious trade infrastructure program. This program--the nation's largest--includes (a) the \$4 billion program of Los Angeles and Long Beach port

development; (b) the \$2.3 billion Alameda Corridor separated-grade rail project linking the ports to the downtown railheads; (c) the proposed \$1 billion Alameda Corridor East rail project from the downtown railyards through the San Gabriel Valley; (d) the \$8-12 billion LAX Master Plan designed to increase airport capacity from 60 MAP to 94 MAP; and (e) Ontario International Airport expansion and plans to convert El Toro and other former military bases such as March AFB into international and cargo airports.

These expansion plans deserve careful scrutiny by the region's policymakers and stakeholders. L.A. port and rail expansion is furthest along and generally remains on schedule. Given consolidation both in the shipping and port industries, the Ports of San Pedro Bay have emerged as the region's load center ports, limiting local ports such as San Diego and Ensenada to smaller niche markets. With recent groundbreaking on the Alameda Corridor rail project, the L.A. area ports are consolidating their dominant market share of Pacific Rim trade. While it may be efficient for the cross-border region to rely upon L.A. port and rail expansion, this strategy is not without its trade offs. By piggy-backing on L.A. facilities, San Diego/Tijuana forfeit a measure of control over their economies.

Unlike port and rail expansion, L.A. airport development is fraught with uncertainties. LAX expansion and competitiveness are highly uncertain. Already long delayed, the LAX Master Plan faces strong community and environmental opposition. At \$8-12 billion (or more), this is the nation's most expensive airport expansion, and the airlines plan to pass the costs on in the form of higher fares. Ontario Airport faces state air-quality ceilings on flight operations, which quickly are being approached. A recent court decision stiffening regional air-quality standards could adversely affect Ontario expansion. While the Orange County Board of Supervisors has approved El Toro, a former Marine air base, as an international airport capped at 24 MAP, its conversion threatens to be seriously delayed or even prevented by determined opposition from neighboring residents. With growing freeway congestion, ground access to L.A. area airports is a serious problem. Regional planners estimate that travel times nearly will double between 1998-2020, on already-crowded thoroughfares such as I-405, I-5, I-15, SR 91 and I-10 that link the cross-border region to LAX, Ontario and other Southern California airports.

Thus, while it may be cost efficient for the cross-border region to continue to rely upon the Los Angeles port and rail system, the same cannot be said for its airports. Constraints on L.A. airport expansion and ground access threaten to impose major costs on travelers and businesses throughout Southern California. Our study of a proposed Orange County airport at El Toro shows these potential costs. Even under a best case "unconstrained" scenario, where expansion at LAX and Ontario is not limited and new airports such as March and Palmdale are developed, 560,000 Orange County passengers by year 2020 would be forced to use airports outside Southern California for long-haul and international flights if a 24 MAP international airport is not built in Orange County. Due to growing freeway congestion, Orange County air travelers would experience 26.2 million annual hours of additional travel time trying to reach out-of-county airports, at a cost of nearly \$800 million annually. Should expansion at LAX, Ontario and other L.A. area airports be constrained, these costs would increase dramatically. While the cross-

border region is not as dependent upon L.A. airports as Orange County, regional policymakers and stakeholders should factor such risks and potential costs into local airport planning.<sup>10</sup>

Regional stakeholders also need to consider the growing inefficiency of LAX and Lindbergh Field because of the burgeoning number of commuter flights. Since airline deregulation, LAX has been turned into the hub airport for Southern California, with commuter flights now accounting for 34 percent of flight operations but only five percent of the passenger load. This creates serious inefficiencies because it takes as long to land a 30-seat commuter plane as it does a fully-loaded 747. At considerable expense, the LAX Master Plan proposes to build a separate commuter runway. Lindbergh Field, with a single 9,400 foot runway, also is burdened with inefficient commuter flights. Currently there are 76 commuter flights a day from Lindbergh to LAX. Lessening the cross-border region's reliance upon LAX could improve efficiencies at both airports.

In the cross-border region itself, the most immediate transportation bottleneck is the highway system to and from the border. Growth in cross-border trade has resulted in a dramatic increase in truck traffic, particularly through the Otay Mesa truck port-of-entry. Truck traffic and congestion have become acute problems on local streets such as Otay Mesa Road because of the lack of direct connections between border crossings and the interstate highway system. Key regional highway projects such as SR 905, a proposed four-lane highway linking the Otay Mesa border crossing with I-805, have been seriously delayed because of lack of funding. However, TEA 21, the recently passed federal transportation legislation, has broken the logjam by earmarking \$54 million in federal funding for the project.

### **Linking Infrastructure Priorities to Regional Development Strategies**

Regional infrastructure planning needs to be more closely linked to cross-border development priorities. SANDAG, the San Diego Regional Economic Development Corporation and the City of San Diego have unveiled development plans focused upon dynamic, export-oriented, high-tech, high-wage sectors of the local economy such as telecommunications, computer software, electronics manufacturing and biotechnology. For Tijuana, the industria maquiladora sector and consumer electronics manufacturing are the focal point of export-oriented development efforts. While these various plans have an infrastructure component, there have been few attempts in the region to prioritize infrastructure needs on the basis of regional development objectives. Although there remains disagreement over what are appropriate development goals for the region, for the sake of argument we accept here the emerging consensus on the importance of the "new economy" and ask what are its trade infrastructure requirements. We do the same for the maquiladora sector.<sup>11</sup>

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<sup>10</sup> Erie et al, *A New Orange County Airport at El Toro: An Economic Benefits Study* (October 1998).

<sup>11</sup> San Diego Association of Governments, *1998 Update: Evaluating Economic Prosperity in the San Diego Region* (January 1998); San Diego Regional Economic Development Corporation, *An Economic Development Strategy for*

**San Diego's High-Tech Economy and Gateway Airports:** As John Kasarda shows, regional trade infrastructure requirements are being driven by the changing nature of global economic competition. Increasingly, such competition is being conducted by 'virtual' corporations which depend upon speed and responsiveness to ever-changing customer demands for their competitive success. In an era of just-in-time manufacturing, flexible customization, and increasing economies of scope, manufacturers are being challenged to produce quality products at competitive prices and deliver their products to market at unprecedented speeds. Indeed, time-based competition is becoming as important a variable as quality and price in the global marketplace.<sup>12</sup>

To be responsive to the realities of global competition, firms must develop systems of production and distribution that are highly synchronized. These realities, in turn, dictate that region-states seeking to compete in the global economy must develop trade-enabling infrastructure to support firms with operations in their regions. Policymakers and other stakeholders developing trade infrastructure must recognize that a growing percentage of the customers served by firms in their region will be beyond the region's borders. These customers demand highly customized products delivered in a timely and predictable fashion.

According to Kasarda, the defining characteristic of twenty-first century trade infrastructure will be the development of integrated, "smart" multimodal transportation systems. These systems emphasize cross-docking facilities that link highways, railways, seaports and airports. The development of these systems will recognize the increasing importance of international or gateway airports--particularly those with air cargo capability--to contemporary global trade. Today, more than one-third of U.S. merchandise exports by value are shipped by air. High technology manufactured products are especially conducive to air shipment. Thus, for high-tech economies such as California's, over one-half of exports by value now are shipped by air. Airborne exports also include services, which account for one-fifth to one-quarter of total trade activity. Service exports are especially important to rapidly growing Southern California industries such as tourism, entertainment and professional/business services.

Gateway airports are critical for regions such as San Diego seeking to develop high-tech, knowledge-based economies. Research by David Birch shows that knowledge-based economies rest on such pillars as a world-class research university, superior quality of life and proximity to an international airport. In terms of the air transportation needs of the new economy, our research on a proposed El Toro airport in nearby Orange County, where the knowledge industry is a major driver of the local economy, suggests that the relationship between information technologies and air travel is more one of synergy rather than substitution. SANDAG's 1996 air

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*the San Diego Region*; and City of San Diego, *Charting a Course for the 21st Century: A Strategic Plan for San Diego's New Economy* (September 1997).

