

The Relevance of Mexico's Mega Public Investments and Its Emphasis on the Rescue of Its Macrosouth Region: Towards a Paradigm Shift in the Face of the Prevailing Neoliberal Strategy

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ABSTRACT

In the current multipolar global context prevailing nowadays at the world level and the imperative of national-states, especially those from the periphery and emerging economies, to seek development alternatives beyond the neoliberal model (Washington's Consensus), encouraging social inclusion within their lagging economies by prioritizing growth, social inclusion, and sustainability. As shown by Mexico's recent emphasis on rescuing its Macro South region, a long-time neglected geostrategic and geoeconomic region by neoliberal regimes, which emphasized growth but neglected people's well-being and a sustainable environment for the sake of profit. Accordingly, this article aims at firstly analyze through pertinent indicators the prevailing asymmetry between Mexico's Macronorth versus Macrosouth regions to assess their asymmetric development, and secondly, Mexico's effort to revert such situation and rescuing the latter by encouraging its economic growth, social inclusion and sustainability through public funding infrastructure megaprojects such as the Mayan Train, the Tehuantepec Trans-Isthmic Corridor and the Dos Bocas Refinery, etc. already put into operation by Mexico.

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I. INTRODUCTION

In the first part (Part I), we start examining, through relevant socioeconomic and environmental indicators, the manifest asymmetry between the Macronorth regions (encompassing North, Northwest, Western, and Center economic regions) and the Macrosouth (encompassing Gulf, South-Pacific, and Southwest economic regions) in economic, social, and environmental outlook. In Part II, we briefly address the efforts of the Mexican government to rescue the long-time lagged Macrosouth region through public-funded large megaprojects channeled towards this macroregion, such as the Mayan Train and the Trans-Isthmus Corridor, aiming to diminish the asymmetry gap between the two above-referred macroregions along with regional economic strategy implemented by the past AMLO's Administration (Andrés Manuel López-Obrador) and continued by the present one led by president Claudia Sheinbaum, which seeks a paradigm shift focused on promoting economic growth with social inclusion for the first time in history oriented towards regional development with social inclusion for this geostrategic macroregion. The study horizon spans the period from 1980 to 2020.

II. PART I: PREVAILING ASYMMETRY BETWEEN MACRONORTH VS MACROSOUTH

Economic Outlook

To begin with, we briefly review the socioeconomic and environmental scenario in both of them. Through some indicators, on the economic side, namely, GDP, per capita, public, and foreign direct investment (FDI), and formal job generation in both macroregions, during the above-mentioned lapse in both macroregions.

Macrosouth vs Macronorth.GDP's Outlook(1980-2020)

From the figures below, we appreciate the GDP behavior in the Macrosouth situation during the referred period according to INEGI (Mexican National Statistics Bureau) cited as a source underneath each of each table.

Macrosouth.GDP's Outlook(1980-2020)

We proceed by examining the behavior of this important economic indicator in the Macrosouth region for the analysis during the study period:

TABLA 1.1 MACRO-SUR PIB POR REGIONES (1980-2020) (MMDD, \$USD corrientes)						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Golfo de México	20.2	24.3	36.4	67.9	73.8	3.30%
Pacífico Sur	14.4	17.8	34.8	48.6	53.5	3.30%
Sureste	21.6	25.4	38.6	92	95.5	3.80%
Total Regional	56.1	67.5	109.7	208.5	222.8	3.50%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI. Varios años.
 2. INEGI:
<https://inegi.org.mx/programas/pibent/2018/#tabulados>
<https://inegi.org.mx/app/tabulados/default.aspx?pr=19&vr=1&in=1&tp=20&wr=1&cno=1&idrt=3260&opc=n>

From the previous information we observe the biggest absolute GDP value of 95.5 (thousands millions,US dollars) in the Macrosouth, is reported for the Southwestern region by the end of the period, 2020, growing at a pace of 3.8% yearly, likely for the public and private investment toward tourist industry around the Mayan Riviera during the last two decades. Following in second place comes the Gulf region (with 73.8 thousand US dollars),

which reports a strong dynamic growth (3.2%) during the last decade. Anyway, the average growth pace of the combined three regions reports an average rate of 3.5% during the analysis period.

Macronorth GDP's Outlook (1980-2020)

To analyze the situation prevailing in the Macronorth, we use the data in the following table:

TABLA 1.1 MACRO-NORTE PIB POR REGIONES (1980-2020) (MMDD, USD corrientes)						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Norte	36.4	46.9	145	211.4	217.7	4.60%
Noroeste	27.2	34.2	51.8	102.7	108.9	3.50%
Occidente	22.2	27.4	59.5	89.9	95.4	3.70%
Centro	63.4	85.3	376	488.9	495.3	5.30%
Total Regional	149.2	193.8	632.3	892.9	917.3	4.60%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI. Varios años.
 2. INEGI:
<https://inegi.org.mx/programas/pibent/2018/#tabulados>
<https://inegi.org.mx/app/tabulados/default.aspx?pr=19&vr=1&in=1&tp=20&wr=1&cno=1&idrt=3260&opc=p>

Where it is evident that the GDP values of the Macrosouth's regions pale in comparison to the corresponding values of the Macronorth. For instance, the GDP reported for Central region overshadows those of the remaining three in the Macronorth, as its absolute GDP is almost 500 thousand mUSDs (495.3) growing at pace of 5.3% per year during the analysis lapse), followed far behind, in the second place by the Northern region with almost 218 thousand mUSDs, with a growth rate of 4.6% during the entire period.

In other words, there is a clear greater wealth concentration, both public and private investment, in the Central region, particularly in the last decade.

Altogether, the Macronorth shows the greatest income concentration compared to the Macrosouth region, explainable by the greater flow of investment to the former.

GDP per capita. Macrosouth vs Macronorth (1980-2020)

Income per capita is a very important indicator to analyze when it comes to measuring the average income of inhabitants dwelling in a specific region or community. In our case between Macrosouth and Macronorth during our study period.

