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The Decade of the Grijalva: Bureaucratic Change and the Streamlined Politics of Water Management in Southeastern Mexico

Abstract

In 1947 Mexican President Miguel Alemán toured the United States with President Harry Truman. Upon Alemán's return to Mexico he lectured his cabinet and congress on the Tennessee Valley Authority's (TVA) comprehensive river development policies. He proposed Mexico should establish similar executive river commissions. In 1951, the Grijalva River Commission (CRG), one of four executive river commissions, began initial surveys in the Grijalva River basin. By the mid-1960's the CRG had not achieved predicted outcomes and was replaced by the Federal Electric Commission (CFE) in river management projects. The CFE argued the Grijalva contained almost 50% of the nation's hydroelectricity. Thus began the "Decade of the Grijalva." President Gustavo Diaz Ordaz believed a new era of modernity through a massive expansion of Mexico's electrical grid was imminent. Importantly the 1960's exemplified a clear shift from the social Revolutionary principles of the ruling party, towards a developmental program that overlooked specific environmental, social and political elements unique to Chiapas.

Keywords: water management, development, energy, dispossession, Mexico

Introduction

The Institutional Revolutionary Party (PRI) dominated Mexican politics from its inception in 1946 (arguably since 1929 when it was known as the National Revolutionary Party, and then the Party of the Mexican Revolution) exemplifying the conventional characteristics of an authoritarian dictatorship. Political scientists argue the principal elements of authoritarian regimes are their reliance upon a passive, apolitical civil society, with limited, but ultimately powerless opposition parties.[1] However, state planners in the middle half of the 20th century encountered not only politically aware and active populations, but also a landscape that confounded authoritarian, technocratic developmental schemes. Beginning in 1947 PRI technocrats embarked on a nationwide

[1] The extant body of literature, principally among political scientists that analyze the validity of retaining these rigid typologies of Latin American dictatorships has synthesized the classic works on dictatorships such as Hannah Arendt's work. See among others, John Paul Sondrol, "Castro's Cuba and Stroessner's Paraguay: A Comparison of the Totalitarian/Authoritarian Taxonomy," Ph.D. diss., University of Arizona, 1990. See also Roderic Ai Camp's work focused specifically on Mexico and the move towards a more clearly defined democratic system. Roderic Ai Camp, *Politics in Mexico: The Democratic Transformation* (Oxford: Oxford University Press, 2003, 4th edition), *Politics in Mexico: The Decline of Authoritarianism* (Oxford University Press, 1999).

modernization program to enhance energy production, agricultural output and expand transportation networks, relying on the corporatist political strategy employed with stunning success during the presidency of Lázaro Cárdenas.[2] In the southeast, the state hoped to harness the hydraulic resources of the Grijalva River basin, which cuts through Chiapas and Tabasco, employing the same political strategy to prevent opposition from peasant, campesino and indigenous groups.[3] Hydraulic and civil engineers estimated the Grijalva River basin contained over fifty percent of the nation's hydropower, power that could be utilized for electrical production, agricultural expansion and aquaculture. Engineers proposed a series of multi-purpose dams as the centerpiece of this developmental project, but overlooked subtle, yet significant factors that limited the state's projected benefits. Mega-projects, including the construction of highways, bridges and large dams (dams over 15 meters from the foundation to the top) incur obvious direct outcomes, including population displacements, abruptly transformed hydraulic patterns, and the erection of seemingly permanent manmade structures. However, indirect consequences are just as damaging as they are unpredictable, such as soil erosion, declining water quality, and the initiation of cultural, ethnic and labor conflicts.[4] In Chiapas the physical environment and local communities at times complied with state projections, reacted indifferently or at other times completely opposed mandates from Mexico City and executive river commissions. Chiapanecos participated in both formal and less visible forms of democratic participation, contesting the mode of resource exploitation pursued by the state, including not only "silent transcripts" but also outward opposition.[5]

Authoritarian/totalitarian taxonomies have been incisively applied to analyses of various Latin American nation states. These critical appraisals of the political, social and economic development of, among other countries, Cuba, Paraguay, Brazil and Mexico assert that the ebb and flow of dictatorial regimes are rooted in culturally and historically contingent elements, including the centrality of the Catholic church, a male dominated, patriarchal social order and a politically inactive, uninformed civil society.[6] Conversely, in his discussion of democratic trends in Latin America, Carlos Forment approaches 19th century political history applying a neo-Tocquevellian framework, focusing on civil society. Tocqueville distinguished Latin American and Anglo-American democracy based primarily on the influence of the church, arguing the United States successfully mitigated the influence of the church on politics, thus allowing for the emergence of modern, secular political forms of participation. Conversely, Tocquevellian scholars have argued that in Latin America the church maintained pervasive influence over political and economic policy, mitigating the emergence of associative, democratic groups. Forment argues that scholars and public intellectuals over the past century have blamed this "colonial legacy," and a resulting weak, almost non-existent civil society, as the basis for the re-emergence of *caudillos* and dictatorships across the region.[7] However, when analyzing, among other archival evidence, the print production that existed in countries such as Mexico, this ahistorical assumption looses weight. Although democratic participation was partially circumscribed by literacy, a nascent, yet active democratic civil society flourished through a myriad of official and non-official institutions including political parties, labor unions, and mutual aid societies

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[2] Camp, *Politics in Mexico*, 130-31.
[3] See figure 1.1 and 1.2 in appendix for Chiapas' geography and hydrology.
[4] Paul K. Gellert and Barbara Lynch, "Mega-Projects as Displacements," *International Social Science Journal* 175 (March 2003): 15-25. For social and ethnic conflict see Miguel Alberto Bartolomé and Alicia Mabel Barabas, *La presa cerro de oro y el Ingeniero el gran Dios: Relocalización y etnocidio Chinanteco en México* (México D.F.: Consorcio Industrial Litográfico, 1990). Bartolomé and Bárabas describe the conflicts that emerge when Chinantecos of Oaxaca were displaced by the Balsas river commission and re-settled in mestizo communities. Not only do they lose their lands, but begin to lose traditional mediating groups including indigenous councils.
[5] James Scott, *Domination and the Arts of Resistance: Hidden Transcripts.* (New Haven: Yale University Press, 1990).
[6] John Charles Sondrol, "Castro's Cuba and Stroessner's Paraguay," 1-12.
[7] Carlos Forment, Democracy in Latin America: 1760: 1900 (Chicago: University of Chicago Press, 2003), xi-xvii.

Other social scientists continue to uncover evidence concerning statist attempts to incorporate these various factions into the national narrative through monumental architecture, public rituals and officially sanctioned performances. Mexico City's urban geography exemplifies the authoritarian impulse to carefully orchestrate a unifying national mythology, replete with statues to its Revolutionary past and venerable indigenous foundations (while in practice indigenous groups are constantly discriminated against). [8] There has been however, far less effort in appraising the state's influence in Mexico's peripheral regions, including the arid, sparsely populated north, or the mysterious and heavily indigenous south. National mythologies, revolutionary monuments and ritual celebrations have been applied in these regions with at best, indifferent results. What then, has the state turned to in the enterprise of consolidating a unifying historical, national narrative in these regions? In the case of the south, the obvious answer has been recurrent repressive episodes of military interventions, culminating most notably in the 1994 Zapatista uprising in Chiapas. Yet there have been more nuanced attempts to incorporate perceived fringe groups into the nation. More notable 20th century examples would be rural education programs instituted by Plutarco Elías Calles in the immediate aftermath of the Mexican Revolution (1910-1920, arguably).[9] But has the state only sought to consolidate power through military intervention, ritual celebrations, education programs and national holidays? The answer is of course, no. What other ways then, have state planners fostered a sense of nation and modernity among poor farmers and laborers in Chiapas?

James Scott, better known for his work on forms of peasant resistance, generated important analytical questions (synthesizing the work of environmental historians, geographers and anthropologists) concerning the state's attempts to "get a hold of" its territory through a series of modernist projects that sought to rationally order the physical landscape, ultimately introducing modernity to "third world" peasant communities.[10] Can the "synoptic lens" (as termed by Scott) of the state incorporate peripheral regions, ultimately asserting monolithic, uncontested control over the physical and human geography of the nation? As has been amply demonstrated by colonial and modern historians, continual forays into the periphery by imperial and later national engineers, cartographers, taxonomists and scientists struggled to condense the myriad environmental, social, and cultural actors into legible representations.[11] Does this failure reflect a hubris peculiar to occidental epistemology, whose modern expression has unmasked the continual shortcomings of the scientific process? If merely looking at predicted electrical generating capacity, then yes. State institutions at both national and international levels identified geographies and populations according to unqualified data, superficial equations, leading to large-scale expenditures, with at best, indifferent results.[12] The revolutionary narrative, employed to such great affect by Lázaro Cardenas, struggled to incorporate Mexico's southeast into the technocratic vision of the Mexican state.

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[8] Thomas Benjamin, *La Revolución: Mexico's Great Revolution as Memory, Myth and History* (Austin, Texas: University of Texas Press, 2002).
[9] Stephen Lewis, *The Ambivalent Revolution: Forging State and Nation in Chiapas, 1910-1945* (Albuquerque, New Mexico: University of New Mexico Press, 2005).
[10] James Scott, Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed (New Haven, Connecticut: Yale University Press, 1998).
[11] For the colonial period in Mexico see, Barbara Mundy, *The Mapping of New Spain: Indigenous Cartography and the Maps of the Relaciones Geográficas* (Chicago: University of Chicago Press, 1996). For the national period see, Raymond Craib, *Cartographic Mexico: A History of State Fixations and Fugitive Landscapes* (Durham, North Carolina: Duke University Press, 2004).
[12] See, James Ferguson, *The Anti-Politics Machine: "Development," Depoliticization and Bureaucratic Power in Lesotho* (Minneapolis: University of Minnesota Press, 1994).