<sup>12</sup> John D. Kasarda, "Transportation Infrastructure for Competitive Success," *Transportation Quarterly*, Vol. 50, No. 1 (Winter, 1996); and Kasarda, "Innovative Infrastructure for Agile Manufacturers," *Sloan Management Review*, Vol. 39, No. 2 (Winter, 1998).

transportation study comes to a similar conclusion for this region. While information technology streamlines order taking, accounting, internal operations and production, air travel still is needed to make business contacts and close deals.<sup>13</sup>

Even in a knowledge-based economy using technologies such as teleconferencing, there are few substitutes for face-to-face meetings and the physical movement of goods. A recent passenger survey at LAX indicated that a majority of business travelers who use teleconferencing began to fly more after being introduced to the technology. In Orange County, computer-based firms have among the highest air travel rates, airport travel time sensitivities and air cargo utilization rates of any industry. Table Three shows the air trip generation rates for employees in high-tech manufacturing industries in Orange County.

Industry	Air Trips Per Year
Search, Navigation Equipment	9.00
Aircraft, Parts	8.24
Communications Equipment	7.99
Guided Missiles, Space Vehicles, Parts	7.90
Instruments, Measuring, Analyses	6.88
Computer, Office Equipment	5.99
Electronic Components, Accessories	5.02
<b>All High-Tech Industries</b>	<b>6.78</b>
<b>All Categories of Employment</b>	<b>1.78</b>

Thus, the region's high-tech workers have nearly four times the air travel rate compared to the average. They are 60 percent more sensitive to airport travel times. Orange County's high-tech businesses also have the highest requirements for overnight and express air cargo delivery--27 percent above the regional average.

The Bay Area graphically illustrates the air transportation needs of an export-based, high-tech economy. Sixty percent of the 2,500 largest computer and electronics companies in the world are located in Silicon Valley. High-technology products--computers, electrical equipment and instruments--account for 60 percent of the region's exports. These high value-added exports almost exclusively are shipped by air. While Silicon Valley heretofore has relied upon San Francisco International Airport (SFO), this has changed due to growing traffic congestion. As airport demand and travel time to SFO dramatically have increased, plans have commenced to

<sup>13</sup> David L. Birch, "The Q Factor," *National Civic Review* 76:4 (July-August 1987); and Cognetics, Inc., *Entrepreneurial Hot Spots: The Best Places in America to Start and Grow a Company* (1993); SANDAG, *Market Demand and Opportunities Study for Air Transportation in the San Diego Region* (March 1996).

<sup>14</sup> Data from Erie et al., *A New Orange County Airport at El Toro*, Table 3-7.

significantly expand nearby San Jose International Airport to accommodate a 150 percent passenger increase and a 288 percent growth in air cargo, 1997-2010. The expansion is strongly supported by local elected officials and business organizations in the Silicon Valley. A potential long-term competitive advantage of the Bay Area compared to Southern California is the fact that it has three international airports--San Francisco, Oakland and San Jose--all undergoing major expansion in a region with only one-third the population. Regional stakeholders would do well to study the Bay Area's efforts to assess the infrastructure requirements of an export-oriented, high-tech economy.<sup>15</sup>

Not only are airports conducive to high-tech, high-wage industries, they generate good-paying jobs in other sectors and contribute more than nearly any other local public investment to high value-added growth. As Table Four shows, for five benchmark airports around the country with available wage data surveyed as part of our El Toro airport study, the average salary for the direct jobs generated was higher, with one exception, than the metropolitan-wide average salary.

<b>Table 4</b>		
<b>Average Salaries of Direct Employment For Selected Airports<sup>16</sup></b>		
<b>Airport</b>	<b>Direct Employment (Average Salary)</b>	<b>Airport MSA* (Average Salary)</b>
LAX	\$33,597	\$32,615
Ontario	30,730	32,615
John Wayne	30,495	29,433
BWI	37,539	29,719
Phoenix	31,635	28,940
<b>Overall Average</b>	<b>\$32,799</b>	<b>\$30,664</b>

\* Metropolitan Statistical Area

Direct airport employment, e.g., ticket agents, baggage handlers, and aircraft maintenance workers, is generated on the airport site by airport operators, the airlines and other aviation-related tenants. Airports also are potent job generators, with strong multiplier effects (particularly for air cargo activities) creating employment in trade, tourism, transportation and manufacturing. For 19 benchmark airports examined in our El Toro study with available economic impact data, an average of 6,196 total jobs--direct, indirect and induced--were generated for each additional million annual passengers (MAP) served. Were San Diego to build the airport facilities needed to meet projected year 2020 passenger and air cargo demand, 86,744 additional jobs could be added to the region's economy. This represents nearly 20 percent of the county's projected 471,600 job growth, 1997-2020.

<sup>15</sup> See Association of Bay Area Governments, *Economic Competitiveness: Comparing San Francisco Bay Area Exports and Imports with Major Competing Regions* (May 1995).

<sup>16</sup> Erie et al., *A New Orange County Airport at El Toro*, Table 4-2.

As Anne Evans, outgoing chair of the Greater San Diego Chamber of Commerce, recently observed, “the airport remains a ceiling on our ambitions to integrate San Diego into the world economy.”<sup>17</sup> Even with \$238 million in new terminal, parking and ground-access improvements, Lindbergh Field lacks adequate international, long haul and air cargo capacity. As noted, it does not serve a significant share of the region’s passenger and air cargo demand. The opportunity cost to the region’s economy is substantial. Lindbergh only generates 4-5 percent of the region’s economic activity--or \$4.5 billion. In contrast, LAX, with full international long-haul and air cargo service, generates nearly 10 percent of the \$450 billion in Los Angeles area activity. Were San Diego to have full air service, particularly international and air cargo, this could generate \$4-5 billion in new regional economic opportunity. International tourism is another lost opportunity. Because of Lindbergh Field’s limited non-stop international service, fewer all-inclusive or package tours come to San Diego, and they arrive late and leave early because of the need to make connections at LAX or SFO. The annual cost to the region’s economy of fewer and shorter all-inclusive international tour stays could be at least \$350 million.

While high-speed rail (HSR) is being touted as another panacea, the projected \$6.2 billion price tag for a magnetic levitation system connecting the Southern California airports like Lindbergh Field and LAX is highly expensive. Financial, environmental and safety concerns will make local government and voter approval difficult to obtain. HSR ridership also remains highly uncertain. A recent study comparing European and American airport access systems concluded that air passengers are typically very reluctant to take rail systems to airports, especially when carrying several bags with them. Among surveyed European airports with direct rail access, the maximum rail mode share was 34 percent. For U.S. airports, the maximum passenger share was 15 percent. Reluctance would be greater in Southern California, which does not have the extensive local transit networks of Europe or the East Coast. Florida, the first state to pledge a significant amount of money for a HSR project linking its major metropolitan areas, canceled the proposed \$6.3 billion project in January 1999, citing financing, environmental and ridership concerns.

Thus local airport development should be considered a top infrastructure priority for San Diego-Tijuana. International passenger and air cargo projections for the region are robust. Air transportation is critical to the region’s development priority of an export-oriented, high-tech economy. Travel substitution technologies such as teleconferencing and high-speed rail appear to have limited and uncertain impacts on burgeoning aviation demand. Given the risks and potential costs to the cross-border economy of relying upon uncertain L.A area airport expansion, the region should accelerate efforts to develop its own international and air cargo airport capacity, particularly if it wishes to increase its share of high value-added Pacific Rim trade.

Our purpose here is not to engage in the internecine debates about particular expansion plans at Lindbergh, Rodriguez, Brown Field and possibly other sites. Instead, the argument is that additional airport capacity, irrespective of site, is needed for regional competitiveness. By its

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<sup>17</sup> Anne Evans, “1998 Was a Good Year for San Diego,” *The San Diego Union-Tribune*, December 30, 1998.

nature, airport development is contentious. Airports create a large set of dispersed benefits, e.g., numerous jobs created throughout the region, and a much smaller set of concentrated costs, e.g., traffic and noise around the airport. This benefit/cost structure creates incentives for airport opponents, rather than supporters, to organize and be heard. In the next section, we present a regional airport planning model that may help the cross-border area resolve some of its airport controversies.