GDP per capita. Macrosouth (1980-2020)

To examine this indicator for the Macrosouth region, by reviewing the figures reported in the following table:

TABLA 1.2 MACRO-SUR PIB p.c.por Regiones (1980-2020)(\$USD corrientes)						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Golfo de México	143.9	299.5	598.6	809.6	958.4	4.90%
Pacífico Sur	147.7	306.8	759.4	895.4	997.2	4.90%
Sureste	139.6	287.5	498.8	790.1	925.7	4.80%
Total Regional	431.2	893.7	1856.8	2495.2	2881.3	4.90%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI, Banco Mundial. Varios años. 2. INEGI:
<https://www.cuentame.inegi.org.mx/economia/pibpc.aspx>
<https://www.inegi.org.mx/temas/ifb/>
<https://www.inegi.org.mx/temas/pib/>
<https://cuentame.inegi.org.mx/economia/pibpc.aspx?tema=e>
 3. Banco Mundial:
<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

Observing that the per capita income of the Macrosouth regions, based on the data from the 2010-2020 period, shows a clear increase compared to previous decades, as the values by the end of the period (2020) are very similar for the three reported regions, with a growth rate close to 5% during the period. The reported per capita

values in the three regions are below, or near, a thousand dollars (US\$1,000.00) per year, compared to higher figures reported for the Macronorth regions, as we shall see below.

GDP per capita. Macronorth (1980-2020)

Regarding the income per capita prevailing in the Macronorth, we take advantage of the data

reported in the following table for the four regions for the analysis period.

TABLA 1.2 MACRO-NORTE PIB p.c.por Regiones (1980-2020)(\$USD corrientes)						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Norte	463.4	784.2	1009.9	1392.6	1568.8	3.10%
Noroeste	251	562.2	864.7	996.8	1167.5	3.90%
Occidente	279.9	416	682.5	885.3	1019.5	3.30%
Centro	871	1589.5	1899.5	2160	2390.9	2.60%
Total Regional	1865.3	3351.8	4456.6	5434.6	6146.8	3.00%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI, Banco Mundial. Varios años. 2. INEGI:
<https://www.cuentame.inegi.org.mx/economia/pibpc.aspx>
<https://www.inegi.org.mx/temas/ifb/>
<https://www.inegi.org.mx/temas/pib/>
<https://cuentame.inegi.org.mx/economia/pibpc.aspx?tema=e>
 3. Banco Mundial:
<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

It results from the above information that per capita incomes of the Macronorthern regions manifest a stark contrast to the corresponding Macrosouth regions. This is especially evident for the Northern, Northwest, Western, and Central regions.

For instance, it is noteworthy that the Central Region reports the highest per capita income among all the regions in this macroregion, with a value of almost US\$2,391 (US\$2,390.9), with an average annual growth rate of 2.6%, followed, in second place, by the Northern Region with US\$1,569 (US\$1,568.8), with a growth rate of 3.1%. In third place is the Northwest with US\$1,168 (US\$1,167.5), growing at a pace of 3.9% per annum, and in fourth and last place is the Western Region with US\$1,019 (US\$1,019.5, with an average annual rate of 3.3% during the analysis horizon.

All the above findings entail that the regions with the greatest concentration of wealth are located in the Macronorth region, namely the Central and North regions.

This explains the strong immigration flow of the labor force toward these two regions, coming from within Mexico and from abroad, namely, Central and South America.

Public Investment. Macrosouth vs. Macronorth (1980-2020)

A key factor that explains the emphasis placed by the Mexican government on the growth of one region over another through time is federal investment in the macroregions analyzed.

Public Investment. Macrosouth (1980-2020)

To analyze this situation, we proceed by examining what happened in Macrosouth regarding this variable during the time horizon of analysis. To get this accomplished, we use the figures in the following table, which reports the figures of public investment in both macroregions during 1980-2020.

TABLA 1.4 MACRO-SUR Inversión Pública Total por Regiones (1980-2020) (mmdUS\$dls corrientes)						
Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Golfo de México	0.3	0.3	0.7	1.2	1.5	3.90%
Pacífico Sur	0.1	0.1	0.3	1.1	1.3	6.50%
Sureste	0	0	0.2	0.3	0.9	8.90%
Total Regional	0.5	0.5	1.2	2.6	3.6	6.40%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI, Secretaría de Economía, SHCP. Varios años.
 2. INEGI:
https://www.inegi.org.mx/sistemas/olap/proyectos/bd/continuas/finanzas_publicas/fpmun.asp?s=est&c=11289&proy=efipem_fmum
<https://www.inegi.org.mx/programas/finanzas/>
<https://datos.gob.mx/busca/dataset/mexico-prospero-estadisticas-por-entidad-federativa>
 3. SHCP:
https://www.finanzaspublicas.hacienda.gob.mx/work/models/Finanzas_Publicas/docs/congreso/FP/2010/FP_201001.pdf
 4. CEFEP:
<https://www.cefp.gob.mx/publicaciones/documento/2019/cefp0192019.pdf>

From the previous data, it is evident that the Gulf region has consistently held the largest share in the whole region and taken the lead in federal investment over time, with an average growth rate of nearly 4% and followed closely in second place by the South-Pacific region with a value of US\$1.3 billion. In third place comes the Southeast region, with less than US\$1 billion, but with a high pace rate of nearly 9% over the period.

This region is also experiencing dynamic expansion during the analysis period.

This region comprises the Mayan zone (Yucatán, Quintana Roo, and Campeche), and strong federal investments focused on the tourist industry.

Public Investment. Macronorth (1980–2020)

On the other hand, concerning public investment channeled toward the Macronorth region, versus the situation observed in the Macrosouth region, we use data from the following table:

Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Norte	0.2	0.2	0.7	2.9	4.3	7.80%
Noroeste	0.1	0.1	0.3	0.6	1	5.50%
Occidente	0.1	0.1	0.3	0.9	1.2	5.50%
Centro	1	1	0.9	2.6	5.1	4.30%
Total Regional	1.4	1.4	2.1	7	11.6	5.40%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI, Secretaría de Economía, SHCP. Varios años.
 2. INEGI:
https://www.inegi.org.mx/sistemas/olap/proyectos/bd/continuas/finanzaspublicas/fpmun.asp?s=est&c=11289&proy=efipen_fmum
<https://www.inegi.org.mx/programas/finanzas/>
<https://datos.gob.mx/busca/dataset/mexico-prospero-estadisticas-por-entidad-federativa>
 3. SHCP:
https://www.finanzaspublicas.hacienda.gob.mx/work/models/Finanzas_Publicas/docs/congreso/fp/2010/FP_201001.pdf
 4. CEFPE:
<https://www.cefp.gob.mx/publicaciones/documento/2019/cefp0192019.pdf>

From the above data, we can observe that Mexico has placed greater emphasis on its Central Region (US\$5.1 billion) by the end of the period, with a growth rate of 4.3%, followed in second place by the Northern Region (US\$4.3 billion), growing at an impressive pace of 7.8% annually. This exceeds the growth rate of the rest of the regions and that of the entire Macronorth region (4.3%) during the analysis period.