From the CRG to the CFE

Beginning in 1947 Mexican President Miguel Alemán Valdes initiated a series of far- reaching institutional reforms aimed at developing the arid regions of the Pacific coats, and alleviating seasonal flooding on the Gulf coast (principally in Chiapas and Tabasco). The government established a series of executive river commissions throughout southern and western Mexico to implement comprehensive, multi-purpose river development plan modeled on the Tennessee Valley Authority. These executive river commissions, such as the Grijalva River Commission (CRG) based in southeastern Mexico, proposed a network of levees, irrigation canals and multi purpose dams that would foment agriculture, aquaculture and energy production in the underdeveloped south. The executive river commissions formed by the Mexican government through the 1950's theoretically functioned as decentralized institutions that would have the flexibility to determine the specific needs of each region in which they functioned. That is, state planners conceived of these executive commissions as having the ability to appraise the peculiarities of diverse regions such as Tabasco, Chiapas, and the Pacific coast of Oaxaca. Further, state planners hoped to allow executive river commission to operate with the freedom and flexibility of private enterprise. Unfortunately, the requisite political will or financial capital did not exist, and state planners promoted riparian development plans that would provide more immediate and visible returns on investments. The experience of Netzahualcoyótl dam (Malpaso) amply justified this reconfiguration of state plans, where constructing a multi-purpose dam complex resulted in a complicated, protracted and marginally productive endeavor. When the Belisario Dominguez dam (La Angostura) neared completion, the experience would be similar. Local communities defied the predicted engineered outcome developed in distance Mexico City, as did the dynamic and misunderstood landscape.

By the early 1960's it was evident that the comprehensive water management schemes initiated in 1947 by President Alemán, Minister Adolfo Orive Alba and Carlos Molina Rodríguez would not pass through the quagmire of political opposition in Mexico City or the influential network of regional *camarillas*.[13] The inauguration of Malpaso at the end of López Mateos' sexenio brought a rush of anticipation that multi-purpose river management would contribute to national development. However, by 1967 government policy shifted away from the costly and unpredictable TVA model for river management. Instead, the new President of the Republic, Gustavo Díaz Ordaz, determined that the Federal Electric Commission (CFE) should lead Mexico's modernization and developmental plans as it concerned water management, particularly in the powerful Grijalva River basin. The CFE development plan stood in stark contrast to the sprawling, far-reaching CRG program. CFE plans replaced the comprehensive social planning espoused by the CRG with what Scott terms " a muscle bound high modernist" project. High modernist projects applied in southern Mexico sought to elevate impoverished peripheries through a rigid application and influx of labor and technology.[14] The emergence of the CFE as the overseer of water management in Chiapas necessitates a discussion of specific historical concepts. First, a discussion of the relationship between national and state politics establishes the principal figures and ideas that informed new Grijalva River plan. A brief discussion follows on the "Miracle Economy" of the late 1950's and sixties including notions of dependence, and the import substitution economic model. In the 1950's

[13] For a concise explanation of the influence of the camarilla system see Roderic Ai Camp, *Politics in Mexico*. Camp explains the many facets of the camarilla system that distinguish it from other interest groups, including the most vital element, that of the role of the mentor-prodigy relationship.

[14] Scott, *Seeing Like a State*, 103-130. Scott spends a great deal of time discussing urban planning, and points to the modern design as ahistorical, not allowing for change over time, or the incorporation of elements that did not appear on the original plan. Scott points to Brasilia, Brazil as one of these high modernist cities, that remained essentially unchanged in the interior of the city, but spawned massive shanty towns on its outskirts. Dams can be seen to wreak the same consequences in eco-systems, where they allow for little other than what the blueprint points to, with unforeseen consequences literally spilling into areas outside of its domain.

politicians and economists believed that Mexico would soon reach self-sufficiency in food and energy production. With the abandonment of multi-purpose river development schemes, in favor of more narrow projects that offered quicker returns, Mexico slipped back into dependence on foreign imports and capital. However, in the 1960's, the Revolutionary party began to show fissures, however slight, when popular labor, student and medical worker movements spread across the country. As PRI technocrats attempted to re-assert their authority, leading figures such as Díaz Ordaz unimaginatively referred to the "next stage of the Revolution" when announcing mega-projects such as the Angostura Dam on the Grijalva River. Anxious engineers anticipated their next challenge invoking the most recent and modern science. Just as CRG engineers, they shared a vision of a re-worked ecological and social landscape. By late September 1968, the decade of the Grijalva officially began.

The Politics of Development: Díaz Ordaz Style

Through the 1960's the authoritarian bureaucracy that governed Mexico faced few direct threats to its control of federal, state or municipal governments. Of course many opposition groups existed, including campesino syndicates in Chiapas and Tabasco. Still, instances of outright protest were rare. The ability of the state to manipulate workers' unions such as the Mexican Workers Confederation left many dissenters with few options for effective protest. Workers need only have read the reports coming from Mexico City in the photo journal *Mañana,* to have seen the results when independent union members broke with the Mexican Workers Confederation (CTM). The May Day confrontation in Mexico City of 1952 between CTM members allied with police resulted in attacks and a few deaths among independent unionists.[15] Chiapaneco campesinos experienced similar intimidation by ejidal unions and the National Campesino Confederation (CNC) when they attempted to participate in independent movements seeking land rights.[16] By 1968, the increase in violence and governmental repression reached its climax.

Journalists have characterized the period from the mid-1960's through the presidency of Luis Echeverría as the *guerra sucia,* or dirty war.[17] During this period, Díaz Ordaz and Interior Minister Echeverría, clandestinely sought out government dissenters, particularly those thought to be allied with the Mexican Communist Party (PCM). Many labor and student activists were imprisoned and sometimes "disappeared". As in the United States, these clandestine operations fueled widespread anti-government movements, culminating in confrontations between the army and police against protestors. In Mexico conflict occurred on 2 October 1968, when student protestors gathered in the plaza of the Three Cultures in the neighborhood of Tlatelolco. After protestors refused to disband, soldiers and police opened fire on the crowd, with the *London Times* reporting over 500 civilians casualties.[18] Díaz Ordaz, Echeverría and even the head of the American Federal Bureau of Investigation (FBI), J. Edgar Hoover blamed Communist infiltrators for provoking the army. The government predictably understated the casualty toll reporting only twenty-five protestors had been killed.[19] A period of intimidated calm ensued after the Tlatelolco protests. Political analysts regard

[15] Archivo General de la Nación (AGN), Fondo Mayo, Section 3959.
[16] Neil Harvey, *The Chiapas Rebellion: The Struggle for Land and Democracy* (Durham: Duke University Press, 1999), 92-95.
[17] "Echeverría ordenó la guerra sucia", *Processo* (Agosto1998), 12-15.
[18] "Students and Police Clash in Mexico City," *London Times,* 4 October 1968, 1.
[19] "Hoover Finds Peril in New Left Action," *New York Times*, 19 May 1968, 25. Rafael Sánchez Velázquez, "Implantar el Comunismo meta el grupo de linea dura del conflicto estudinatil: Lo afirmo uno de sus mas destacadas, dirigentes, Socrates Campos, Lemus, ante el Ministerio público federal," *El Nacional*, 6 October 1968, 1.

Díaz Ordaz and Echeverria's clumsy handling of these protests as the beginning of the eventual loss of political sovereignty held by the PRI.[20]

The conservative trajectory of Mexican politics since the revolutionary Cárdenas land reforms can be simplistically plotted on a presidential chronology, beginning with Manuel Avila Camacho's declaration, "Soy creyente," or "I am a believer," signaling an end to the radical secularism of the Revolution and culminating with Díaz Ordaz.[21] Still, this generalization is fraught with problems and exceptions, particularly within the concept of Cardenismo itself and with the presidency of Díaz Ordaz. His political profile in many ways justifies that of a paranoid conservative reactionary. Díaz Ordaz rose to prominence in the conservative town of Puebla, gaining a reputation as a hard working and loyal party bureaucrat. He certainly did not look the presidential part. Díaz Ordaz was a short man with a pock marked face that even he poked fun at. Apart from a few jokes at his own expense, Díaz Ordaz's paranoid disposition made him particularly qualified for his position as Minister of the Interior under López Mateos. His service to the party and López Mateos led to his selection as the official party candidate in the 1964 election where he triumphed by an official tally of ninety percent. During the 1964 campaign Díaz Ordaz invoked the Revolutionary jargon employed so successfully by his predecessors. He repeatedly declared that he would continue land redistribution programs, rural modernization, as well as continued development of domestic industry.[22] It was in the last two years of his presidency that Díaz Ordaz delivered on one of these revolutionary programs in distant Chiapas.

Díaz Ordaz came to power during a period of rapid economic growth. This "Economic Miracle" is conventionally said to begin with Ávila Camacho's intensive program of capital accumulation in 1940 and fueled by industrial expansion in Mexico City, Guadalajara and Monterrey. The Miracle economy relied on the rural periphery for both food resources and cheap labor. Urbanization had become a major problem as CRG engineers had predicted in the 1940's. Rapidly growing urban centers contributed to both export growth and increased importation of industrial materials. Without a viable rural agricultural economy to supply the necessary staple grains for the urban sector, Mexico remained dependent on foreign imports of food staples, most notably corn. Although statistics obscure many details, they also elucidate fundamental economic conflicts. In 1968 Mexican exports rose by 6.7 percent, while imports offset this growth, growing to twelve percent in the same year.[23]

During the 1960's little significant structural change occurred in Chiapas, particularly in the rural sector. Peasants and Indians continued to be shifted to marginal lands, at times evicted from lands completely. The two principal industrial centers of Tuxtla Gutiérrez and Tapachula failed to accommodate the growing landless populations.[24] According to newspaper reports in 1968, approximately 15,000 peasants in Chiapas did not have land and 13,000 new workers sought jobs annually. Workers found few opportunities, settling for part-time work or work in informal markets.[25] The landless and labor problems struck Indian communities with particular force, despite

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[20] See Roderic AI Camp, *Politics in Mexico,* 245.
[21] Gilbert M. Joseph, Anne Rubenstein and Eric Zolov, "Assembling the Fragments: Writing a Cultural History of Mexico Since 1940," in *Fragments of a Golden Age: The Politics of Culture in Mexico Since 1940,* eds. Gilbert Joseph, Anne Rubenstein and Eric Zolov (Duke University Press, Durham, North Carolina, 2001), 3.
[22] See Don Hofstadter, *Mexico 1946-73* (New York: Facts on File, 1974), 101-2. For Díaz Ordaz's quirky personality see Enrique Krauze, *Mexico: Biography of Power: A History of Modern Mexico, 1810-1996* transl. Hank Heifetz (New York: Harper Perennial, 1997), 676.
[23] Hofstadter, *Mexico, 1946-73*, 119. See also, Gilbert Joseph, ed. *Fragments of a Golden Age.*
[24] On land evictions see Neil Harvey, *The Chiapas Rebellion,* 211-17.
[25] Henry Giniger, "A Mexican State Feels Neglected: Chiapas Lacks the Means to Develop its Resources," *New York Times* 11 February 1968 (New York), 21.