**Tijuana's Maquiladoras, the Highway System and Border Crossings:** On the Mexican side of the border, the top trade infrastructure priority is improving the region's highway system and border crossings. For the maquiladoras, component parts from Asia are trucked in from the Los Angeles/Long Beach port complex. Finished products then are trucked back across the border to destinations primarily within a five hundred mile radius, e.g., San Diego, Los Angeles, the Bay Area, Phoenix, and Las Vegas. By value, nearly 90 percent of the northbound freight that originates in Mexico is carried by trucks. California's four commercial border crossings--Otay Mesa, Tecate, East Calexico and Andrade--are potential choke points whose overload threatens the smooth flow of maquiladora products. The highway system and border crossings such as San Ysidro also serve Tijuana's large tourist-oriented service sector.

With Mexican imports--nearly all of which are shipped by truck--projected to grow by more than 200 percent, 1996-2020, and U.S. exports--also trucked--increasing by over 300 percent, there will be enormous strains placed on the regional highway system. As noted in the Appendix, key highway improvement projects linking the border crossings and the California and U.S. markets include SR 905 and SR 125. Here there are encouraging signs. The target date for SR 905's completion as a four-lane expressway has been moved up from 2015 to 2005, with a subsequent expansion to six lanes programmed. SR 125 South, a 9-mile tollway and 2-mile state connector financed primarily with private capital, will begin construction in 1999 with a scheduled completion date of 2001. However, currently stalled are proposals to widen SR 94, a mountainous highway serving the Tecate border crossing, and to renovate and enlarge the Tecate port-of-entry.

While it has been suggested that maquiladora exports may shift from truck to rail shipment should the San Diego and Arizona Eastern rail line be modernized and re-opened, the likelihood is that trucks will remain the preferred shipment mode well into the future. Within five hundred miles, trucks are a more economical transportation mode than rail. Moreover, there are no direct rail infrastructure linkages, current or planned, to the maquiladora plants. However, should the export market significantly expand and external and internal rail linkages be created, there may be future incentive to ship by rail.

Though important regional undertakings, port and rail development appear not as critical as airport and highway expansion for achieving the cross-border area's development priorities. For San Diego, high-tech exports such as computer parts are shipped by air rather than vessel. More generally, West Coast gateway airports, by exporting high value-added goods and services, contribute more to regional economies than do ports, which are net importers of low value-added

goods, much of which are shipped to Eastern destinations. Preliminary estimates are that Lindbergh Field generates 4-5 percent of the region's economic activity while the small Port of San Diego generates less than one percent. The massive Los Angeles/Long Beach port complex, with good expansion prospects and accessibility, will remain the dominant container port for Southern California. Since vessel cargo tends to be less time sensitive than air cargo, growing traffic congestion on the Southern California highway system poses a lesser threat to port-dependent businesses.

Given the multiple constraints on San Diego maritime development--limited space for terminal expansion, the need for harbor dredging, the lack of a direct eastern rail connection, and capital financing constraints--it is little wonder that the Port of San Diego oscillates between a development strategy oriented toward tourism and the cruise industry versus a cargo-oriented strategy. Yet as the Port District shifts from a lease income to an economic development orientation, an argument can be made that maritime investments, notwithstanding these constraints, contribute more to the region's economy than do the District's tourist-oriented commercial activities. Preliminary estimates suggest that on a per job basis, the District's maritime activities generate roughly twice the regional value-added (direct, indirect and induced effects) as do its commercial activities. However container-based port development depends upon a direct eastern rail connection (see below).

For Tijuana, the maquiladora sector currently is port-dependent, relying upon vessel shipment of component parts from Asia. With ongoing container expansion at the Ports of San Pedro Bay and Ensenada, and possible expansion at the Port of San Diego, port capacity and access should not be problems. Seeking to attract maquiladora cargo, the Port of Ensenada's private operator is focusing upon the trans-Pacific container shipping business. In this market, Ensenada would be competing with the Los Angeles/Long Beach ports, which have greater handling capacity, infrastructure and rail transportation. Ensenada's competitive advantages may be lower cargo handling costs and less traffic congestion. However, a looming factor is whether new NAFTA "rules of origin" for maquiladora components favoring U.S., Canadian and Mexican suppliers starting in 2001, coupled with duties charged on non-North American imports (ending the current Mexican policy of allowing all maquiladora components to enter the country duty-free), will encourage offshore suppliers to establish operations in the U.S. or Mexico, thus lessening the demand for ports. In addition, the construction of a rail link to the Ensenada port may be required in order to realize its full potential.

As regional policymakers and stakeholders consider port development and rail projects such as the SD&AE railway or a proposed Ensenada to Tecate line, they would do well to consider the impacts of the ambitious "Southwest Passage" proposal. This SCAG-sponsored initiative, endorsed by SANDAG, is designed to transform East/West rail and highway routes along the U.S./Mexico border into a seamless freight transportation system from Southern California to Texas. The Union Pacific's Sunset Route, the Burlington Northern/Santa Fe rail line, and the I-8 and I-10 interstate highways would serve as a mini land bridge linking the San Pedro Bay ports with the Ports of Houston and Corpus Christi. Thus, the Los Angeles/Long Beach ports would

maintain their dominance over Pacific Rim maritime trade while Asian imports destined for Europe would be shipped over the land bridge and placed on vessels in Houston and Corpus Christi. This strategic initiative also calls for strengthening North/South rail and highway links in the four Southwestern states to capture greater Mexican trade. TEA 21 designates the California portion of the Southwest Passage a high priority trade corridor, making it eligible for future federal funding. By strengthening rail connections to the East and to the Mexican interior, this initiative could increase the value of rail investments in the cross-border region. It could also better position the region to take advantage of the preferential trade regime enjoyed by Mexico with respect to the major economies of Latin America.

### **Planning, Governance and the Prospects for Binational Cooperation**

What are the cross-border region's planning and governance mechanisms for trade infrastructure decision-making, and what are the prospects for greater binational cooperation?

**Planning and Governance:** As part of a more comprehensive and strategic approach to infrastructure planning, the region needs to utilize better data and analytic tools. Here there are encouraging signs. Reflecting the Port District's economic development focus, the Master Plans for Lindbergh Field and the Port of San Diego are generating aviation and maritime forecasts, to be followed by facility requirement analyses. To make its decisions more development-oriented, the District is assessing the relative economic and fiscal impacts of its various aviation, maritime, commercial and industrial activities. These studies will be made available in early to mid-1999. SANDAG has initiated a cross-border transportation study to better guide regional highway planning, and is updating its 1996 San Diego A&E railway feasibility study. What are still needed are comparable analyses for Baja California. SANDAG recently has acquired IMPLAN, a state-of-the-art regional input-output model, with more accurate regional multipliers and a trade sector component. With IMPLAN, analyses now can be performed of trade's impact on various sectors of the San Diego economy. This may stimulate research on the impact of trade on the various sectors of the Tijuana economy.

There also are encouraging signs in terms of cross-border transportation planning. In mid-1996, SANDAG and several other Southern California agencies signed an agreement with the State of Baja California and its five municipalities to develop a joint border transportation plan. As part of the agreement, the Consul General of Mexico in San Diego will work with the SANDAG Board on binational planning issues. The Municipality of Tijuana has placed a planner at SANDAG to provide land use and other data for the agency's geographic information system (GIS). Caltrans has agreements with state and federal transportation agencies in Mexico to cooperate in transportation planning. In addition, there are a growing number of cooperative

arrangements between organizations--business, civic and academic--with similar transportation and development interests on both sides of the border.<sup>18</sup>

Yet, one critical yet lagging area is regional airport planning. To help resolve airport site and expansion controversies, local policymakers and planners should consider using state-of-the-art models like the Regional Airport Demand Allocation Model (RADAM). The RADAM model, especially developed for Southern California's complex multi-airport system, provides passenger distributions, airport ground access and land use impacts, and can be used as input for air quality conformity analyses. The model made its debut in SCAG's 1994 study of military air base conversion, generating passenger allocations for six air carrier and several contingency airport sites in Southern California. RADAM also has been used in the LAX Master Plan, the El Toro Master Plan, and the modeling of Palmdale Regional Airport as an alternative to LAX.