Accordingly, public investment by the Mexican federal government clearly emphasizes support for the Macronorth region, and in particular, for the Central Region, and secondarily for the North Region, although the latter reported greater dynamism during the analysis period. Behaviour which is understandable given its proximity to the United States and the foreign investment

channeled to border states, particularly toward the export maquiladora industry.

Foreign Direct Investment (FDI). Macrosouth vs. Macronorth (1980–2020)

As an important complement to public investment earlier examined, it is important to consider the behavior of foreign direct investment (FDI) as a key variable that explains the growth of both macroregions during the study period.

Foreign Direct Investment (FDI). Macrosouth (1980–2020)

To accomplish this purpose, we start by examining the behavior of this variable for Macrosouth, based on the data in the following table:

Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Golfo de México	0.01	0.01	1.41	2.42	2.76	16.40%
PacíficoSur	0.01	0.02	0.37	0.68	1.16	13.80%
Sureste	0.01	0.01	0.31	0.55	1.32	14.80%
Total Regional	0.02	0.04	2.09	3.65	5.24	15.20%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI, Banco Mundial. Varios años. 2. INEGI:
<https://www.cuentame.inegi.org.mx/economia/pibpc.aspx>
<https://www.inegi.org.mx/temas/fib/>
<https://www.inegi.org.mx/temas/pib/>
<https://cuentame.inegi.org.mx/economia/pibpc.aspx?tema=e>
 3. Banco Mundial:
<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

From the outset, we observe that the Gulf region has the highest absolute value in terms of foreign capital (US\$2.76 billion), followed far behind by the Southeast region (US\$1.32 billion), and in third and last place by the South Pacific region (US\$1.16 billion). The Gulf region observed the most dynamic growth during the period (16.4%), followed by the Southeast region (14.8%), and thirdly by the

South-Pacific region (13.8%) during the period.

However, regarding the historical behavior of FDI in the Macrosouth, it pales in comparison to that observed in the Macronorth, based on the figures reported in the following table:

TABLA 1.3 MACRO-NORTE Inversión Extranjera Directa por Regiones ((\$MMD\$USDLLs))						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Norte	0.39	0.55	4.94	9.01	10.95	8.70%
Noroeste	0.07	0.1	1.91	3.28	3.79	10.30%
Occidente	0.01	0.11	0.01	0.98	1.68	14.20%
Centro	2.5	2.91	9.3	10.41	12.81	4.20%
Total Regional	2.97	3.67	16.16	23.68	29.23	5.90%

FUENTES:
1. Elaboración propia a partir de datos de INEGI, Banco Mundial. Varios años. 2. INEGI:
<https://www.cuentame.inegi.org.mx/economia/pibpc.aspx>
<https://www.inegi.org.mx/temas/ifb/>
<https://www.inegi.org.mx/temas/pib/>
<https://cuentame.inegi.org.mx/economia/pibpc.aspx?tema=e>
3. Banco Mundial:
<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

Where we notice that FDI focused to the Central region by the end of the period reaches nearly US\$13.0 billion (a rate of 4.2%), closely followed by the Northern region, in second place, at nearly US\$11.0 billion (with a rate of 8.7%), and far behind, in third place, the Northwest region (US\$3.79 billion) (with a yearly rate of 10.3%), and in fourth and last place, the Western region (US\$1.68 billion) (with a 1.68%) during the period.

Formal Employment. Macrosouth vs. Macronorth (1980–2020)

Concerning formal employment between the two macroregions, we present below an overview of job generation in the Macrosouth during 1980–2020 through the following table.

Formal Employment. Macrosouth (1980–2020)

From the table below we present an overview of job generation (in millions of people) in each of the three regions encompassed in the Macrosouth during 1980–2020:

TABLA 1.6 MACRO-SUR Población trabajadora Formal por Regiones (1980-2020) (millones personas)						
Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Golfo de México	1	1.2	1.4	1.6	1.4	0.80%
Pacífico Sur	0.4	0.5	0.6	0.8	0.9	2.10%
Sureste	0.3	0.4	0.6	0.7	0.6	2.10%
Total Regional	1.7	2.1	2.6	3.1	2.9	1.40%

FUENTES:
1. Elaboración propia a partir de datos de INEGI. Varios años.
2. INEGI:
<https://www.inegi.org.mx/temas/estructura/>
<https://www.inegi.org.mx/app/cpv/2020/resultadosrapidos/default.html>
https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2021/iooe/iooe2021_03.pdf

It can be appreciated that the Gulf region of the Macrosouth region, by the end of 2020, is the largest job generator, with almost one and a half million jobs (1.4 million), growing at a slightly over 1%

annual average rate. The South Pacific and Southeast regions, in second and third place, with 0.9 and 0.6 million people, respectively, and an average annual growth rate of 2.1%. This indicates

that, despite these two regions generating fewer jobs in absolute terms (less than one million jobs by the end of the period), their growth rate is very high, indicating their dynamic economic expansion.

On the Macronorth side, as a job generator of formal jobs, we use the data reported in the following table.

TABLA 1.6 MACRO-NORTE Población trabajadora Formal por Regiones (1980-2020) (millones personas)						
Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Norte	2	2.5	3.2	3.5	2.4	0.50%
Noroeste	0.9	1.2	1.6	1.8	1.3	0.80%
Occidente	0.9	1.2	1.6	2	1.8	1.70%
Centro	3.6	4.6	6	6.8	5.9	1.20%
Total Regional	7.4	9.6	12.3	14.1	11.4	1.10%
FUENTES: 1. Elaboración propia a partir de datos de INEGI. Varios años. 2. INEGI: https://www.inegi.org.mx/temas/estructura/ https://www.inegi.org.mx/app/cpv/2020/resultadosrapidos/default.html https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2021/iooe/iooe2021_03.pdf						

From the previous table is noteworthy that the Central region, by the end of the period, becomes the largest job generator of formal jobs in the macroregion, with nearly six million jobs (5.9) at the end of the period, with an average annual rate of slightly above 1% (1.2%), followed, in second place, far behind, by the Northern region, with nearly two and a half million jobs (2.4) growing at an average annual rate of 0.5%. In third and fourth place, in order of importance, we have the Western region (1.8%), the Northwest region (1.3%) at a growth rate of 0.7%, and the Northeast region with an annual average rate of 0.8%, respectively.