official government publications and the superficial rhetoric of the National Indigenous Institute (INI).[26] Indian culture had been marketed with great success as a lure for tourists by the early 1970's. Yet the daily lives of Chiapan Indian communities was a continual struggle to gain access to limited land, discrimination in job markets and a disinterested federal bureaucracy that saw their communities as embarrassing vestiges of a superstitious past. The official view of indigenous communities followed the dictum in the 1917 Constitution declaring Mexico a mestizo nation. This outgrowth of José Vasconcelos' concept of the *raza cósmica* held particular sway with bureaucrats working in heavily indigenous areas such as Chiapas and Oaxaca. A document from the Papaloapan Commission succinctly summarizes the official view of Indian communities in the 1960's, stating that through the process of state backed mega-projects, Indian communities would jump:

> Many stages of historical evolution. They are in a process of change from a tribal life to today's civilized life. They are integrating themselves rapidly thanks to the help they received from the Papaloapan Commission and the National Indigenous Institute not only in material products but also in cultural benefits. The moral help they have been receiving since they emerged from their previous isolation into a different world offers them more comforts and ample opportunity for well-being and prosperity.[27]

Díaz Ordaz hoped to remedy the perceived backward rural sector, exemplified by corporate Indian communities, through a radical program of energy exploitation with the CFE in the vanguard of the movement.

A Brief History of the CFE

The first electric generating plant reached operational capacity in the textile factory of Hayser and Portillo in León, Guanajuato, in 1879. Two years later engineers attempted to install incandescent lights in Mexico City for public safety, but failed due to insufficient transmission lines and energy production. The first hydroelectric plant opened in Batopilas, Chihuahua, in 1889 with a capacity of 22 kilowatts. This facility illuminated a limited stretch of the copper mine in Batopilas, while the majority of the mine remained illuminated by oil lamps and candles. Other hydroelectric facilities opened in mines around San Luis Potosí in 1892, and in the mines of Real del Monte outside of Pachuca in 1897. Between 1887 and 1911 over 100 electric companies incorporated throughout Mexico, all under privately held, largely foreign-backed owners.[28] The largest companies, the Mexican Light and Power Company and the Guanajuato Power and Electric Company, successfully monopolized the majority of electrical production into the 1900's. Together they controlled production of 681 of the over 837 kilowatts of electrical production throughout the country.[29]

After the Revolution, President Alvaro Obregón sought to curtail the influence of foreign control on domestic resources. He remained careful not to ward off continued investment that would stifle economic growth. To meet both of these mandates Obregón created the National Commission of Power (CNFM, Comisión Nacional de Fuerza Motriz) in 1923. The CNFM acted to control the further monopolization of electrical production. It also drafted amendments that exerted stricter

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26 See Informe de Gobierno de Chiapas 5, Gobernador Manuel Velasco Suárez (México DF: Talleres Editorial, 1975), 19.

27 Archivo Histórico del Agua (AHA), Fondo, aprovechamientos superficiales, Caja 9, Expediente 1,654, Páginas 4-7.

28 Guillermo Rodríguez y Rodríguez, "Evolución de la industria eléctrica en México," in *El sector eléctrico de México*, coordinación de Daniel Reséndez-Núñez (México DF: Fondo Cultura Económica, 1994), 16-18.

29 Enrique de la Garza Toledo, Javier Melgoza, Liliana de la Garza, Enrique Laviada, Mario Trujillo, Victor Sánchez, Raúl Corral, Héctor Amezcua, Rafael Reyes A., y Graco Rojo (co-authors), *Historia de la industria eléctrica en México*, (México DF: Universidad Autónoma Metropolitana, 1994), 19-23.

control over subsoil and hydraulic resources. In 1926 the first formal piece of legislation concerning electrical production, reform ten of article 73 of the 1917 Constitution, gave the federal congress the ability to legislate on electrical energy production for public distribution. On 14 August 1937 during the Cárdenas presidency, the CFE became the exclusive ministry charged with expanding, regulating and producing electricity. President Cárdenas created the CFE as an institution charged with conserving and promoting the national drive for energy independence, a move supported by the 1938 oil expropriation.[30] Still, electrical concessions remained in the hands of private companies, with the largest holders based outside of Mexico.

By 1960, President López Mateos set the stage for a less famous expropriation. Under pressure from nationalist constituencies within the upper levels of the party structure, López Mateos pressured General Electric Corporation, the largest shareholder in the Mexican Light and Power Company, to place its stock holdings on the domestic exchange. Fearing a nationalist expropriation, GE reluctantly agreed and the federal government immediately purchased ninety percent of Mexican Light and Power's stocks. On 31 March 1960, the federal government approved the purchase of these stocks at a price of 65 million dollars, with five million due immediately. The contract stipulated that balance would be paid over the next fifteen years at 6.5 percent interest.[31] The purchase of the GE stocks gained credence among politicians when the president invoked Article 27 of the Constitution. He argued that according to Article 27 electrical production constituted a national resource, not a resource available for foreign exploitation.[32] With the nationalization of electrical production, López Mateos limited the extent of foreign intervention in electrical production. The problem CFE ministers quickly encountered, however, were the high costs of maintaining coal, oil and hydropower electrical production facilities. Not only did these facilities require trained technicians to operate them, but also a constant input of materials to maintain the machinery. These things cost money, and the profits generated by electrical production fell far short of the requisite cash necessary to address these issues. The building of new facilities required greater capital investment. This was particularly important when discussing the construction of hydroelectric facilities in the country's remote north, and distant south. To meet capital demands, the CFE and the National Bank turned to international lending institutions, including the World Bank (WB) and the Inter-American Development Bank (IADB).

It is impossible to give a synopsis of the lending practices and policies of international lending agencies such as the WB, IADB and the International Monetary Fund (IMF). The current debate over these institutions ranges from rampaging anti-globalization protestors to supporters of neoliberalism. Neoliberal proponents consider free trade as the only avenue to develop and modernize political and economic institutions in the third world. When lending institutions began offering massive loans to Latin America for mega-projects, Mexico benefited due to its financial position in the 1960's. International debt had grown significantly, but the prognosis for continued economic growth remained positive into the 1970's. The Díaz Ordaz administration took full advantage of loans made available for infrastructural improvement.

[30] Rodríguez y Rodríguez, "Evolución de la industria eléctrica en México," 20-22.
[31] Ibid, 29-30. See also Jaime Navarro and Nora Linda Montes, "Development and Planning in the Mexican Electricity Subsector," *Energy Policy in Mexico: Problems and Future Prospects for the Future* Eds. Miguel S. Wionczek, Oscar M. Guzman and Roberto Gutierrez (Boulder: Westview Press, 1988), 67.
[32] Guillermo Kelly Novoa, "Marco legal y regulación del servicio público de energía eléctrica en México," in Daniel Reséndez- Nuñez, ed., *El sector eléctrico de México*, 47.

La Revolución Eléctrico

During the commemoration ceremonies for the fifth anniversary of the nationalization of electricity on 27 September 1965, CFE director Guillermo Martínez Domínguez delivered a rather frank assessment of the plight of southern Mexico. He pointed to the continual inability of the state to access the supposedly immense stores of energy. As he detailed the problems of over dependence on petroleum and coal, the director continued to lament the unequal distribution of electrical access across the country. He stated that the five states of southeastern Mexico that accounted for 11 percent of the country generated only two percent of national electrical production. This equaled about 117,000 kilowatts, or one third of that generated by large cities such as Monterrey. He argued that the solution to this problem was the creation of an interconnected electrical system. This system would integrate the untapped sources of the Grijalva Usumacinta basin with existing electrical networks in the central basin, Nayarit, Zacatecas, and San Luis Potosí. Finally, he theorized that this energy system would link up with the oil fields of southern Tamaulipas, almost doubling national energy production. Domínguez Martínez strengthened his case, outlining a system where petroleum, coal, hydroelectric and nuclear energy would function in a complimentary, nationwide grid. He declared this system allowed for long term, sustainable energy independence.[33] Estimates on the potential for hydroelectricity in the south accounted for the newly installed turbines in Malpaso Dam, with four new turbines still awaiting installation. In 1967 the director unveiled the potential of the Grijalva River hydroelectric production.

On 14 December 1967, Martínez Domínguez delivered a lecture to students, professors and professional engineers of the National School of Engineering. Guillermo Domínguez began his lecture with a prefatory imperative that all electrical engineers had the duty to fulfill. He declared that during the Díaz Ordaz sexenio electrical engineers had the duty to critically analyze the accomplishments of the electrical industry. Of equal importance was to attend to future energy demands. He continued his lecture pleading that engineers must analyze available energy sources and those presently unexploited. As the speech proceeded, the director listed recent accomplishments of the Díaz Ordaz administration. He pointed to the 14th August consolidation of 19 private electrical companies including the Central Light and Power Company into the CFE. Generating facilities in Veracruz, Puebla, Michoacan, Guanajuato, Jalisco, Colima, Nayarit, Hidalgo and Tabasco (among others) shed their private owners and incorporated into a single administrative unit under the CFE. Nationalist newspapers latched onto the story, terming it one of the most monumental and ambitious development programs since the oil expropriations of 1938. Journalists pointed to the work of the CFE as a true sign of the vitality of the Revolutionary impetus toward modernity.[34] Guillermo Domínguez justified the need for aggressive energy exploitation due to an annual 3.6 percent demographic increase. This demand was compounded by households that already had electric with demands increasing 5.1 percent annually. Further, due to "impressive" annual economic growth of over 6 percent under the Díaz Ordaz administration, demand for energy became even more important. Guillermo Domínguez paraphrased the president stating "Without electricity and without petroleum industrial development is impossible." The director conceded that Mexico remained a rural country, but suggested that the CFE had greatly increased rural electrification. He pointed to the construction of over 840 generating and transmission systems that benefited over one million citizens in coordination with thirty-one state governments.[35] But, he

[33] Licenciado Guillermo Martínez Domínguez, "Discurso del 27 de Septiembre de 1965 al conmemerarse el V Aniversario de la nacionalización de la industria eléctrica," *La industria eléctrica de México: Comisión Federal de Electricidad, 1965-1970* (México DF: Imprenta Nuevo Mundo, 1970), 14-15.
[34] "La electrificación de México," *El Nacional*, 1 Agosto 1968 (México DF), 5. See also, "De la gira Presidencial: Interconnexion de Sistemas eléctrico," *El Nacional*, 1 Agosto 1968 (México DF), 5.

continued, referring to an earlier speech in 1965, the Grijalva River had the potential to accommodate future energy shortages.