As part of SCAG's March AFB Joint Use Feasibility Study, RADAM was applied to the San Diego aviation market and Lindbergh Field. The model is equipped to measure the impacts of high speed rail and a new module provides air cargo distributions. For the cross-border region, RADAM could be used to model airport demand, ground access, air quality (vehicle miles traveled) and land use impacts for the various Lindbergh Field Master Plan alternatives, a proposed transborder terminal for Rodriguez Field, a cargo airport at Brown Field, contingency sites such as Miramar and Camp Pendleton, and high-speed rail connections to other Southern California airports. SANDAG, the Port District and relevant Mexican authorities and stakeholders might consider partnering with SCAG in its recently commenced regional aviation system study (which uses the RADAM model) in order to understand the complex dynamics of the entire Southern California/Northern Baja California aviation system. As a result, airport development in the region might be better coordinated and the benefits and costs associated with particular site and expansion options better evaluated.<sup>19</sup>

In San Diego, infrastructure governance is highly fragmented and decentralized, creating serious coordination problems. Port, rail and airport development decisions are made by limited-purpose special authorities--the Port District and the Metropolitan Transportation Development Board--rather than by city agencies as is the case in Los Angeles, San Francisco, Long Beach and Oakland. Institutional fragmentation appears greatest in regional airport planning. SANDAG is responsible for regional airport planning and site decisions. The Port District manages Lindbergh Field, while the City of San Diego has responsibility for Brown Field. To date, there has been little cooperation between these agencies. Thus a Joint Powers Authority (JPA) has been proposed to resolve the region's long-term air transportation needs. A proposed San Diego Regional Airport Authority would consist of the major political subdivisions affected--the City of San Diego, County of San Diego, the San Diego Unified Port District, SANDAG and their

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<sup>18</sup> SANDAG, *Border Area Transportation: The Local, State, National, and International Connection* (November 1996), pp. 16-17.

<sup>19</sup> See Advanced Transportation Systems, *Lindbergh Field & San Diego County: RADAM Airport Model Survey & Air Passenger Market Review* (July 1996).

Mexican counterparts in Baja California.<sup>20</sup> Absent such mechanisms, San Diego's fragmented governance system complicates binational cooperation on infrastructure issues.

Yet there are examples of cross-border service cooperation. The greatest incentives to cooperate seem to be found among equivalent jurisdictions. A case in point are the numerous mutual aid and service agreements between the City of San Diego and the Municipality of Tijuana. The City of San Diego addresses cross-border issues through its Binational Planning Program. The County of San Diego holds U.S.-Mexico Border Summits, which bring together county officials and their Mexican counterparts. The County cooperates with Mexican officials on such issues as criminal justice, agriculture, environmental health, child services, air pollution and hazardous materials.

In Tijuana, where the governance system is in transition, there are a different set of coordination problems. A once-unitary system, where key decisions were made in Mexico City, is being transformed by the twin forces of devolution and democratization. Yet uncertainties and constraints surrounding decentralization make binational cooperation elusive at the grassroots. This is particularly true with respect to municipal financing. With inadequate levels of local financing provided by national and state authorities, infrastructure development is constrained. The absence of adequate local financing in Baja California creates an unequal stage for exploring opportunities for binational cooperation around particular projects. Also missing is a regional transportation planning agency. SAHOPE, the transportation agency for northern Baja California, is a federal agency with overall responsibility for planning and funding the development of transportation infrastructure. One of the challenges in developing coordinated transportation planning across the border is that Baja California does not have a metropolitan council of governments like SANDAG. An additional challenge is that Mexico's port, rail and airport systems are being privatized. Uncertainties surrounding the privatization process further complicate efforts at cross-border cooperation.

In the San Diego/Tijuana region, formal institutional cooperation on the development of trade infrastructure is still in its infancy. Prior to 1992 there was no formal mechanism to permit even cross-border communication on regional issues. The door to formal communication was opened in 1993 with the creation of the local Binational Liaison Mechanism (BLM). The BLM is a forum made possible by a treaty between the U.S. and Mexican governments. It allows for local dispute resolution and information sharing by local agencies and regional offices of federal agencies on both sides of the border. The BLM mechanism has been employed to address a number of development-related issues in the cross-border region, including the management and development of the region's land ports of entry.<sup>21</sup>

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<sup>20</sup> See San Diego Regional Airport Authority, *The Need for a County-Wide Citizen's Airport Authority: A White Paper* (October 1996).

<sup>21</sup> Scott Grimes, "Making a Trans-Border Micro-Region Work: The Cast of San Diego/Tijuana," San Diego Dialogue Working Paper (September 1998).

A variety of working groups have been established under the BLM to examine issues related to cross-border development. Among these efforts is the Regional Border Ports of Entry (Tijuana-Tecate-San Diego) Council, which was established in 1998. The Council serves as a forum for regional and federal agencies, as well as community stakeholders, to examine opportunities to improve the management of the border crossings. It also provides a forum for considering the long-term expansion needs of the ports of entry, including how they can be effectively integrated into the highway systems on either side of the border. While the local forum does not engage in formal planning, it does provide a point of departure for further informal collaboration. These informal contacts may lead eventually to more formalized cooperation.<sup>22</sup>

**Binational Cooperation--Lessons From Other Cross-Border Regions:** What can the San Diego/Tijuana area learn from other cross-border regions? Unfortunately, there is little published on transborder planning and governance. Indeed, SDSU Professor Lawrence Herzog, a preeminent scholar in the field, concluded in a recent study that there is a “lack of good empirical case studies of cross-border cooperation and planning”.<sup>23</sup> This lack of information is partially explained by the dearth of real world cases of cross-border cooperation. Borders were designed to impede human interaction--a fact reflected in the frequent use of mountains, rivers and other geographic barriers as international boundaries. Countries long have sought to control their borders to keep out invaders (and, sometimes, to keep their citizens in). More recently, countries have sought to keep out illegal immigrants, contraband, and unwanted ideas and values. Even positive border activities such as trade can produce negative externalities such as those generated by the displacement of firms and production. Nonetheless, countries are belatedly realizing the advantages of more open borders.

### *Cross-Border Opportunities*

Cross-border cooperation on trade-enhancing infrastructure can stimulate economic growth, reduce transaction costs in the local economy, improve efficiency by reducing unnecessary duplication of services, and allow the parties involved to take advantage of economies of scale both in the planning and production of public services and infrastructure. Specific cross-border projects that would benefit from greater binational cooperation include the coordination of the land ports of entry and highways on both sides of the border; the modernization and re-operation of the SD&AE rail line; a possible trans-border passenger terminal for Rodriguez Field; and coordination between the San Diego and Ensenada ports.

Creating cross-border cooperation is difficult, not just because it usually involves language barriers and cultural differences. There is natural conflict between the needs of adequate law

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<sup>22</sup> *Ibid.*, and Gabriela Lemus and Magali Muria, *The Administrative Geography of the Mexican-United States Border* (working title), San Diego Dialogue, forthcoming.

<sup>23</sup> Lawrence Herzog, “Cross-Border Planning and Cooperation.” Briefing Paper for the Workshop, “A Roadmap to 2020: Future Challenges for the Border Environment,” Border Institute, Rio Rico, Arizona, December 7-9, 1998, p. 18.

enforcement and speedy passage for goods and people. There is the planning problem created by large-scale infrastructure projects requiring coordination among multiple levels of government and agencies, often with overlapping and even competing jurisdictions. Lining up the appropriate planning, institutional and financing mechanisms is difficult enough on one side of the border without having to duplicate the work on the other side. Cross-border cooperation takes a great deal of time, and can be incredibly frustrating. Thus, despite recognition that border communities could benefit from closer coordination with their neighbors, cooperation often fails to occur.