Accordingly, the Macronorth region is the main generator of formal jobs in Mexico, while the Macrosouth region remains lagging behind both in domestic and foreign investment throughout the analysis period. Situation that largely explains the background of Southern to Northern migration toward Macronorth and its regions and entities within this macroregion of the country.

Economic Outlook's Preliminary Conclusions:

The above economic indicators just examined reveal the emphasis placed by all past regimes throughout almost the entire period under analysis, prioritizing growth at all cost-policy focusing in boosting domestic and foreign capital profits in the country, with disregard to population's social well-being and environmental implications which come accompanied by multiple externalities such as the asymmetry fostered between the two macroregions. For the same token, the exclusionary policies implemented by past regimes throughout

the entire period under analysis are felt within the states and municipalities that comprise them.

On another hand, as an expected consequence of the observed high concentration of investment in the Macronorth region, it results in greater growth and higher job creation in this region as opposed to the lagging situation in the Macrosouth. Which explains the ongoing exodus of labor from south to north in search of formal employment, but this situation has also led to a series of socioeconomic regional imbalances throughout the study period, particularly in the border region, such as industrial and human overcrowding, and environmental and socioeconomic externalities around US-Mexico border states, which seems to mimic in the Central region as we shall see later.

However, the above neoliberal strategy and its implications all the referred regions and the whole country openly clash with the one adopted by the new Mexican regimes since AMLO's administration, and continued by the current president, Claudia Sheinbaum. With a nationalistic and leftist leanings, backed with unprecedented strong social support, advocates a new economic strategy in Mexico, far from Washington's Consensus neoliberal stance, aiming at gradually diminishing income inequality and prevailing regional asymmetry in the country, favoring social inclusion and sustainable development throughout the country, particularly between the two macroregions.

Social Outlook

In this section, we will consider only the following social indicators: population, Gini coefficient, and HDI (Human Development Index) for the two macroregions involved in our current analysis. Starting by examining the population behavior in the Macrosouth region during the analysis period.

Total Population. Macrosouth vs Macronorth (1980-2020)

Total Population. Macrosouth Region (1980-2020)

Let's examine the prevailing population situation in the Macrosouth Region according to the figures reported in the following table, in millions of inhabitants, during our analysis period

Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Golfo de México	8.4	10	11.6	13.2	14	1.30%
Pacífico Sur	6.6	8.9	10.4	12	13.2	1.80%
Sureste	1.7	2.4	3.2	4.1	5.1	2.80%
Total Regional	16.6	21.2	25.2	29.2	32.3	1.70%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI. Varios años.
 2. INEGI:
<https://www.inegi.org.mx/sistemas/Olap/Proyectos/bd/censos/cpv2020/pt.asp>
https://www.inegi.org.mx/sistemas/olap/consulta/general_ver4/MDXQueryDatos.asp?proy=
https://apps1.semarnat.gob.mx:8443/dgeia/compendio_2014/dgeiawf.semarnat.gob.mx_8080/bi_apps/WFServlet3cef.html
https://www.inegi.org.mx/programas/ccpv/1980/tabulados/cpyv80_nal_poblacion.xlsx
https://www.inegi.org.mx/programas/ccpv/1990/tabulados/cpyv90_nal_poblacion.xlsx
https://www.inegi.org.mx/programas/ccpv/2000/tabulados/cpyv2000_nal_poblacion.xlsx
https://www.inegi.org.mx/programas/ccpv/2010/tabulados/cpyv2010_nal_poblacion.xlsx
https://www.inegi.org.mx/programas/ccpv/2020/tabulados/cpyv2020_nal_poblacion.xlsx

From the figures of the previous table, it becomes clear that the Gulf region leads the Macrosouth in population by the end of the period, totalling 14.0 million people, growing at an annual rate of 1.3%. Closely followed in second place by the South Pacific region with just over 13.0 million inhabitants by 2020 (13.2 million), at a pace of 1.8%, faster than the Gulf region (1.3%). In third place, and far below the first two in population, is the Southeast region with only 5 million people, although growing at a pace close to 3% (2.8%) throughout the period.

The above situation entails a dynamic population growth in the Macrosouth, particularly

the medium-term trend in the Gulf and South Pacific regions. Explainable for the growing interest toward this macroregion, as a consequence of greater emphasis of public and FDI investments toward the touristic industry located in the Mayan zone and oil industry and, more recently, toward Mayan and Transismic corridor megaprojects.

Total Population. Macronorth Region (1980-2020)

To examine the population overview of the Macronorth, from the figures reported in the following table, which covers our analysis period and compares it with the prevailing situation in the Macrosouth region, previously discussed.

Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Norte	10.6	12.9	15.2	17.7	20.4	1.70%
Noroeste	4.8	6	7.7	9.2	10.5	2.00%
Occidente	8.3	10.1	11.8	13.4	15.1	1.50%
Centro	26.5	31.1	37.6	42.7	47.7	1.50%
Total Regional	50.2	60	72.3	83.1	93.7	1.60%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI. Varios años.
 2. INEGI:
<https://www.inegi.org.mx/sistemas/Olap/Proyectos/bd/censos/cpv2020/pt.asp>
https://www.inegi.org.mx/sistemas/olap/consulta/general_ver4/MDXQueryDatos.asp?proy=
https://apps1.semarnat.gob.mx:8443/dgeia/compendio_2014/dgeiawf.semarnat.gob.mx_8080/bi_apps/WFServlet3cef.html
https://www.inegi.org.mx/programas/ccpv/1980/tabulados/cpyv80_nal_poblacion.xlsx
https://www.inegi.org.mx/programas/ccpv/1990/tabulados/cpyv90_nal_poblacion.xlsx
https://www.inegi.org.mx/programas/ccpv/2000/tabulados/cpyv2000_nal_poblacion.xlsx
https://www.inegi.org.mx/programas/ccpv/2010/tabulados/cpyv2010_nal_poblacion.xlsx
https://www.inegi.org.mx/programas/ccpv/2020/tabulados/cpyv2020_nal_poblacion.xlsx