The official estimates Martínez Domínguez delivered in 1967 were provocative and misleading. According to CFE surveys and hydropower studies 11.5 million kilowatts of hydroelectricity remained untapped across the country. Of these 11.5 million kilowatts, 7.2 gushed unused into the Gulf of Mexico from the Grijalva River. Another 1.3 million kilowatts remained unused in the middle Balsas River, with another 3 million kilowatts located in disparate parts of the country. The director went on to promise that the budget approved by the president and the congress of almost 500 million pesos would be used to finally appropriate these wasted stores of energy.[36] It was not until 1968 that Díaz Ordaz and Martínez Domínguez announced the specific location and scale of the project that enabled the rational extraction and production of hydropower from the country's greatest, source, the Grijalva River.

Few Chiapanecos understood the technical details of CFE predictions. Still, many state residents appropriated this information, transforming it into a source of state pride. The CFE generated a heightened sense of both state identity and nationalism. This dynamic bureaucracy provided Chiapanecos with a duty to elevate not only the state, but also the nation to a brightly lit, electrical future.

The Decade of the Grijalva

On 30 September 1968, CFE director Martínez Domínguez and President Díaz Ordaz stood on the steps of the national palace and delivered a brief address announcing the most ambitious hydroelectric project in Mexico. They proposed to build the hydropower plant on the upper Grijalva River, twenty minutes east of La Concordia and two hours south of the state capital of Tuxtla Gutiérrez. Martínez Domínguez explained that this single purpose electrical station ushered in the "Decade of the Grijalva." The "Decade of the Grijalva" began a period of unprecedented expansion of electrical generating capacity based on the predictable flow of the Grijalva River's waters. Officially named Belisario Domínguez after the Chiapaneco Revolutionary martyr, the dam took the common name of the site, La Angostura, meaning the narrows. The press corps reported the inauguration of the "Decade of the Grijalva" with predictable refrains to the Revolution. Reporters thronged to the story. They wrote that politics remained revolutionary and progressive, while simultaneously aggrandizing the proposed projects as an example for development to other Latin American nations.[37] Addressing the national congress in October, President Díaz Ordaz asserted that, "With this work, we will obtain electrical generating capacity that will allow us to control the Grijalva efficiently as well as operate the Netzahualcóyotl dam more efficiently."[38]

In their initial announcements, neither the president nor the CFE director went into significant detail about ancillary projects. They did not discuss irrigation, aquaculture, land reclamation, flood abatement or clean water, which had all been central to the Malpaso proposal. Later, under the Echeverría administration, a few platitudes were made concerning the secondary and tertiary

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[35] Licenciado Guillermo Martínez Domínguez, "Conferencia dictada en la Escuela Nacional de Ingenieros, el 14 Noviembre 1967," *en La industria eléctrica de México: Comisión Federal de Electricidad, 1965-70*, 37-38.
[36] Ibid, 39-40.
[37] Guillermo Martínez Domínguez, "En Septiembre 30 de 1968 al Salir de un acuerdo con el Presidente Díaz Ordaz ante un grupo de periodistas," in *La industria eléctrica de México*, 126-28. For press coverage see among others, Juan Chávez Rebollar, "Una gigantesca presa se construye en le Grijalva: Será la mas larga del país y costara mil millones de pesos; junto con Malpaso genera 3 millones de kilovatos para 17 estados," *El Nacional* (México DF), 1 October 1968, 1.
[38] Presidencia de la República, *El Gobierno Mexicano*, Numero 47 (1-31 Octubre), 129.

benefits of La Angostura. But La Angostura started and finished as a single purpose project whose focus was electrical production. The principles of social planning that drove the CRG's outline for the lower Grijalva River valley existed only in the state's marketing plan. As the experience of Malpaso had demonstrated, multi-purpose river management proved far too costly, both financially and politically.

Engineers projected that La Angostura's initial generating capacity would reach 540,000 kilowatts, a remarkably high estimate. Equally ambitious were projections concerning the aftermath of the completion of La Angostura. These projections materialized quickly. When la Angostura was completed, work began immediately on two more hydropower plants, one at Chicoasen, and later at Peñitas. With the completion of these dams, the CFE finally initiated the extraction of the estimated 7.2 million kilowatts stored in the river's annual flow. Also, this store of electricity would offset the predicted five million kilowatts of increased demand the CFE expected to arise over the next nine years.[39] Scarcity of resources had been a constant worry of the government since the 1940's. Increased urban migration and demographic growth pressured politicians to seek expeditious and rapid resolutions.

Financing the dam, as with Malpaso, came from international lending institutions including the IADB, the WB and IMF. Additional funds from private lending institutions in Europe, Japan and Canada added the requisite capital. International lending institutions recognized that the Mexican economic condition remained relatively sound, despite increased imports. Projected costs for completion of the entire Grijalva hydroelectric complex reached 5,000 million pesos, with the exchange rate between the dollar and peso at about 12.5 to one in the 1960's. Building La Angostura itself required an initial cost of 1,250 million pesos, with costs expected to rise as the dam neared completion. The requisite materials of 60,000 tons of concrete, steel reinforcements, lumber to form the dam, as well as the electrical, hydraulic and mechanical machinery alone accounted for almost half of the cost. Guillermo Domínguez expected labor costs to surpass the allotted 700 million pesos. These demands, Guillermo Domínguez continued in an address to the Chiapas state assembly, would extend to the local economy. The CFE projects created cement factories, lumber mills, work camps, and substantially increased capital circulation in the state due to a temporary spike in wages and industrial expenditures.[40]

Martínez Domínguez worked diligently from 1965 to 1968 in order to secure the necessary loans for the Grijalva River projects. On 12 August 1968, during a newspaper interview, the CFE director revealed he had received a letter from WB director Robert McNamara concerning Mexico's credit rating. McNamara conveyed his assurances that he was completely confident in the CFE and Díaz Ordaz administration concerning their ability to not repay these loans. McNamara also assured the director that he believed the Grijalva River hydroelectric complex was a necessary and practical developmental plan. McNamara also viewed the CFE under Martínez Domínguez's directorship as largely responsible for Mexico's high regard among world lending institutions. The director quoted McNamara as declaring "We at the bank appreciate and value the long relationship we have with the CFE… We are particularly impressed with the improved efficiency of the CFE under your direction."[41]

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[39] Guillermo Martínez Domínguez "Declaraciones formuladas el 11 de Enero 1968, sobre la CFE en el progresso de México," *La industria eléctrica de México*, 53.
[40] Martínez Domínguez, "El 15 de Noviembre de 1968, en Tuxtla Gutiérrez, Chiapas," La industria eléctrica de México," 130.

Two WB loans preceded McNamara's letter to Martínez Domínguez. On January 1968, the WB approved a loan of 52.5 million dollars for infrastructural improvements, specifically road improvements, irrigation systems and electrical production. According to the WB and President Díaz Ordaz the Mexicali Valley received 32.5 million dollars of this loan, because of its potentially rich agricultural fields. The CFE gained control over the remaining 20 million dollars, immediately channeling a reported 10 million dollars to surveys and initial works in the Grijalva River.[42]

In June 1968 Mexico received another loan from an international banking consortium, headed by the WB that included banks from Belgium, France, Germany, Italy, Spain, Sweden, Switzerland, the United Kingdom, Canada and Japan. The loan totaled 112 million dollars, with the WB providing the majority of 90 million dollars. The loan contract specifically stated that the monies were to be used for hydroelectric plants and the expansion of the electrical system.[43] The terms for the January and June loans were for twenty years at 6.25 percent annual interest. With these last two loans, Mexico's debt to the WB rose to 767 million dollars, with 155 million dollars specifically for electrification and hydropower projects. Less than a year after the June 1968 loan, the WB awarded another 125 million dollar loan-package, again for electricity and hydropower.[44]

Building in the Narrows

Construction on La Angostura began early in 1968, months prior to the official announcement on 30 September. The site chosen, a narrow pass on the middle Grijalva River, stood on the eastern slope of the Frailesca region in a limestone canyon. As with Malpaso, the Grijalva River had to be diverted from the work site in order to prepare the bedrock foundation for the superstructure of the dam. To accomplish this, engineers dug two massive deviation tunnels thirteen meters in diameter. Next, workers established a 56-meter-high temporary cofferdam, successfully diverting the waters away from the narrow pass. Engineers designed the deviation tunnel and cofferdam to divert an estimated 4,400 cubic meters of water per second. When the superstructure neared completion, large concrete caps plugged the deviation tunnels. Materials from the cofferdam were slated for recycling for further building projects.[45] However, many *chiapanecos* believed the CFE just demolished the cofferdam and let it fall into the river.[46]

La Angostura's design differed significantly from that of Malpaso due to environmental constraints and the availability of materials. Engineers built Malpaso as a rockfill dam with a permeable core, but designed La Angostura as a rockfill dam with a compacted clay core. As the geology of the area consists of soft limestone, CFE engineers could build on-site cement factories, a necessary step considering the volume of concrete necessary. The 60,000 tons of cement used to build the control structure would encase three vertical axis generators each with a capacity of 180,000 kilowatts. To turn these generators, the CFE purchased three Francis-type turbines that delivered 253,800 horsepower, discharging 240 cubic meters of water per second. Final estimates concluded that after the termination of the Grijalva hydroelectric system, national hydroelectric production would

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[41] "Reconoce el Banco Mundial la eficiencia de la CFE," *El Nacional*, 13 Agosto 1968 (México DF), 1.
[42] "Mexico gets Two Loans totaling 52.5 Million: Borrowings from the World Bank to be Spent to Improve Roads and for Irrigation Systems," *Wall Street Journal*, 29 January 1968 (New York), 3.
[43] "World Bank to lend $90 Million to Mexico for Electricity System: Eight European Nations, Canada, Japan to Provide $22 Million in Credits for Similar Purposes," *Wall Street Journal*, 27 June 1968 (New York), 27.
[44] "World Bank Loan Approved for Mexican Electrification Projects."
http://web.worldbank.org/wbsite/external/extaboutus/extarchives/0,,contentmdk:20
[45] Comisión Federal de Electricidad, *Experiencias en proyectos hidroeléctricos* (México DF: VII congreso internacional de mecánica de suelos e ingeniería de cimentaciones, 1969), 70.
[46] Ingeniero Gustavo Grajales, interview by author. 12 April 2006.

increase by over 48 percent (of 1968 production).[47] However, the manner in which the CFE riddled its reports and journals with percentages and statistics misled the public concerning the importance of hydroelectric production. Electrical demand increased by over five million kilowatts in the next nine years (from 1968). CFE engineers argued that the Grijalva constituted the principal source to meet this growth in demand. However, the 48 percent increase in electrical generation from the Grijalva River projects only concerned hydroelectric production, which was a minor percentage of electrical generation. As will be explained in the conclusion, hydroelectricity accounted for only a fraction of electrical generation in the country. Many mega-hydropower projects throughout Latin America absorbed massive amounts of surplus labor, accrued large interest bearing foreign debts, but ended up being little more than symbolic monuments to modernity and progress.