A chief barrier to cross-border cooperation is the giant coordination problem that must be solved. The heart of the problem is that *somebody* has to lead. This requires at a minimum a sense of a joint destiny and dependence. Without some sense of a shared future, coordination will be a non-starter. Further, someone involved needs an incentive to lead, which is more complex than just finding someone who is willing to accept the task.

Appointed officials often have limited or highly focused authority, and lack the scope to deal with a problem they view (correctly) as falling outside their mandate. One can imagine creating a new entity with the authority to deal exclusively with transborder issues, but there is little incentive for existing agencies to lobby for the creation of an organization they will compete with. Indeed, existing agencies would probably fear having their authority overridden or taken away entirely. Elected officials, on the other hand, take their cue from their constituents. If voters do not realize the potential benefits of cross-border coordination, they may be indifferent or even hostile to such actions. Given the considerable length of time required for planning transportation projects, elected officials--particularly under term limits--have limited incentive to think long term or support projects that extend beyond their terms of office.

An example of how narrow jurisdictions and electoral incentives can impede the development of trade-enhancing infrastructure can be found in Windsor, Canada. Across the river from Detroit, this border city is a net beneficiary of global trade. Nonetheless, the municipality is considering the trade-adverse step of taxing the international trucks that pass through its territory.<sup>24</sup> City officials are worried about concentrated costs in the form of higher taxes for road maintenance and the diffuse benefits of trade that must seem particularly remote when the bulk of the trucks are merely passing through Windsor. One can imagine San Diego residents concerned with local quality of life opposing the SR 905 connector for similar reasons.

Despite the obstacles, cross-border cooperation does occur. The most common type of cooperation involves informal contacts which, while beneficial, have their limits. Relationships built around individuals only are useful as long as both parties remain in their respective offices and years of work can be undone when one party retires or fails to be reelected. Informal contacts also are limited by the authority of those involved, and local officials may run into interference from federal ones who tend to view border issues as international problems.

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<sup>24</sup> Martin Mittelstaedt, "Windsor May Slap Toll on International Truckers" *The Globe and Mail*, January 6, 1999.

Locally, cross-border cooperation faces two additional obstacles. First, as Herzog cogently argues, social and economic asymmetries such as those between San Diego and Tijuana form a serious barrier to joint infrastructure development, not least because of imbalances in the ability to share costs.<sup>25</sup> Second, representatives of San Diego need to be sensitive to concerns of sovereignty infringement on the part of their Mexican counterparts, and avoid the appearance of planning for, rather than with, Mexican authorities. Sovereignty is a salient issue in Mexican politics, and “any proposed transborder effort that implies less than total control by the Mexican government over Mexico’s half of it tends to be quickly shot down as ‘a violation of Mexican sovereignty.’”<sup>26</sup>

### *Comparative Lessons*

To better understand these potential obstacles, we have surveyed existing attempts at cross-border infrastructure planning. Perhaps more frustrating than the lack of actual cases is the paucity of useful analytic data on those that do exist. There is scant information on the scope of projects, the extent of organizations’ power, and what institutional mechanisms (if any) are in place for project planning, management and conflict resolution. One is left wondering whether the institutions involved played an integral part in the planning process, or came into being as a product of that process. It is often unclear whether the institutions are merely advisory, or wield real authority. Moreover, existing research almost never considers what the alternatives might have been, and which elements were critical to the projects’ success. Indeed, in some cases it is not even clear what outcome would constitute success. This hampers our ability to draw useful lessons applicable in San Diego, and suggests that further research is sorely needed.

The cross-border projects we did identify vary on three major dimensions: the primary level of cooperation, the degree of institutionalization, and the extent of project completion. First, the level of cooperation refers to the branch of government(s) involved. Cooperation may be the result of high level talks between national governments, inter-agency discussions, or more informal contacts between the mayors of paired border cities. Talks that take place between central governments have the advantage of stability and carry greater weight in as much as they are not subject to later revision by a higher level of government. Local agreements, on the other hand, may be easier to achieve since a local government may find that on certain issues it has more in common with its counterpart across the border than it does with its own federal government. The level of government involved does not appear to be a good predictor of cross-border cooperation. Successful examples at the national level include the Chunnel and the European Union, while the Regio-Basiliensis is an extraordinarily successful example of local cross-border planning between the Swiss, French and Germans in the area surrounding Basil, Switzerland.

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<sup>25</sup> Herzog, “International Boundary Cities: The Debate on Transfrontier Planning in Two Border Regions,” *Natural Resources Journal*, Vol. 3 (Winter, 1991).

<sup>26</sup> Professor Samuel Schmidt, quoted in Gregory Gross, “Cross-border Cooperation is Examined at Conference,” *The San Diego Union-Tribune*, January 12, 1999.

Herzog's 1998 study provides a catalog of 50 projects in various stages of planning and development along the U.S./Mexican border, with cooperation led by various branches and levels of government.<sup>27</sup> Of these projects, nearly half (23) are transportation projects. Environmental efforts (17) are the next most numerous, while land use projects (10) account for the rest. Most of the border transportation projects involve the expansion of border crossings, or the roads and bridges that lead up to border crossings. The cross-border environmental projects almost exclusively involve water – a few providing it, but most treating it in waste-water facilities. The land use projects are an assorted mix including housing, parks, and redevelopment. In each of these areas of cross-border cooperation, there is tremendous variety in terms of the lead actor. For the ten transportation projects listed for the San Diego/Tijuana region, eight different lead actors are identified.

Second, the degree of institutionalization refers to the institutions (if any) created by a cross-border agreement. Cooperation does not require institutions--witness many bilateral trade agreements--or may lead to the creation of new institutions or the expansion of existing ones. Institutionalization lends a degree of permanence to the cooperation, and more importantly, provides both a precedent and a forum for further joint action. The overall lack of information makes this dimension particularly troublesome to assess. One case is offered by the impressive-sounding European Cross-Border Action and Cooperation Program (known by its French acronym PACTE), an agreement between France and Belgium which creates bodies to define and list potential cross-border cooperation projects.<sup>28</sup> In another, the Meuse-Rhine EUREGIO Council was established in 1978 as a cross-border parliamentary assembly (a government of governments) for over one hundred municipalities in the Netherlands and Germany.<sup>29</sup> The Council's stated goal is to organize cooperation in economics, education, culture, tourism, technology, transportation infrastructure, and agriculture. Yet without knowing more about the authority of the EUREGIO Council or the extent to which the recommendations of the ECACP are binding, it is impossible to assess the progress they have made.

Third, the degree of project completion lacks sex appeal as a topic. Yet given the difficult, lengthy, and often fruitless process of hammering out agreements on cross-border cooperation, it is worth considering. Projects that quickly move along may offer a road map for others seeking similar agreements; those that languish in talks may provide their own lessons. The Tumen River Area Development Program includes six nations interested in developing an area bordered by China, North Korea and Russia.<sup>30</sup> Mired in international conferences since 1991, the lack of progress on this joint development and industrialization plan highlights the need for a credible sense of a shared future and trust for cooperation to proceed. A similar point is suggested by the

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<sup>27</sup> See Herzog, *op. cit.* (1998), pp. 5-9.

<sup>28</sup> Described in Rongxing Guo, *Border-Regional Economics*. (Germany: Physica-Verlag, 1996).

<sup>29</sup> A. van der Veen, "Theory and Practice of Cross-border Cooperation of Local Governments: The Case of EUREGIO Between Germany and the Netherlands" in *Regional Networks, Border Regions and European Integration*. R. Cappellin and P.W.J. Batey, eds. (London: Pion Ltd, 1993).