It should be noted from the above information, that the bulk of Mexican population is concentrated in the Macronorth region, namely around the Center Region (comprising the states of Mexico City, state of Mexico, Puebla, Tlaxcala, Querétaro, Guanajuato, Hidalgo, and Morelos), which will englobe almost half of the national population by 2020 (47.7 million people), growing yearly at a pace of 1.5%. This region is followed in second place by the Northern region with 20.4 million people and growing at a pace of 1.7%. The Western region is in third place with 15.1 million people (at a pace of 1.5%), and the Northwest region is in fourth and last place with 10.5 million inhabitants (at a pace of 2.0%).

The high human and urban concentration in this macroregion results explainable in light of the substantial public and foreign investments focused into this macroregion, which can also be explained by the ongoing immigration of the labor force from the south to the north within the Mexican territory. Capital flows, comprising both domestic and foreign, to the various entities encompassed in the

Macronorth, particularly the Central and Northern regions of the country, as highlighted previously. This situation makes it a powerful magnet for the flow of labor from south to north and explains the concentration of urban, social, and myriad socioeconomic and environmental externalities associated with this phenomenon within this macroregion.

Gini Coefficient. Macrosouth vs Macronorth (1980-2020)

An essential indicator in this analysis, allowing us to understand income distribution among a population, in this case, Mexican families who live in both macroregions, is the Gini coefficient. To begin with, the Macrosouth region during the study period.

GINI Coefficient. Macrosouth (1980-2020)

We start reviewing the prevailing situation in the Macrosouth region for the analysis period, based on the figures reported in the following table

TABLA 2.2 MACRO-SUR Coeficiente de Gini por Regiones (1980-2020)						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Golfo de México	0.57	0.54	0.54	0.46	0.43	-0.70%
Pacífico Sur	0.58	0.53	0.55	0.5	0.44	-0.60%
Sureste	0.61	0.52	0.57	0.45	0.43	-0.90%
Promedio Regional	0.58	0.53	0.55	0.47	0.43	-0.80%
FUENTES: 1. Elaboración propia a partir de datos de CEPAL, CONEVAL. Varios años. 2. CEPAL: https://repositorio.cepal.org/bitstream/handle/11362/47671/1/S2100989_es.pdf 3. CONEVAL: https://www.coneval.org.mx/Medicion/MP/Paginas/AE_pobreza_2018.aspx http://dgeiawf.semarnat.gob.mx:8080/ibi_apps/WFServlet?IBIF_ex=D1_POBREZA01_27&BIC_user=dgeia_mce&IBIC_pass=dgeia_mce&NOMBREENTIDAD=*%&NOMBREANIO=* https://www.coneval.org.mx/Informes/Pobreza/Evolucion_Dimensiones/Evolucion_pobreza_ingresos_1990_2010.zip						

It is clear that by the end of the period, there exists a marked income inequality in all the regions involved. Explainable by the low standards of living and per capita income in this macroregion, resulting from poor wealth distribution within the entities encompassed in this macroregion, such as the Gulf, South Pacific, and Southeast regions. Despite a slight improvement observed by the end of the period, improvement that does not exceed an annual average of 1% throughout the period compared to its 1980 value. In any case, the situation in Macrosouth regarding income inequality paints a dismal picture.

GINI Coefficient. Macronorth (1980-2020)

To examine the behavior of the Gini coefficient for the Macronorth, i.e., the "richest region," we use the data from the table below, which reports the Gini coefficient for all the four regions encompassed in this macroregion for our analysis period:

TABLA 2.2 MACRO-NORTE Coeficiente de Gini por Regiones (1980-2020)						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Norte	0.53	0.51	0.49	0.43	0.41	-0.60%
Noroeste	0.52	0.5	0.47	0.41	0.39	-0.70%
Occidente	0.61	0.55	0.51	0.45	0.41	-1.00%
Centro	0.59	0.53	0.52	0.45	0.42	-0.80%
Promedio Regional	0.56	0.52	0.5	0.44	0.41	-0.80%

FUENTES:
 1. Elaboración propia a partir de datos de CEPAL, CONEVAL. Varios años.
 2. CEPAL: https://repositorio.cepal.org/bitstream/handle/11362/47671/1/S2100989_es.pdf
 3. CONEVAL: https://www.coneval.org.mx/Medicion/MP/Paginas/AE_pobreza_2018.aspx
http://dgeiawf.semarnat.gob.mx:8080/ibi_apps/WFServlet?IBIF_ex=D1_POBREZA01_27&IBIC_user=dgeia_mce&IBIC_pass=dgeia_mce&NOMBREENTIDAD=&NOMBREANIO=
https://www.coneval.org.mx/Informes/Pobreza/Evolucion_Dimensiones/Evolucion_pobreza_ingresos_1990_2010.zip

From the previous information we realize that the situation prevailing over time in the Macronorth does not appear to differ a great deal from that observed in the Macrosouth discussed above. We observe that income distribution among the population in this region, considered the "richest" region in the country, is highly unequal, judging by the Gini coefficients reported for all regions and at the regional average, which are the same as we observe in the Macrosouth.

In short, the economic boom manifested in the Macronorth, both in terms of GDP and per capita, is not reflected at the household level or among the population of this macroregion. In other words, it does not translate into a higher standard among their populations of the states that make up the Macronorth region, and maintains the same unfair distribution observed in its counterpart, the Macrosouth. This is a clear indication or reflection of the structure of a socially non-inclusive neoliberal economic model prevalent in Mexico during the analysis in the country, which emphasized growth but neglected social well-being for the population.

Human Development Index (HDI). Macrosouth vs. Macronorth (1980-2020)

Finally, it is also important to consider the behavior of the HDI index in both macroregions in our analysis to ascertain the quality and standard of living of their populations. This international indicator is important because it encompasses other important aspects in addition to the per capita income of a nation or economy, such as educational level and life expectancy (longevity). This indicator was established by the UN to differentiate a country's social well-being and allows it to establish its degree of backwardness or progress (low, medium, and high, human development).