The Campaign for Popular Support

CFE Director Martínez Domínguez visited Chiapas twice after the announcements of the "Decade of the Grijalva," first in November 1968, then again in 1970 in support of Luis Echeverría's presidential campaign. On 15 November, the director met with ejidatarios, private landholders, and workers who lived in the area that would soon be affected by dam construction. The delegation Martínez Domínguez met included representatives from state-backed syndicates, including the CTM and SNC. After explaining the tentatively scheduled work program to the select delegation, Martínez Domínguez continued to explain the far-reaching benefits the Grijalva River projects promised. Not only would campesinos and workers benefit from the many modern amenities afforded by a comprehensive electrical grid, including lights, radios, perhaps even televisions, but also an array of social benefits. According to CFE estimates, dam construction would provide immediate employment for 15,000 laborers, including unskilled and skilled workers. Further, of those 15,000 jobs, the CFE reserved at least 70 percent for *chiapanecos*. Even more, after completion of the dam, 90 percent of CFE employees responsible for operating and maintaining the dam would have to show permanent residency in Chiapas. Stressing the social importance of education, the director argued that the Autonomous University of Chiapas (UNACH) would be provided with a unique opportunity to train engineering students, promising full transparency and access to professors and students.[48] Reinforcing these grand claims, Chiapas Governor Manuel Velasco Suárez argued that with La Angostura, the hydroelectric complex of Chiapas would save the nation 4.5 billion barrels of oil annually.[49]

CFE officials reminded local residents and politicians that electricity led to the growth of an industrial complex that would remain after completion. Planners promised the emergence of cement factories, lumber mills, and an interconnected road network. These facilities would connect the peripheral regions of the state to a nascent industrial economy in the south. Employment within these factories, as well as the widespread commodity production that spread into the countryside held particular allure for impoverished campesinos and laborers who continued to work with rudimentary tools. The government remained clear concerning the number of towns and villagers that faced displacement due to the projects. Planners maintained that the incentives for complying with *levantamientos* far outweighed losses of communal and familial lands. Martínez Domínguez promoted a plan of resettlement that included model villages built with modern building materials, complete with electricity, clean water, schools and medical clinics. These incentives to move proved far more contested than the response from the representative of the National Indigenous

[47] Comisión Federal de Electricidad, *Experiencias en proyectos hidroeléctricos*, 70-72.
[48] "El Proyecto hidroeléctrico sin precedente para aprovechar en su totalidad el río Grijalva." *El Nacional*, 16 Noviembre 1968 (México DF), 7.
[49] *Segundo Informe de gobierno de Chiapas*, Manuel Velasco Suárez, Gobernador Constitucional. I Noviembre 1972 (México DF: Editorial Libros de México, 1972), 107.

Commission (CNI). In a press conference the CNI representative from Venustiana Carranza pleaded that Martínez Domínguez convey a message to the president stating, "We are with you, as is our hope, affection and respect. We think that we are being treated fairly and with justice."[50]

Martínez Domínguez returned to Chiapas in 1970 when the CFE fittingly held its annual conference in Tuxtla Gutiérrez. The conference coincided with the visit of presidential candidate Echeverría, who arrived on 2 February 1970. Martínez Domínguez took the opportunity to showcase the progress of La Angostura, not only for the benefit of Chiapanecos and the future president, but also with the knowledge that his job and legacy were on the line. Chiapanecos arrived at the conference able to view the electrical menagerie of wonders that awaited them upon completion of the dam complex. Conference attendants shepherded women to the gallery of newly released blenders, ovens, vacuum cleaners and toasters, while men viewed demonstrations of the latest power tools and technicolor televisions. A delegation, including Echeverría attended a tour of the construction site in La Angostura, both on foot and from the air. Thoughtful poses of Echeverría, complete in a hard hat at the construction site seem to convey a sense of approval. The presence of the presidential candidate also conveyed a sense of continuity. Echeverría was clear that he viewed the Grijalva River projects as crucial to national development. In a brief speech to the press corps, Echeverria reiterated that the Grijalva river projects promised to modernize industry. Also, he continued, but that under his administration the peripheral benefits of industrial expansion, infrastructural improvement and education, would extend into the impoverished peripheral regions of Chiapas.[51]

Martínez Domínguez remained in a tenuous position politically, as the usual process of presidential succession involved the wholesale replacement of the cabinet. The outgoing CFE director did not overtly grovel for fear of his job, as he continued to refer to the Revolutionary agenda pursued under the administration of Díaz Ordaz. On 6 November 1970 at the conference of the Social Union of Mexican Businesses (USEM) Martínez Domínguez delivered a brief summary of his work under Díaz Ordaz. He argued that the hundreds of millions of pesos invested in public works and industry under the outgoing administration "encouraged the confidence of millions of Mexicans in the ideals of the Mexican Revolution and the execution of the constitutional rights of its citizens."[52] This did not save his position in the CFE, as newly elected President Echeverría replaced Domínguez with former president José López Portillo.

Newly elected Chiapas Governor Manuel Velasco Suárez, however, stood to reap immense benefits from the CFE projects. Not only did Governor Suárez seek out every photo opportunity he could with President Echeverría, but also with any federal minister, no matter how brief the appearance may have been. On 20 January 1971 Suárez gathered the local press to discuss his meeting with the sub-minister of the Industry and Commerce. Suárez and assistant Minster José Campillo Sáenz appeared on the steps of the governor's residence, declaring that Chiapanecos were "sitting on a mountain of gold." Chiapas government officials explained hydropower brought electricity but also an incredible explosion in industrial capacity. Suárez and Sáenz assured the crowd that everything from cars, cement, furniture and dairy factories would create a true industrial center in the south.[53] Unfortunately, future factories did little to help campesinos who had recently been displaced from

[50] Ibid. See also, "La decada del Grijalva: Proyecto de la Angostura," CFE No. 7, vol. 1 (Enero 1970), 102-3.
[51] "Luis Echeverría se esforzar en replantar una política agrícola: Así lo manifesto en la ciudad del Tuxtla Gutiérrez ayer: Texto del Discurso," *El Nacional*, 3 Febrero 1970 (México DF), 1.
[52] Martínez Domínguez, "Conferencia del Sr. Lic. Guillermo Martínez Domínguez, ante la USEM," *La industria eléctrica de México*, 112.
[53] Francisco Martínez, "Estamos sentados en un montaña de oro," *El Sol de Chiapas* 20 Enero 1971 (Tuxtla Gutiérrez), 1. "La Angostura alienta la industrialización de Chiapas," *El Sol* 24 Febrero 1971 (Tuxtla Gutiérrez), 1.

productive lands, their homes, and had traditional communication networks, including roads completely reorganized. Many families and corporate groups remained confused, uncertain but active.

Not one to let the press have much respite, Governor Suárez proclaimed the next day that CONASUPO had started a pilot program in the state. He declared that this program served as an example to the rest of the country in how families could better support themselves. Suárez and Echeverría continued that this marked another example of how the state and federal government fought to keep increasing prices of basic food staples at a reasonable price for its citizens. According to the article, the governor and president directed the national food subsistence program to create far-reaching and effective avenues to feed many of the marginalized citizens of Chiapas.[54]

Later in the year, Suárez held conferences with the Regional Campesino Committee and the Community Agrarian League in the state capital. Newspaper reports quoted Suárez as stating that without the aid and support of Suárez and Echeverría, the fate of the campesinos and farmers in Chiapas would turn out badly. Luckily though, the article goes on, the support and strength of the Revolutionary spirit of state and federal leaders provided these groups with an optimistic outlook.[55] Suárez and Echeverría shared a populist political style, based on reaching out to the majority of the population that remained in precarious social and economic positions. In practicality though, these leaders gained their positions through a complex network of political patronage based on the PRI promotional structure.

In late December, the governor referred to the progress of the dam at La Angostura, attempting to quell increasing petitions from displaced villagers. He argued that the construction of new villages at Reparto and Tendida neared completion and that the CFE had finally completed the majority of surveys outlining new land settlement plots for displaced villagers. Suárez claimed the president and CFE director Portillo had personally assured him that work would progress in a far more manageable manner, with fewer disruptions to local communities.[56] As frustrations grew with the slow pace of land re-distribution, conflict escalated in the fields between private landowners and ejidatarios. On 7 December, newspapers reported that brawls broke out between landowners and ejidal workers over land borders. Both groups had been relocated in Pijijiapan from Concordia, but had not been given precise boundaries. The ejidal commissioner and the engineer in charge of the survey could not be found for comment, nor could the governor.[57]

In an effort to offset growing unrest Suárez began publicly assuring landowners that compensation would soon arrive. He affirmed that he would visit the dam site in the coming days to make certain work progressed as it had been promised. How he would judge this remained unclear. Importantly, he conveyed assurances from the president and the CFE minister that all ejidal and campesino groups would be well compensated for lands lost due to flooding from the dam.[58] As the latter part of this chapter signifies, this promise did not materialize for many campesinos around Concordia and Carranza.