<sup>30</sup> Given their mutual animosity over the years, it of course impressive that the countries are even speaking. The talks are described in Rongxing Guo, *op. cit.*, pp. 151-160.

inactivity of the proposed Cascadia Corridor Commission, which would plan a high-speed rail connection linking Portland, Oregon, Seattle, Washington, and Vancouver, Canada.<sup>31</sup>

Two critical lessons stand out. First, transborder cooperation is an awkward coordination game, one which demands a leader. Collaboration with one's colleagues across the border is too frequently regarded as beyond an agency's jurisdiction. Since the requisite incentives cannot be willed into existence, there is no easy solution to the leadership dilemma. Some cases may lend themselves to what are termed "privileged groups," where one actor has a natural incentive to single-handedly assume the costs and burdens of leadership. This seems to be the driving force behind what Herzog calls one of the most successful examples of cross-border infrastructure planning: the Regio-Basiliensis in Basil, Switzerland.<sup>32</sup> He explains that cooperation began as a one-sided effort led by Swiss pharmaceutical companies and only later included French and German officials. This does not, however, imply that cross-border cooperation must be held hostage to the vagaries of fortune.

The Regio-Basiliensis example also suggests a second lesson: cross-border cooperation takes time and begins slowly. Above all, it is a process that builds over time.<sup>33</sup> The Regio-Basiliensis--which eventually planned the tri-national airport at Mulhouse, France--was itself the culmination of frequent informal contacts. While informal contacts have their limitations, they are relatively easy to arrange, and create opportunities to build trust and foster understanding. Although it may sound trite, one should not dismiss the importance of building relationships through progressively more ambitious projects. Informal contacts can lay the groundwork for more permanent institutions in a cycle where success begets success. The European Union, which began with a treaty governing the production of coal and steel, is a good example of this progression in cooperation. Similarly, the European Convention on Transboundary Cooperation (1982) is based on a model of gradually increased coordination. Cooperation begins slowly with informal talks and consultation, eventually progressing to the establishment of permanent institutions. The model agreements, statutes and contracts included in the Convention's appendix anticipate cross-border relationships evolving in a pattern of gradual progression that could be emulated here.<sup>34</sup>

For additional inspiration, San Diego/Tijuana officials may do well to examine local cooperation in Texas, which offers a promising area for further research. The Texas border region with Mexico has several advantages that encourage binational cooperation. First, the bulk of

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<sup>31</sup> Various Cascadia projects have been proposed over the years, with little progress. The high speed rail proposal is described by Bruce Agnew in "Overview of Washington State and Perspective on Cross-Border Issues." Paper prepared for the British Columbia Round Table on the Environment and the Economy, December 1992.

<sup>32</sup> See Herzog, *op. cit.* (1991).

<sup>33</sup> See J.W. Scott "Planning Cooperation and Transboundary Regionalism: Implementing Policies for European Border Regions in the German-Polish Context" in *Environment and Planning C: Government and Policy*, vol. 16 (1998) pp. 605-624; Lawrence Herzog, *op. cit.* (1991, 1998); and Niles Hansen, "International Cooperation in Border Regions: An Overview and Research Agenda" in *International Regional Science Review*, vol. 8, no. 3 (1983), pp. 255-70.

<sup>34</sup> As described by Hansen, *op. cit.*, pp. 264-5.

NAFTA trade between Mexico and the U.S. travels through Texas land ports of entry, creating an urgent need for cooperation in trade infrastructure planning. Second, the Texas/Mexico border towns are relatively similar in their demographic and socioeconomic makeup, greatly reducing the problems associated with cross-border asymmetries in standards of living. Third, there is a history of greater cooperation at the state and local level between Texas government officials and their counterparts in Mexico. A possible model to emulate is the Dos Laredo-Nuevo Laredo region. Recognizing a shared problem in their explosive growth, the two border cities created a joint urban plan and “the political atmosphere appears to be in place to implement cross-border planning and environmental management.”<sup>35</sup>

### *Conditions for Collaboration*

Thus cross-border cooperation in infrastructure planning is a rare, difficult, and gradual process, even under the best of circumstances. Three necessary conditions for binational cooperation appear to be common destiny, leadership, and patience. Common destiny refers to the belief in a shared future; it is the understanding that joint prosperity hinges on cooperative efforts. Effective leadership is a prerequisite for solving the immense coordination problems created in dealing with multiple levels of government and their respective agencies in one country, and then forging an agreement with their counterparts in another. Patience is required because the one common denominator of all the cases of cross-border cooperation identified is that relationships and institutions are created gradually. To date, much of the binational cooperation along the U.S./Mexico border has involved projects where the shared interest was self-evident, as in the case of border crossings or waste-water treatment facilities.

Despite the rhetoric of a common San Diego/Tijuana region, the reality is of two relatively independent cultures and economies. Unlike some of the paired communities along the Texas border with Mexico, local officials here face the additional hurdle created by substantial cross-border income disparities. Given these asymmetries, policymakers and stakeholders may need to spend additional time cultivating a sense that our respective economic futures cannot be disentangled from that of the region as a whole. As for resolving the leadership issue in the cross-border region, preliminary steps have been taken. Regularly scheduled meetings between officials from both countries as part of the Binational Liaison Mechanism, along with regular informal meetings of stakeholders, are a promising beginning.

Yet, given the San Diego/Tijuana region’s strong trade potential and manifest infrastructure needs, much more is needed. Regional policymakers and stakeholders now need to launch a creative and sustained effort to develop the appropriate institutional mechanisms, insulated from the frequently shifting local political winds, that are needed to ensure long-term and effective binational infrastructure planning and development.

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<sup>35</sup> Herzog, *op. cit.*, (1998), p. 16.



## Appendix<sup>36</sup>

### A Status Report on San Diego/Tijuana Airport, Highway/Border Crossing, Port and Rail Facilities and Projects

#### Airports

With one-half to two-thirds of San Diego's domestic air freight--and nearly all of its international air cargo--"leaking" to other Southern California airports, local airport capacity is a weak link in regional trade infrastructure. The uncertain prospects of El Toro serving as a commercial airport and the near-certainty of the Marines remaining at Miramar Marine Corps Air Station have put the spotlight on upgrading the binational region's current civilian airfields.

**Lindbergh Field:** San Diego's primary airport has limited nonstop international service to Mexico, Canada and Great Britain. Passenger traffic, currently 3 million short of the 17 million travelers a year that can be accommodated comfortably, is expected to double by 2020, with significant flight delays predicted as early as 2004 and near gridlock by 2010. Having completed a modest \$238 million upgrade of terminals, parking, and access roads, Lindbergh is pursuing an expansion program that will increase its size from 474 to over 600 acres. The Port District is reacquiring the 90-acre now-vacant site on Pacific Coast Highway formerly leased to General Dynamics, and has added 44 acres of the recently closed Nimitz Naval Training Center. It has also concluded a deal for obtaining some 30 acres of Marine Corps Recruit property through a land swap that will make possible the extension of the north taxiway to the full length of the runway.

A new Airport Master Plan, in preparation for unveiling by the Port Commission in early 1999, theoretically could include options ranging from building a new 51-gate passenger terminal or new air cargo center on the abandoned General Dynamics' Convair facility along Pacific Coast Highway, to expanding the current 9,400-foot runway to the 11,000 feet required to takeoffs and landings by fully loaded Boeing 747 jumbo jets, to construction of a second, parallel 9400-foot runway. A second runway could be built northward through the remainder of the Marine Corps Recruit Depot, but the route favored by former Port Commission Chairman David Malcolm is south of the main runway, through Teledyne Ryan and the current terminals which would be relocated between Interstate 5 and Pacific Coast Highway. The Master Planning Process has produced evidence that this option and others may be very difficult to implement.

No cost or environmental studies have yet been made for a project that might require the rerouting of I-5 and rail and trolley tracks. Other obstacles to a second runway alternative include a possible veto by the Federal Aviation Administration (FAA), because of insufficient

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<sup>36</sup> This Appendix is a summary, update and expansion of the discussion of infrastructure projects presented in "Improving Trade Infrastructure for a More Competitive Region," Briefing Paper, June, 1998, prepared for San Diego Dialogue's Economic Breakfast Series, by Scott Grimes, Director of Research and Program Development at San Diego Dialogue.

separation between the two runways, and opposition by Loma Portal and Point Loma residents who would prefer to see Lindbergh permanently closed.