Human Development Index(HDI). Macrosouth (1980-2020)

Under this premise, we first analyze what is happening in the Macrosur region during our analysis period using the data in the table reported below:

TABLA 2.3 MACRO-SUR Índice de Desarrollo Humano (IDH) Armonizado por Regiones (1980-2020)						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Golfo de México	0.7	0.75	0.72	0.72	0.76	0.20%
Pacífico Sur	0.59	0.74	0.67	0.67	0.76	0.60%
Sureste	0.69	0.77	0.68	0.73	0.78	0.30%
Promedio Regional	0.66	0.7533	0.69	0.7067	0.7667	0.40%

FUENTES:
 1. Elaboración propia a partir de datos de CEPAL, CONEVAL. Varios años.
 2. ONU: <https://www.undp.org/sites/g/files/zskgke326/files/migration/mx/UNDP-MX-PovRed-IDHmunicipalMexico-032014.pdf>
<https://www.idhmunicipalmexico.org>
https://www.undp.org/sites/g/files/zskgke326/files/2023-02/INFORME_PNUD_2022_electronico-Portadas.pdf
 3. CONAPO: https://paot.org.mx/centro/linea-semamat/informe02/estadisticas_2000/compendio_2000/01dim_social/01_05_Pobreza/dat_a_pobreza/Cuadrol.5.2.htm
 4. ONU: https://apps1.semarnat.gob.mx:8443/dgeia/compendio_2016/dgeiawf.semarnat.gob.mx_8080/ibi_apps/WFServlet68ca.html
https://apps1.semarnat.gob.mx:8443/dgeia/informe_2008/compendio_2008/compendio2008/100.8.236_8080/ibi_apps/WFServlet7a2f.html

We can observe that all regions encompassed in the Macrosouth maintain lagging economic levels, resulting from low per capita incomes, educational levels, poverty, and poor healthcare levels. This

translates into low life expectancies for their populations, which, according to UN standards, constitutes "lagging" regional economies throughout the analysis period.

Human Development Index(HDI). Macronorth (1980-2020)

Following the same methodology applied to

analyze the behavior of the Macrosouth we review the case of the Macronorth through the figures reported in the following table for our analysis period:

TABLA 2.3 MACRO-NORTE Índice de Desarrollo Humano (IDH) Armonizado por Regiones (1980-2020)						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Norte	0.73	0.78	0.81	0.74	0.77	0.10%
Noroeste	0.76	0.82	0.81	0.76	0.8	0.10%
Occidente	0.7	0.73	0.78	0.73	0.78	0.30%
Centro	0.7	0.81	0.8	0.75	0.77	0.20%
Promedio Regional	0.72	0.79	0.8	0.75	0.78	0.20%
FUENTES: 1. Elaboración propia a partir de datos de CEPAL, CONEVAL. Varios años. 2. ONU: https://www.undp.org/sites/g/files/zskgke326/files/migration/mx/UNDP-MX-PovRed-IDHmunicipalMexico-032014.pdf https://www.idhmunicipalmexico.org https://www.undp.org/sites/g/files/zskgke326/files/2023-02/INFORME_PNUD_2022_electronico-Portadas.pdf 3. CONAPO: https://paot.org.mx/centro/line-semarnat/informe02/estadisticas_2000/compendio_2000/01dim_social/01_05_Pobreza/dato_pobreza/Cuadro1.5.2.htm 4. ONU: https://apps1.semarnat.gob.mx:8443/dgeia/compendio_2016/dgeiawf.semarnat.gob.mx_8080/ibi_apps/WFServlet68ca.html https://apps1.semarnat.gob.mx:8443/dgeia/informe_2008/compendio_2008/compendio2008/10.100.8.236_8080/ibi_apps/WFServlet7a2f.html						

It is worth noting from the previous table that all the regions encompassed in the Macronorth keep the levels of “lagging economies” according to UN standards, albeit having higher per capita incomes than the Macrosouth.

In other words, higher growth is not enough to guarantee better living standards of a region or country when a poor distribution of wealth within their regional populations persists. Given that, as we mentioned earlier, the HDI weighs, in addition to per capita income, crucial social factors such as educational level and healthcare levels. This implies low life expectancies, which altogether converged into a lagged region status under UN international criteria, throughout the entire period, especially by the end of the period, just as in the case of the Macrosouth region previously analyzed. With the sole exception of the Northeast region, which shows a figure with a slight HDI improvement during the period.

Social Outlook's Preliminary Conclusions:

From the above analysis of the social indicators, it is evident that the Macronorth region has largely benefited from both federal investment and private and foreign direct investments into this region through time, which explains the high job generation in the region, but this does not entail a better income distribution among its population. Although Macronorth is the largest job generator and also shows the largest concentration of inhabitants, it reports alarming levels of income maldistribution during the analysis period. That is,

the economic boom is not reflected in higher living standards for the regional population and their families during the period under analysis.

On the other hand, the observed lag in the Macrosouth region compared to the Macronorth region, in terms of lower GDP and per capita, as well as formal employment, lower human concentration, can be primarily explained by the low concentration of capital, both from federal and foreign investment, in this region during the analysis period. This can be translated as the existence of unbalanced development within the two regions, characterized by greater inequality and a lower Human Development Index (HDI) between these two macroregions. Evident from the reported figures of HDI in both macroregions and the Gini coefficient, showing a very poor income distribution in both of them, both within the “wealthy” Macronorth and in the lagging or “poor” Macrosouth through time.

Environmental Outlook

The environmental indicators considered in this section are Population Density, Vehicle Motorization, Energy Consumption, and Greenhouse Gases (CO₂).

Population Density. Macrosouth vs. Macroregion (1980-2020)

In this section we start examining the prevailing situation with respect to population density in both macroregions during our study horizon 1980-2020.

Population Density. Macrosouth (1980–2020)

We start by reviewing the population density in Macrosouth during the study horizon based on the figures reported in the following table.