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[54] "Chiapas será estado piloto de la CONASUPO en la República, para abaratar el gasto Familiar," *El Sol de Chiapas*, 21 Enero 1971 (Tuxtla Gutiérrez), 1.
[55] "Reconocimiento a la obra revolucionaria del Dr. Velasco Suárez: De los Comités Regionales Campesinos y la Liga de Comunidades Agrarias," *Diario Popular*, 2 Diciembre 1971 (Tuxtla Gutiérrez), 1.
[56] "Impulso al terminar la presa 'La Angostura:' Se construyen El Reparto y Laja Tendida, poblados, la CFE informa que se terminó el deslinde de tierras," *Diario Popular*, 28 Diciembre 1971 (Tuxtla Gutiérrez), 1.
[57] "Entre ejidatarios y propietarios afectados," *Diario Popular* 7 Diciembre 1971 (Tuxtla Gutiérrez), 3.
[58] "Los campesinos de la Angostura serán bien indemnizados," *El Sol* 9 Febrero 1971 (Tuxtla Gutiérrez), 1.

The governor did however, keep his promise to visit the dam. He viewed the dam from foot, car and air in an effort to convince his constituents that he had been as thorough as possible in appraising the progress of dam construction.[59] Suárez was a man of science, and a trained surgeon. He was not however a civil engineer or aerial photographer. This lack of training did not prevent him from judging that progress exceeded expectations, and that the dam would begin operation imminently. The populist posturing of state and federal leaders did little to quell the numerous petitions filing in from displaced campesinos and workers in the La Angostura flood zone, particularly as it concerned the premature proclamations of near completion.

Moreover, the press in Chiapas cannot be categorically viewed as mouthpieces for the state. Looking through the back pages of newspapers, accounts of the displaced and their inability to gain compensation could be found. One article almost denounced the CFE for forcing out residents in Copainala, who had lost over 10 million pesos of recently harvested cacao.[60] These stories rarely made it into the public sphere, as they became buried by the far more compelling and easier to digest official predictions of a near future, brightly lit by the Grijalva River hydropower stations. In the official record however, many instances of resistance exist.

The Displaced

CFE reports on the social and environmental outcomes from the construction of La Angostura remained somber, as they had with Malpaso. With the resulting artificial reservoir created by La Angostura, 13 population centers sank from sight underneath a lake covering an area of 56,000 hectares.[61] Of the 15,469 residents of these towns, over 10,000 people relocated to neighboring villages or applied for housing in model villages promised by the CFE. Over 38,311 hectares of previously tilled farmland, housing and public space disappeared under La Angostura's reservoir.[62] The map in figure 5.1 is from a file dated from 1970, compiled in a CFE geohydrologic study. Within the blue areas, surveyors delineated the approximate region that would become inundated after the closing of the dam face. The dark blue line meandering through the blue area represents the original course of the river, with the lightly shaded areas still dry land.[63] A second map shows the area of the reservoir in relation to the state (Map 5.2-5.3). The map reveals that the reservoir took up considerable space in the land-starved state. Also of interest on this map are the new networks of roads, delineated by the bold blue print, that encircle the reservoir from the border of Guatemala, around Tuxtla.

In 1971 work began in earnest, with the extension of roads from Tuxtla Gutiérrez to the work zone outside of La Concordia. César Ramírez supervised both the work and land expropriations needed for road building, which remained one year away from completion in May 1971. Ramírez compiled an inventory of works in progress and those already completed. The inventory detailed twelve road-building projects between the Pan American Highway in Tuxtla, coursing south through the towns of Jericho, Revolución Mexicana, Independencia and ending in La Concordia. Engineers and laborers built five bridges through the stream-laden territory, two in the town of Revolución Mexicana and three in Independencia. The total cost for road building reached 44, 110,000 pesos

[59] "Manuel V. Suárez visitó ayer La Angostura," *El Sol*, 12 Feb 1971(Tuxtla Gutiérrez), 1.
[60] "Solicitan a la CFE víveros varios campesinos*," El Sol,* 31 Enero, 1971 (Tuxtla Gutiérrez), 7.
[61] Martínez Domínguez, "El 15 de Noviembre en Tuxtla Gutiérrez, Chiapas," *La industria eléctrica de México*, 130.
[62] Archivo General del Estado de Chiapas (AGC), Caja La Angostura, Expediente, "Relocalización y electrificación de 7 poblados que resultaran afectados por la inundacion que causara el embalse de la presa 'La Angostura,' localizada en el Estado de Chiapas, México," Página, 9.
[63]AGC, Caja La Angostura, Expediente, restitución de tierras, mapa 2. See also AGC, Caja La Angostura, Expediente CFE, "Estudio geohidrologico de margén izquierda y derecha del vaso de la Angostura entre los ríos Dorado, Concordia y Blanco," Página, anexo 4.

and the five bridges cost 11, 220,000 pesos. The road meandered along 240 kilometers through the rugged interior of the central valley. Completion of the road system was expected by 1972. These roads, on the left margin of the river reportedly remained in good condition in 1971. Roads slated for improvement on the right margin, through the towns of Chiapa de Corzo, Acalá and Venustiano Carranza received no improvements as of that date (and remain in that condition today). According to state law, a state representative had to be present during all road-building plans. As the state road engineer, Rubén Valente co-signed plans and inventories concerning road progress. He concurred with César Ramírez that improvements on the right margin had to be deferred until the access road to the dam site in La Concordia reached completion. Unfortunately, the pressing need for transportation routes in large municipalities such as Carranza became unavoidable, particularly as the reservoir began to fill in.[64]

On 3 July 1971 Bartolomé Gómez Mendoza and Domingo Hidalgo Gómez, representing the communities of Vega del Paso and Yuchén in the municipality of Venustiano Carranza, wrote a petition to Governor Velasco Suárez. They urged him to quickly address the impassable conditions of the roads around their villages. The petition begins in a familiar vein, starting with a cordial salutation to the governor and president from the indigenous communities of Vega del Paso and Yuchén. They go on to thank the CFE and INDECO (a Mexico City company contracted to design and build villages for relocation) for elevating their standard of living in the wake of land expropriations that occurred in 1968, as well as the Governor Velasco Suárez for his constant attention to the plight of indigenous communities. But the petition continues, "at the same time we want to address to you the following petition." The villagers pointed out that the construction of the new road from their village to Venustiano Carranza, the municipal capital, as well as the indigenous center of the municipality, caused them to travel a far greater distance than they had on their traditional paths. These paths had become impassable because of floodwaters from La Angostura. Next, the petitioners requested the construction of a dock on the banks of the reservoir, for transportation purposes, as well as for fishing. Third, the indigenous community asked when the new promised public transportation buses would arrive. The petition continued and questioned when INDECO would deliver building grade timber, as to date, the company only delivered poorly milled lumber. The fifth request concerned the arrival of seventeen new families in the village. The petition requested that these households immediately be given access to clean water, electricity, and drainage. Finally, the petition pointed out that restitution for 85 hectares of their former lands had yet to be paid to the municipal council. After one year the Yuchén community continued to press for the compensation it had been promised. They decried the unlivable conditions in the village. When, they asked, would the model villages promised by CFE planners arrive?[65] Petitioning of this sort became common in the early 1970's. Unfortunately, with the economic downturn in the early 1970's, federal funds became scarcer, and many communities such as these of Vega del Paso did not receive promised payments or services.

Petitions continued to arrive at the offices of CFE engineers and to state and national leaders. On 3 July 1973, a petition addressed to Governor Suárez arrived signed by the ejidal council of Concordia. Antonio Alonzo, Luz Yannini de Sánchez, Candelaria Albores and Manuel Rojas pleaded with the Governor to do all he could to deliver the promised compensation. They awaited money from both land and house evictions due to CFE projects. The petition claimed that the CFE had yet to allocate promised housing and lands. The ejidal council was perplexed as they had written numerous letters and received assurances after several meetings with the CFE director in Chiapas. The petition meanders off, lauding the governor's great achievements as statesmen, public

[64] AGC, Caja La Angostura, Expediente, La Angostura, Asuntos de adquisicion, Página, 2.
[65] Ibid, 3-4.

speaker and world class neurosurgeon, but remains short on specific details on their losses. Finally, the petition abruptly ends, with the ejidal leaders pleading that the governor grant them a conference to discuss their ordeal. It is unclear in this folder if that meeting ever took place.[66] Petitions by corporate organizations vaguely described their losses, however, inventories on individual farmers and their properties represented a far more detailed account of losses experienced by campesinos and landowners in the Angostura flood zone.

In 1974, the property of Pedro Pérez Santiago, named Amatal, rested at the bottom of the La Angostura reservoir. His farm had covered 55 hectares, where he planted corn on thirty acres and raised cattle on the remaining lands. His small house, now destroyed, had been a one-room building of four by twelve meters, with wooden walls and a dirt floor. The land valuations for his property had been relatively high, with CFE *levanto* engineers calculating that his losses exceeded 250,000 pesos (a little over 20,000 dollars at that time). By late 1974, though, Pérez Santiago had not received compensation for his losses. The money remained in bureaucratic limbo as CFE officials reserved a large portion of it for the purchase of Santiago's new farm in New Concordia. His home had been wiped out for over a year, and he still waited for compensatory cash for a new home.[67] As with dam refugees in the region of Malpaso, the governmental bureaucracy left many individuals, families and corporate groups with little hope of recovering promised indemnity payments.

Many individuals, such as Ignacio García, simply moved on to try to restart their lives in other towns. García gave up on compensation for his lands lost in Venustiano Carranza. He claimed the government owed him 100, 000 pesos in 1974, but he never received a centavo. Instead, he moved to live with family in Tecpatán, a town upriver from Tuxtla. García's story is rather fantastical, as he recounts the flooding of his village, where the gathered crowd watched the cupola of the village church slowly disappear under the water of the reservoir.[68]

Closing the Tunnel and Opening the Dam

By 1972, as La Angostura neared completion (it opened in 1974), Governor Velasco Suárez recounted the massive investment the federal and state government had made in building La Angostura. He claimed in civil engineering projects alone, that the government had invested 121, 698,000 pesos. Investments in roads and housing reached almost 70,000,000 pesos, with a further 39,800,000 invested in rehabilitating marginal lands. In total, official accounts showed that over 249,669,000.9 pesos had been invested.[69] In 1974, at the first regional geography conference in Chiapas, state and federal officials declared Angostura a resounding success.[70] The conference coincided with the official opening of La Angostura, and Governor Suárez again viewed this as an opportunity to advertise the industrialization of Chiapas.