**Rodriguez Field:** Tijuana's recently built, 10,000-foot runway could accommodate the jumbo jets and nonstop international flights from Asia that Lindbergh currently cannot handle. Binational cooperation in handling regional passenger traffic, short of the failed "TwinPorts" concept for a new cross-border airport, is still clouded by legal and political uncertainties affecting the future of Mexico's airports. The pending privatization of Rodriguez Field depends on a timetable and bidding process still being implemented by the Mexican federal government. The Mexican Secretariat of Transportation has recently published privatization "rules" that include Rodriguez Field in the Northwest Group, one of three groupings of Mexican airports that will be sold as packages.

Unresolved is whether, in the absence of significant bids for the packages, the Secretariat may split off individual airports or small groups of airports for privatization. This could open the way for separate bidding on both Baja California's Tijuana and Mexicali airports. A Tijuana-based group, in conjunction with the Baja government, has expressed interest in acquiring Rodriguez Field, but so too has Mexicali's Grupo Proxima as well as several international airport authorities. Privatization also opens the opportunity for the San Diego Unified Port District, which operates Lindbergh Field, to obtain a concessionary license to operate Rodriguez Field.

**Otay Mesa Trans-Border Terminal:** Another proposal for meeting San Diego's need for direct international flights is a cross-border terminal at Otay Mesa on the U.S. side of the border connected by a bridge and possibly a "people mover" to Rodriguez Field. Promoted by the South County Economic Development Council and the Greater San Diego Chamber of Commerce, the proposal also envisages a new division of operations between airports, with Lindbergh continuing to service flights of under 600 miles but transferring long haul flights to Rodriguez. Facilitating features might include dedicated bus and shuttles between the two airports, complementary rental car facilities, and automatic luggage transfer.

The proposal envisages that Mexican private finance for the new terminal would be attracted by the prospect of increased landing fees in Tijuana. Two San Diego City Council members have recently flown to Mexico City to lobby the federal government on behalf of the concept. Critical to the future of Rodriguez Field operations, as well as the trans-border terminal concept, is whether foreign airlines can develop long-haul flights from Asia with two stops (Tijuana and a final U.S. destination) without surrendering U.S. landing rights. American critics voice economic skepticism about the San Diego market's ability to support regular nonstop flights to the Pacific, and also have raised political objections to the loss of U.S. control over international flights.

**Brown Field:** A private consortium of investors, known as the San Diego Air Commerce Center, has proposed investing \$1 billion over twelve years to convert Brown Field near Otay Mesa into a state-of-the-art air cargo facility. Modeled on Alliance Airport in Dallas, the Center would be supported by multimodal transportation, warehousing, and distribution facilities. Serving Tijuana's maquiladora industry as well as San Diego electronics and biotech sectors, it could eventually offer up to 48 flights per day by 2016.

Supportive consulting studies point to the shift in Southern California's air cargo profile from 20 percent carried on dedicated all-cargo flights in the late 1970s to over 60 percent today. If San Diego fails to develop a specialized air cargo and air express facility, Phoenix and Las Vegas may do so and further erode this region's economic and infrastructure independence. However, the San Diego City Council late last year gave the investor group only a 45-day extension rather than a long term lease, citing a contrarian study by its own consultant disputing the economic demand for the project, various delays, and unresolved issues over legal liability and development impact fees raised by the Otay Mesa Chamber of Commerce. This report noted that there are few examples of successful dedicated air cargo facilities in the United States.

## **Highways/Border Crossings**

With 87 percent of the northbound freight headed out of the San Diego region that originates in Mexico carried by trucks, and 93 percent of that tonnage headed for other states or countries, highway links are vital arteries of the binational economy. Caltrans has designated three major freeways carrying global goods--I-5, I-8, and I-15--Intermodal Corridors of Economic Significance (ICES); they are also critical components of the designated "NAFTA network" of highways and "National Highway System." Southern California's four border crossings--Otay Mesa, Tecate, East Calexico, and Andrade--are potential choke points whose overload threatens the smooth flow of these arteries.

**State Route 905:** The widening to six lanes of Otay Mesa Road, which runs parallel to the border, is a stop gap measure awaiting the completion of a new highway that will eventually link with the interstate system and relieve congestion at the new border crossing. Target date for SR 905's completion as a four-lane expressway has been moved up from 2015 to 2005, with a subsequent expansion to six lanes programmed. It is budgeted for \$4 million in local funds by the City of San Diego, \$24 million in regional funds by the San Diego Association of Governments, \$57 million in state funds from the California Transportation Commission (CTC), and \$54.5 million under the 1998 omnibus federal transportation bill known as the Transportation Equity Act for the 21st Century (TEA 21). The project's progress has been made possible by the success of the strong local lobbying campaign for federal funding.

**State Route 125:** The planned north-south link between the Otay Mesa port of entry and planned Otay Mesa East development and the interstate system is receiving accelerated funding priority from SANDAG and the CTC. The 20-mile, so-called Sweetwater segment is under construction ahead of schedule and targeted for completion in 2000. SR 125 South, a 9-mile tollway and 2-mile state connector financed primarily with \$242 million in private capital, will begin construction in 1999 with a scheduled completion date of 2001, subject to full environmental compliance.

**Virginia Avenue Truck Crossing and San Ysidro Port of Entry:** The old Virginia Avenue crossing, located just west of the San Ysidro border facility, was closed in 1995 in conjunction with the opening of the new Otay Mesa port-of-entry. Its reopening is now the subject of contention between the \$200 million Gateway of the Americas plan for a pedestrian-only border crossing and shopping plaza and an alternative plan to relieve cross-border vehicular congestion

at San Ysidro by redirecting southbound traffic over new freeway lanes at Tijuana's El Chaparral inspection area. The vehicular alternative, which is favored by CABIN, the Mexican government's border inspection agency, could result in \$100 million or more in construction and condemnation costs on both sides of the border.

**State Route 94 and the Tecate Port of Entry:** Partly due to opposition by rural residents who want to limit additional truck traffic, no widening is programmed for SR 94, the mountainous highway serving the Tecate border crossing 35 miles east of San Diego. A \$7 million renovation of the 63-year-old Tecate facility, including enlargement to 13 acres, doubling office space, and adding water storage capacity, was budgeted under the 1999 Omnibus Appropriations Bill, but restricted by Senator Barbara Boxer's amendment banning the construction of eight additional truck bays. On the Mexican side of the border, the so-called Tijuana Loop, a private venture toll road that would connect the Otay Mesa border crossing with the Rosarito toll road, and might ultimately extend to Tecate, remains on the drawing board for lack of funding.

**State Route 7 and the Calexico Port of Entry:** Further east, the new Calexico border crossing makes Mexicali more competitive with Tijuana as a cross-border manufacturing center. TEA 21, the new federal highway funding bill, will accelerate the development of Calexico-Mexicali by allocating \$6 million to begin construction of SR 7 from the new border crossing to I-8.

## Ports

The Port of San Diego, long overshadowed by the needs of the U.S. Navy, is still struggling for self-definition. The two poles between which it oscillates are a strategy oriented exclusively toward tourism and the cruise industry versus a cargo-oriented strategy to bring it into the age of the containerization revolution. The same dilemmas extend south of the border to its sister port at Ensenada.

**Cruise-Oriented Tourism:** While a few cruise lines call at San Diego and/or Ensenada, the region's ports have not yet become part of the global expansion of the cruise ship industry, including the rise of mega-liners. The cooperative marketing campaign to develop the cross-border cruise industry is trying to lure a cruise line capable of offering on a year-round basis either one of two cruise itineraries: a one-day round-trip cruise between San Diego and Ensenada (none has been offered for several years) or one-week cruises originating in San Diego and making several stops in Baja California. Another alternative—for cruise ships departing Long Beach to stop in San Diego—is blocked by the Passenger Services Act of 1886 prohibiting foreign-flag ships from picking up or dropping off passengers between U.S. ports. San Diego's attempts to obtain a waiver are opposed by the maritime unions, which fear a shift away from U.S. flag-ships whose crews are required by law to be made up of a majority of American citizens.