TABLA 3.2 MACRO-SUR Densidad Poblacional por Regiones (1980-2020) (hab/km2)						
Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Golfo de México	47.4	56.5	65.4	74.4	84.3	1.50%
Pacífico Sur	28.6	38.5	45.5	52.2	58.7	1.80%
Sureste	12.2	17.1	23	29.3	39	2.90%
Total Regional	88.2	112.1	133.9	155.9	182	2.10%
FUENTES: 1. Elaboración propia a partir de datos de INEGI. Varios años. 2. INEGI: FUENTES: https://en.www.inegi.org.mx/app/tabulados/interactivos/?pq=Poblacion_Poblacion_07_fb7d5132-39f0-4a6c-b6f6-4cbe440e048d https://sinaloaennumeros.codesin.mx/wp-content/uploads/2015/11/Densidad-de-poblaci%C3%B3n-por-entidad-federativa.xls . https://cuentame.inegi.org.mx/poblacion/densidad.aspx?tema=P#:~:text=De%20acuerdo%20con%20el%20Censo,64%20habitantes%20por%20kil%C3%B3metro%20cuadrado.						

From the outset, it is noteworthy that all regions comprising the Macrosouth keep relatively low population density levels compared to the Macronorth, as we shall see below, due to the latter's territorial extension and low population density. This is especially true for the Gulf region (84.3 inhabitants per km²), followed in second place by the South-Pacific region (58.7 inhabitants per km²), and third and last place by the Southeast region (39.0 inhabitants per km²). However, it should be noted that the latter region has been growing at a pace of almost 3% (2.9%). This suggests a trend of increasing human concentration in the Gulf and Mayan regions in the coming years. This is largely explained by the federal megainvestments channeled toward the oil

industry and tourist industry during the last decade 2010–2020 toward the oil industry, located in Tabasco and Campeche in the Gulf region and the tourist industry around the Mayan zone (Southeast), not to mention the likely impact of mega investments focused to the Mayan Trailway and the Transoceanic Corridor in the Gulf and South-Pacific regions.

Population Density. Macronorth.(1980–2020)

Concerning the prevailing situation in the Macronorth, we used the data from the figures reported in the following table for our analysis period.

TABLA 3.3 MACRO-NORTE Densidad Poblacional por Regiones (1980-2020) (hab/km2)						
Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Norte	14.5	17.7	20.9	24.3	40.5	2.60%
Noroeste	12.5	15.7	20.1	24.1	66.1	4.30%
Occidente	48.6	59.1	68.9	78.6	90.3	1.60%
Centro	203.9	238.6	306.1	328.3	1053.4	4.20%
Total Regional	279.5	331.1	415.9	455.4	1250.2	3.20%
FUENTES: 1. Elaboración propia a partir de datos de INEGI. Varios años. 2. INEGI: FUENTES: https://en.www.inegi.org.mx/app/tabulados/interactivos/?pq=Poblacion_Poblacion_07_fb7d5132-39f0-4a6c-b6f6-4cbe440e048d https://sinaloaennumeros.codesin.mx/wp-content/uploads/2015/11/Densidad-de-poblaci%C3%B3n-por-entidad-federativa.xls . https://cuentame.inegi.org.mx/poblacion/densidad.aspx?tema=P#:~:text=De%20acuerdo%20con%20el%20Censo,64%20habitantes%20por%20kil%C3%B3metro%20cuadrado.						

It turns out that for the Macronorth, population density is lower in almost all of its regions, except

for the Central region (1,053 inhabitants per km²), growing at a pace of 4.2% during the analysis

period. A phenomenon that implies a large number of people living in a small territorial space, as is the case in the metropolitan area of Mexico City(CDMX) and the State of Mexico, as well as other neighboring states. In second place is the Western region (90.3 inhabitants per km²), growing at a rate of 1.6%, and in third place is the Northwest region (66.1), growing at a pace of 4.3%. In fourth and last place is the Northern region (40.5), at a pace of 2.6%. These are regions with a large territory relative to their population size.

Although the Macrosouth region shows higher levels of population density in almost all of its regions, these are small territorial spaces compared to the small population that inhabits them. This is reflected in higher population concentrations, particularly in the Central region (Macronorth), which accounts for more than half of the country's population within that region and nationally during the period.

The above scenario reveals a regional imbalance in terms of population density, as it leads to a disruption of urban services and unbalanced growth in the regions encompassed in the Macronorth, especially around the Central and Western regions. Which growth rates are worrying

during the period, reaching average annual growth rates of 4.2% and 4.3%, respectively, during the study period. This foreshadows urban problems due to human and industrial overcrowding within this macroregion and its entities encompassed within it in the coming years.

Motorization. Macrosouth vs. Macronorth (1980-2020).

An indicator considered synonymous with the level of "progress" for the population of a region, entity, or municipality, as well as its urbanization, is its level of vehicle motorization, expressed in thousands of vehicles per 1,000 inhabitants, by municipality, entity, or region.

Motorization. Macrosouth (1980-2020).

With the aim at analyzing the motorization situation in Macrosouth, we use the figures reported in the following table, which shows this information for this indicator for our time horizon period of analysis.

TABLA 3.1 MACRO-SUR Motorización por Regiones (1980-2020) (Vehículos por cada 1000 habitantes)						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Golfo de México	60.7	97.7	132.8	220	291.1	4.00%
Pacífico Sur	28	41.4	72.2	141.5	232.9	5.40%
Sureste	67.1	110.5	133.5	282.9	415.9	4.70%
Total general	155.8	249.5	338.5	644.3	940	4.60%
FUENTES: 1. Elaboración propia a partir de datos de INEGI. Varios años. 2. INEGI: https://www.inegi.org.mx/sistemas/olap/consulta/general_ver4/MDXQueryDatos.asp?proy=vmrc_vehiculos https://www.inegi.org.mx/programas/vehiculosmotor/#tabulados https://www.inegi.org.mx/temas/vehiculos/						

From the information of the above table it is worth noting that Macrosouth shows low levels of motorization, explained by their low per capita levels, except for the Southeast, with the higher motorization level close to 416 (415.9 vehicles per 1,000 inhabitants) for 2020, growing at a pace of 4.7%. This is followed in second place by the Gulf region (291.1 vehicles per 1,000 inhabitants), and in third place, the South-Pacific region (almost 233 vehicles per 1,000 inhabitants). Motorization of all Macrosouth's regions is growing at a combined rate of 4.6% annually during the analysis period. Which turns out to be a very dynamic growth, higher than

the prevailing rates in Macronorth's regions, as we shall see below.