On 8 May 1974 engineers and laborers installed the cap on the final deviation tunnel at La Angostura. Officially, the final costs for the dam reached 1.2 billion pesos, with 97 million pesos used for building houses in new settlements and 190 million paying for land reclamation, road and bridge construction. The structure, comprised of over 5,000 cubic meters of concrete, steel and rock

[66] AGC, Caja La Angostura, Expediente Peticiones de La Concordia, Página 9.
[67] AGC, Caja La Angostura, Expediente, Propietario Pedro Pérez Santiago, Páginas1-10. There are several examples of these sorts of inventories in the Chiapas state archive, clearly outlining the values of lost properties, with many letters of petition demanding the delivery of compensation.
[68] Ignacio García, interview by author, 7 April 2006. Tape on file with author.
[69] *Segundo informe de Gobierno de Chiapas: Manuel Velasco Suárez, Gobernador Constitucional*, 1 Noviembre 1972 (México D.F.: Editorial Libros de México, 1972), 124.
[70] See, Gobernador Manuel Velasco Suárez, "La Angostura en la Geografía de Chiapas" *Boletín de la Sociedad Mexicana de Geografía y Estadística*, (Abril-Junio 1974) 1-7.

held five turbines buried 100 meters below the surface. The turbines stood in the engine room, at the end of a 650-meter long tunnel where water flowed across the turbines, driving the generation process. Governor Velasco Suárez stated that when La Angostura reached full generating capacity it would provide electricity (along with Malpaso) to seventeen states in the Republic, saving the nation over 10 million barrels of oil per year. The governor proudly announced, "the dam has definitively interrupted the course of the river, and the reservoir as of May 1974 already has more than fifty percent of the water necessary for total generating capacity." In his closing remarks, the governor heralded the continued march forward of the CFE and the Revolution with the initiation of work to build the dam at Chicoasen. Chicoasen, along with Malpaso and La Angostura became the largest hydroelectric system in the country.

When completed, Chicoasen stood 230 meters above its foundation, built from 15 million cubic meters of materials, creating a reservoir of 1.2 million cubic meters at a cost of 8 billion pesos.[71] In the appendix of the Governor's fourth state of the state address, a graph lists the fifteen villages displaced by La Angostura. The graph shows that 9,626 hectares of inhabited lands flooded, submerging 1,812 houses. The address claims that 19,873 hectares that had been reclaimed during the dam building process offset this loss.[72] Governor Suárez quickly left the ceremonial opening of the dam to meet Echeverría in Pichucalco with the new head of the CFE Arsenio Cubillas. They congratulated each other on the unprecedented completion of the tallest dam in the country, one whose power would finally liberate Chiapas from underdevelopment.[73] Now two massive dams had altered the Grijalva, quelling its rapids, rapids that would slow to a trickle with the building of Chicoasen.[74]

In the days after the opening of La Angostura, many Chiapanecos believed that they had been part of a "Great Leap Forward." They believed they had made sacrifices not only for the state but also for the nation. State, national and foreign dignitaries visited the dam and the state capital to celebrate what had been a true multinational effort to modernize one of the poorest regions of the western hemisphere. Dignitaries visited the model villages built by INDECO in Carranza, remarking on the solid construction and the relief residents must have felt to finally have access to water and electricity.[75] When the celebrations and meetings ended, ground had already been broken on the new dam, at Chicoasen, upriver from Chiapa de Corzo. The era of big dams continued in Chiapas, but with far less fanfare and a drastically curbed revolutionary rhetoric that had accompanied the dams at Malpaso and La Angostura. Hydroelectric production in Chiapas did eventually meet predicted energy production demands. State planners did argue that the Grijalva contained fifty percent of the nation's hydroelectric resources. This misleading statement however did not explain that by the early 19080's hydroelectricity only accounted for five percent of Mexico's energy demands.[76] In the end, the state re-ordered the Grijalva River basin, displacing thousands and altering the physical landscape, but not in the rational, engineered manner they hoped.

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[71] Cuarto informe de Gobierno de Chiapas, Manuel Velasco Suárez, Gobernador Constitucional (México D.F.: Editorial Libros de México, 1974), 75-78. See also "Cerraron ayer la cortina de la presa 'La Angostura,'" *El Sol* 8 Mayo1974 (Tuxtla Gutiérrez), 1.

[72] Ibid, 176.

[73] "Cubillas Y Velasco Suárez en Importante Conferencia con Presidente Echeverria: Cerraron Ayer la cortina de la Presa 'La Angostura'" Diario Popular 9 Mayo 1974 (Tuxtla Gutiérrez), 1.

[74] See attached image of presa Chicoasen and the Sumidero Canyon. Photograph by Carey P. Willey.

[75] "500 Casas Construidos el INDECO," *El Sol* 6 Junio 1974 (Tuxtla Gutiérrez), 1.

[76] Roberto Gutiérrez, "The Mexican Energy Sector," in *Energy Policy in Mexico: Problems and Prospects for the Future*, eds. Miguel Wionczek, Oscar Guzman and Roberto Gutiérrez (Boulder, Colorado: Westview Press, 1980), 10.

Conclusion

Dams, bridges, superhighways and towering skyscrapers stand as monuments to a "muscle bound modernity" overlooking ignored systems of local use knowledge concerning environmental and social relationships.[77] Authoritarian regimes throughout Latin America have also followed this model toward development and modernity, with countless examples found in Brazil, Argentina and Bolivia.[78] The positivist impulse that jolted Latin American politics in the last half of the 19th century, filtered through into the 20th century, clinging to the continued belief that through rational, technical planning, Comte's perfectly engineered society would emerge. Unfortunately, instead of a scientific directorate managing the state, Mexico created a technocratic, neo-Porfirian political system that was neither purely authoritarian, nor scientific. PRI technocrats however, did their best to advertise themselves as heirs to the *cientifico* ideal ennobled by José Yves Limantour. The evidence is as profuse as it is misleading, with numerous official publications lauding those "hombres de luz y energía," that would at last elevate Mexico into the ranks of the developed world.[79] Ancillary costs such as the assimilation of indigenous groups, marginalization of workers, and denuded landscapes were viewed as necessary and minor costs in this enterprise.

In the case of dam building in Chiapas, these mega-structures stood as monuments to a Revolutionary developmental impulse that sought to create an egalitarian, positivist social order. Dams invoked progress, order and the Revolution, but they did so in a superficially historical manner. These monoliths officially named after the poet King Netzahualcóyotl, the Revolutionary martyr Belisario Domínguez, and the visionary engineer Manuel Moreno Torres stood as symbols of the nation's history and potential future. Dams invoked the grandeur of ancient Aztec and Maya empires, while eulogizing Revolutionary martyrs. Dams proudly celebrated the innovation of the engineer and the fortitude of the laborer. Immortalized and permanently fixed on the landscape, the Chiapas hydroelectric system contains a far more complex story than that expressed by its commemorative statues and carvings, or museums to its builders and bureaucrats. Bundled up in these dams are stories of grand achievement and irreplaceable loss. They tell a story of states, statesmen, peasants, workers and above all, a majestic river whose temporary sojourn into mechanization promises to be as fleeting as the myriad civilizations it has supported and seen pass.

[77] Scott, *Seeing Like a State*, 44-45. Harvey, " Population, Resources and the Ideology of Science," in *Spaces of Capital*, 60-63.
[78] Zander Navarro, "Democracy, Citizenship and Representation: Rural Social Movements in Southern Brazil, 1978-1990," *Bulletin of Latin American Research*, 13.2 (1994), 130-154.
[79] The CRG, CFE, National Water Commission (CNA) and other state agencies published numerous journals, pamphlets, encyclopedias and memoirs of river and electrical development projects, lauding national progress.

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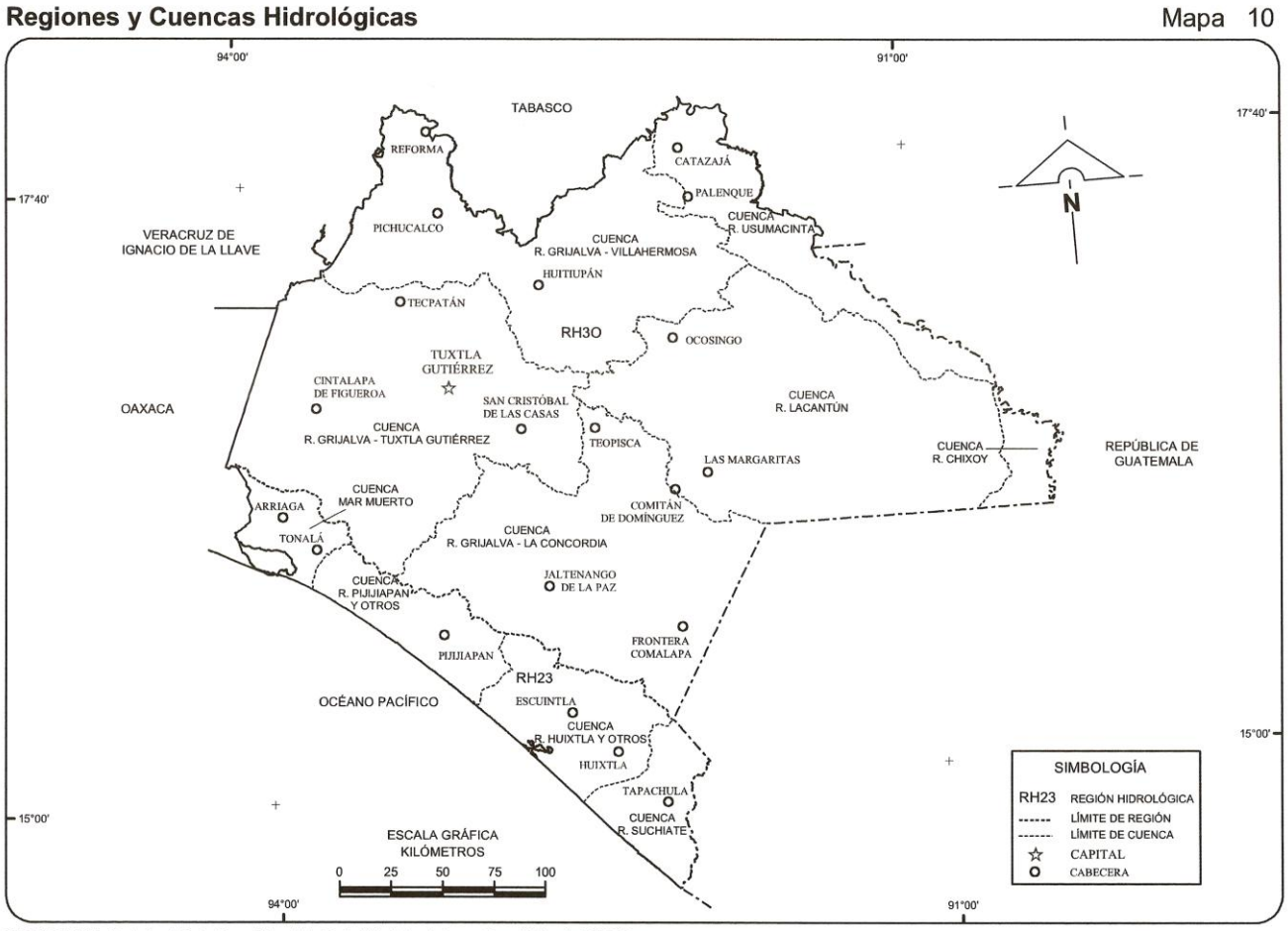
Appendix