In terms of infrastructure projects, the San Diego Unified Port District's Cruise Industry Advisory Committee must decide soon between renovating the current B Street Pier cruise ship terminal as part of the North Embarcadero redevelopment project or instead shifting major operations to a new mixed-use cruise ship terminal, possibly including hotel space and retail

facilities, at the 10<sup>th</sup> Avenue Marine Terminal (TAMT) and the neighboring 8<sup>th</sup> Avenue Campbell Shipyard that would contribute to the downtown redevelopment plan whose centerpiece will be the new Padres' Baseball Stadium. On the other hand, a new cruise terminal on the South Embarcadero at 10<sup>th</sup> Avenue might adversely affect commercial cargo operations at one of the Port of San Diego's only two marine terminals. This, too, is opposed by the maritime unions and their trade-oriented allies on the Port Commission.

The Port of Ensenada's Master Plan for redeveloping its cruise ship terminal has clearer sailing. International Container Terminal Services (ICTS), a Philippine company that owns several terminal operations around the world, will operate the port under a 20-year concession. The first phase of Ensenada's cruise-oriented expansion, including the construction of three new piers and a 200 slip marina at a cost of \$21 million, was scheduled for completion in late 1998.

**Marine Cargo:** Together, the Ports of San Diego and Ensenada handle less than one percent of the container shipments that pass through the Ports of Los Angeles and Long Beach. San Diego is attempting to become not a general cargo facility but a niche port specializing in autos, fruits, soda ash, tuna, and lumber. Gains in cargo have occurred at the 24<sup>th</sup> Marine Terminal at National City, the beneficiary of most of a \$165 million marine infrastructure upgrade as well as \$23 million in BNSF rail yard improvements, that serves as the port of entry for Honda, Acura, Volkswagen, Mitsubishi, Fuso, and Hino Motors vehicles. Honda has agreed to make San Diego a primary port of entry, and outbound vehicle traffic to Asia has now begun with the export of 24,000 Isuzu right-hand drive vehicles to Japan.

Unfortunately, the second marine cargo terminal, the 10<sup>th</sup> Avenue Marine Terminal which possesses a unique cold storage facility but ships comparatively small volumes of bulk cargo, is a money-losing operation responsible for the Port's marine operations deficit. Recently, its only regular container business, Chicken of the Sea International, closed its 10<sup>th</sup> Avenue warehouse and moved to Los Angeles's Terminal Island. A \$52.8 million dredging improvement program to deepen the main channel to 45 feet to accommodate state-of-the-art container ships, which would have included major wharf improvements at TAMT, was recommended against late last year by the Army Corps of Engineers, which favors a more modest program limited to deepening the central channel from the current 40 feet to 42 feet. The other major improvement that would help TAMT—a link with a restored SD&AE Railroad—remains problematic.

Ensenada's cargo improvement program has made significant but limited gains. The 1992 Master Development Plan called for deepening the main channel and increasing breakbulk cargo 50 percent by 2003 and containerized cargo ten-fold by 2015. A specialized Rock Terminal for export to Southern California has been built and is benefiting from a \$9 million upgrade. The Port's private operator plans to commit over \$30 million to marine cargo modernization, or about one third of the private funding envisaged in 1992. As noted, ICTS plans to focus upon container cargo. Phase I, featuring an investment of \$10.5 million for a 300-meter berth and two quay cranes, will be completed in February 1999. Phase II, at a projected cost of \$20 million, will feature a second berth, two additional cranes and new storage and warehouse space. Phase II will begin in 2003. While there has been fear that the Mexican government's privatization rules, which decoupled port cargo operations from rail concessions, would dampen the interest of

private developers in the \$160 million rail project that would directly link the Port of Ensenada with Tecate and San Diego/Tijuana, several railroads are examining the feasibility of the route.

## **Railroads**

The border region continues to suffer because San Diego, Tijuana, and the rest of Baja California lack adequate direct rail connections to national and international markets. At present, San Diego freight is shipped via a BNSF spur line to Los Angeles for transshipment, resulting in costly delays of up to three days. And the maquiladora industry in Tijuana, currently almost 100 percent dependent on trucking, is without direct rail links to either the southeastern U.S. or the interior of Mexico.

**San Diego and Arizona Eastern (SD&AE) Railway:** The SD&AE--a 134 mile long rail link, 44 miles of which runs through Mexico--that was severed in 1983 would, if restored, provide San Diego and Tijuana with a direct freight connection to the east via the Union Pacific's Sunset Line. The Desert Line, rechristened "the NAFTA train," has been stalled by political and legal hurdles on both sides of the border. A local Congressman who fears it as a magnet for illegal immigrants and drug dealers has blocked a federal loan guarantee for the Metropolitan Transit Development Board, owner of the U.S. tracks. TEA 21 contains \$10 million to build a South Bay rail yard but nothing toward the \$100 million plus required to repair and modernize SD&AE. Nonfederal funding possibilities include the State Highway Accounts Fund or the State Infrastructure Bank. In Mexico, RailTex of San Antonio, which had a temporary concession to operate the tracks between Tijuana and Tecate, was outbid for the permanent concession by Grupo Murphy. However, the necessary private financing has not yet materialized, with the result that the privatization of the rail operation is in limbo and the bidding process will have to be reopened.

Aside from political and legal difficulties, the SD&AE's prospects very much depend economically on the Port of San Diego's serious commitment to future marine cargo development as well as upon an eventual parallel link with the Port of Ensenada.

**Ensenada to Tecate Railway:** Ensenada's hopes to become a containerized port in part hinge on a rail connection to Tecate and a revitalized SD&AE line. The proposal by Oxford Rail Inc., jointly owned by Jack Spurling of San Clemente and Edmund Buen Abad of Tijuana, to build such a link has been derailed by the opaque politics of railroad privatization in Mexico. The process, which has been complicated by the decoupling of the cargo port concession from the railroad concession, also has discouraged interest on the part of potential international investors. As noted, several railroads currently are exploring the feasibility of the project.

## About the Author

**Steven P. Erie** is an Associate Professor of Political Science at UC San Diego and a Senior Fellow at USC's Southern California Studies Center. He previously has taught at USC and SUNY Albany. Dr. Erie's current research addresses the demographic, trade and infrastructure linkages between Southern California, Mexico and the Pacific Rim. He is the author of two California Policy Seminar studies on these subjects--Paths to Political Incorporation for Latinos and Asian Pacifics in California (1993), and International Trade and Job Creation in Southern California (1996). His work on Latino and Asian Pacific American political empowerment and its international dimensions has appeared in The California-Mexico Connection, The Bubbling Cauldron, and Racial and Ethnic Politics in California.

Dr. Erie recently has completed four research studies: "Paradoxes of Mexican Integration in Southern California," for Georgetown University's U.S./Mexico Subregions Project; "Facing the Challenges of Expanding Southern California's Global Gateways" for the Pacific Council on International Policy's Project on Southern California's Global Engagement; A New Orange County Airport at El Toro: An Economic Benefits Study for the Orange County Business Council; and "Managing California's New Water Wars" for the UCLA School of Public Policy and Social Research's California Policy Options 1999. At present, he is completing Global Los Angeles: Growth and Crisis of a Developmental City-State. He also is researching regional airport, port and rail planning for the Southern California Studies Center's Creative Communities Project and regional water policy issues for the Brookings Institution's Metropolitan Growth Initiative.

Dr. Erie is actively involved in public policy debates in Southern California on issues of trade, infrastructure, regional development, minority empowerment, governance and public finance. He has spoken before numerous state and regional agencies, local business groups and civic organizations. In terms of governance issues, he is a co-author of the 1998 RAND study on L.A. charter reform and serves on a San Diego charter reform advisory committee. Dr. Erie delivered the 1993 Bollens/Ries Public Affairs Lecture at UCLA, the 1998 Haynes Foundation Lecture and received an outstanding teaching award from UCSD in 1996. His book Rainbow's End won best urban book awards from the American Political Science Association and the American Sociological Association. Dr. Erie is a member of San Diego Dialogue, the Pacific Council on International Policy, the Metropolitan Forum Project, Water and Power Associates, and serves as a contributing editor to the Metro Investment Report.