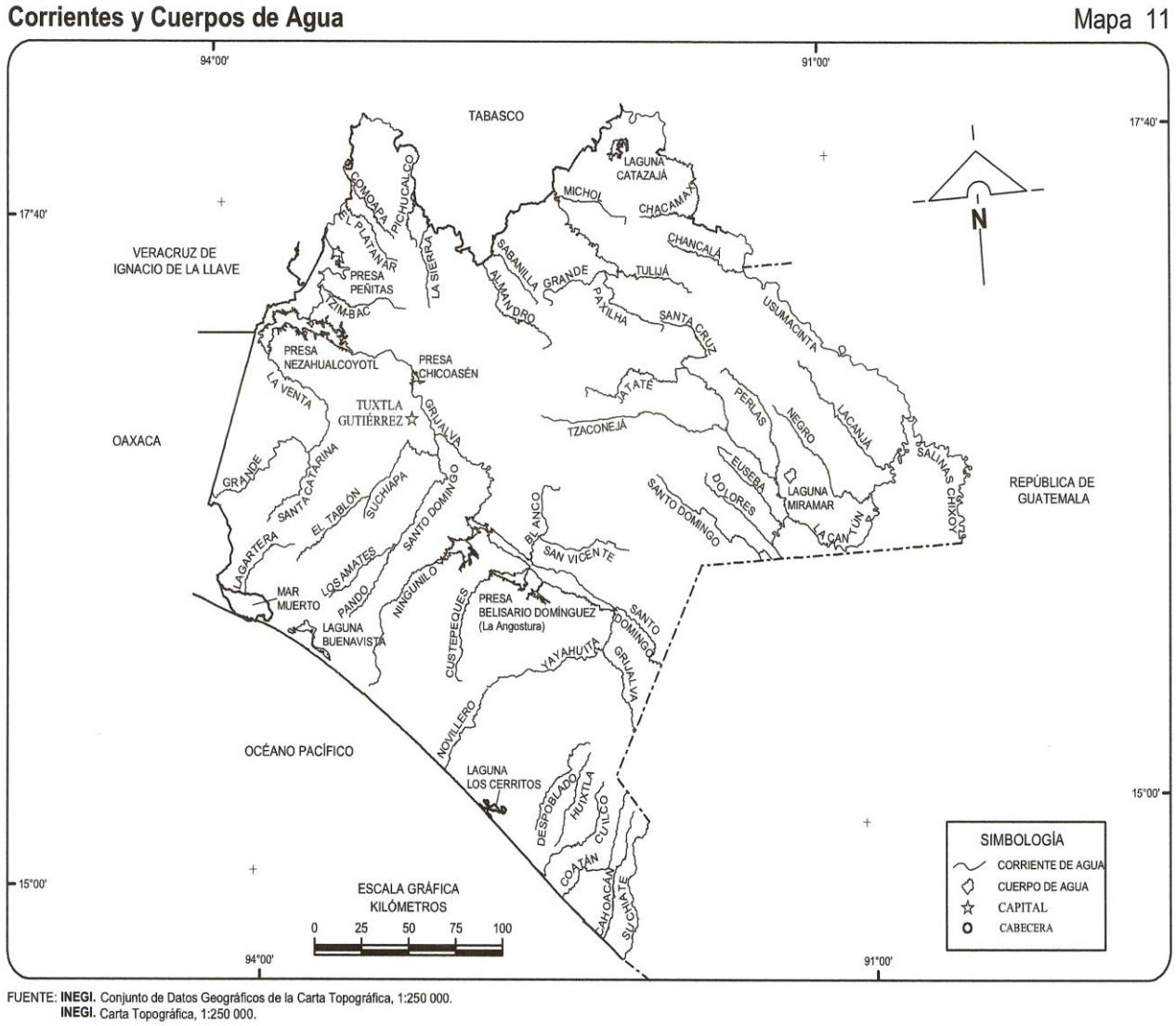
Figure 1.1[80] Geographic Regions and Water Systems of Chiapas



FUENTE: **INEGI.** Conjunto de Datos Geográficos de la Carta Hidrológica de Aguas Superficiales, 1:1 000 000.

[80] INEGI, *Regiones y Cuencas Hidrológicas* (México DF: INEGI, 2006).

Figure 1.2[81] Rivers and Bodies of Water in Chiapas

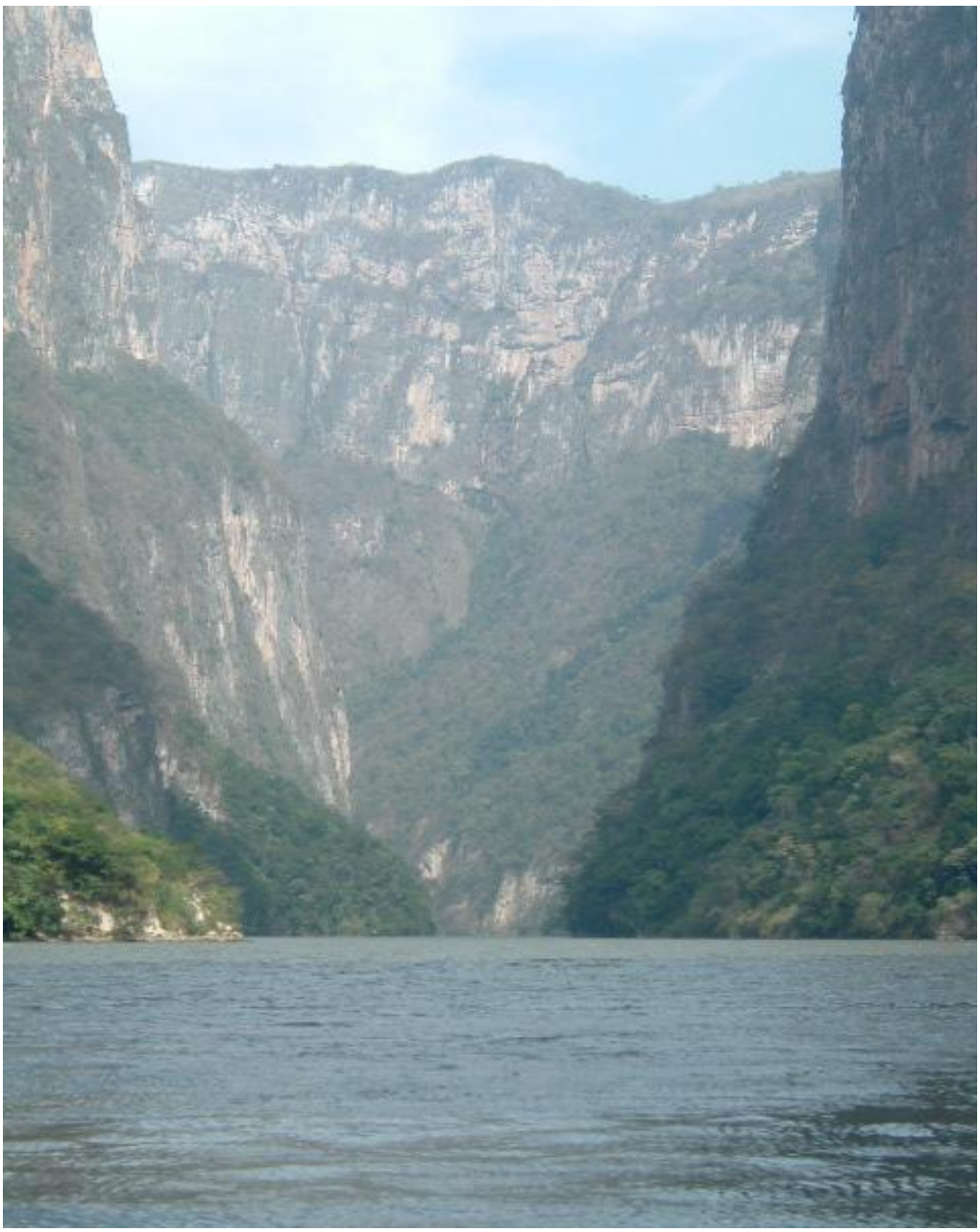


FUENTE: **INEGI.** Conjunto de Datos Geográficos de la Carta Topográfica, 1:250 000.
INEGI. Carta Topográfica, 1:250 000.

The first major dam is located in the lower river basin, Presa Belisario Domínguez, or La Angostura. The second, located just north of the state capital is Presa Manuel Moreno Torres, or Chicoasen. The third, Netzahualcóyotl or Malpaso, is northwest, upriver from Chicoasen, near the border of Veracruz. The final major dam, Presa Peñitas is located northeast of Malpaso.

[81] INEGI, Carta Topográfica (México DF: INEGI, 2006).

Photograph 1.3 The Sumidero Canyon [82]



[82] Photograph by Carey P. Willey, O.D.

Figure 1.4 Monument to the Engineers and Workers of the Manuel Moreno Torres Dam (Chicoasen)[83]

[83] Photograph by Carey P. WIlley