Motorization. Macronorth (1980-2020).

To visualize the prevailing situation in the Macronorth concerning vehicle motorization, we use the data reported in the table below, which reports the figures for this indicator for each region involved in this macroregion for the study period.

TABLA 3.1 MACRO-NORTE Motorización por Regiones (1980-2020) (Vehículos por cada 1000 habitantes)						
Región	1980	1990	2000	2010	2020	TMAC(1980-2020)
Norte	88	148.5	200.8	343	408.9	3.90%
Noroeste	142.4	194.4	240.1	345.1	493.4	3.20%
Occidente	67.7	112.5	185.3	367.6	492	5.10%
Centro	104.9	130.6	154.7	273.8	440.4	3.70%
Total Regional	403	586	780.9	1329.4	1834.6	3.90%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI. Varios años.
 2. INEGI:
https://www.inegi.org.mx/sistemas/olap/consulta/general_ver4/MDXQueryDatos.asp?proy=vmrc_vehiculos
<https://www.inegi.org.mx/programas/vehiculosmotor/#tabulados>
<https://www.inegi.org.mx/temas/vehiculos/>

Where we can observe that all regions of the Macronorth shows higher levels of motorization than the Macrosouth, explainable by a higher per capita level in this macroregion, highlighting in first place the Northwest region with almost 493 (493.4 vehicles per 1,000 inhabitants), followed very closely, in second place, by the West region with 492 (492.0 vehicles per 1,000 inhabitants), third place the Center region with about 440 (440.4 vehicles per 1,000 inhabitants) and in fourth and last place the North region with almost 409 (408.9 vehicles per 1,000) with rates above the 3% annual average, although the western region is growing above the 5% (5.1%) annual average during the period. This results in particularly dynamic rates.

Energy Consumption, Macrosouth vs Macronorth (1980–2020)

A key indicator associated with the degree of industrialization in a region is its electricity consumption, a variable that is in turn associated with greenhouse effect levels in that region, an indicator we will examine later.

Energy Consumption. Macrosouth. (1980–2020)

To explore the electricity consumption (thousands of gigawatt-hours) in the Macrosouth region during the analysis period, based on the data reported in the following table.

TABLA 3.3 MACRO-SUR Consumo Energía Eléctrica por Regiones (1980-2020) (Miles GigaWatts)						
Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Golfo de México	1779.9	2251.3	2515.3	2995.3	3348.8	13.50%
Pacífico Sur	5928.1	6473.9	7060.6	7949.4	8428.5	7.30%
Sureste	1508.4	1965.3	2520.9	3281.3	3954.3	21.30%
Total Regional	9216.4	10691	12097	14226	15732	14.00%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI, SIE, SENER. Varios años.
 2. INEGI:
<https://www.inegi.org.mx/rnm/index.php/catalog/495>
 3. Sistema de Información Energética:
https://sie.energia.gob.mx/bdiController.do?action=cuadro&cveuca=DIIE_C32_ESP
 4. SENER:
https://www.gob.mx/cms/uploads/attachment/file/707654/BALANCE_NACIONAL_ENERGIA_0403.pdf

From the previous information, it is worth noting that the largest electricity-consuming region in the Macrosur region is the South- Pacific region, with a consumption of 8,428 thousand Gigawatts (8,48.5 thousand Gigawatts, growing at an average annual rate of 7.3%), followed by the Southeast region, with a consumption of 3,954 thousand Gigawatts (3,954.3, at a dizzying annual average of 21.3%). Finally, the Gulf region, with a consumption

of nearly 3,349 thousand Gigawatts (33,348) growing at an average annual rate of 13.5% during the period).

As a whole, the entire Macrosouth consumed a total of 15,732 thousand gigawatts by the end of the period, growing at a very dynamic rate of 14.0% average annual growth during the study period. This is indicative of a macroregion undergoing rapid

industrialization. This is explained by the substantial public and foreign investments channeled primarily toward this macroregion, particularly toward the South Pacific and Gulf regions (oil industry, the Tabasco-Minatitlán-Coatzacoalcas corridor) and the Southeast (tourism industry of the Mayan Riviera). This trend is expected to be spurred by

new megainvestments in the Trans-Isthmus Corridor and the Southeast in the coming years.

Energy Consumption. Macronorth (1980–2020)

To examine the energy consumption panorama prevailing in the Macronorth, we take advantage of the figures reported in the following table for the regions encompassed in this macroregion:

TABLA 3.4 MACRO-NORTE Consumo Energía Eléctrica por Regiones (1980-2020) (Miles GigaWatts)						
Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Norte	5006.1	5820.7	6359.8	7472.6	8482.7	11.10%
Noroeste	6317.5	6632.5	7143.6	8285	9137.5	7.70%
Occidente	4456.1	4858.5	5236.5	5899.3	6587.6	8.10%
Centro	5615.9	5986.9	6687.8	7946.7	8835	9.50%
Total Regional	21396	23299	25428	29604	33043	9.10%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI, SIE, SENER. Varios años.
 2. INEGI: <https://www.inegi.org.mx/rnm/index.php/catalog/495>
 3. Sistema de Información Energética: https://sie.energia.gob.mx/bdiController.do?action=cuadro&cvequa=DIIE_C3_2_ESP
 4. SENER: https://www.gob.mx/cms/uploads/attachment/file/707654/BALANCE_NACIONAL_ENERGIA_0403.pdf

From the behavior of energy consumption in the four regions encompassed in the entire Macronorth, we can understand Mexico's emphasis on promoting industrialization in this macroregion. This is reflected in the high levels of energy consumption in its four regions. The Northwest region stands out in first place (9,137.5 thousand Gigawatts, growing at an average annual rate of 7.7%), followed in the second place by the Center region (8,835.0 thousand Gigawatts, at an annual rate of 9.5%), the Northern (8,482.7 thousand Gigawatts, at an impressive annual rate of 11.1%), and the West (6,587.6 thousand Gigawatts, at an annual rate of 8.1%).

Therefore, the aggregate consumption of the entire Macronorth more than doubled that of the entire Macrosouth, since it grew at an average

annual rate of 9.1% during the period. This confirms our hypothesis that the increased flow of capital to this macroregion during this period, both domestic and foreign, has exacerbated its industrialization and, consequently, its energy consumption during the period under analysis.

CO2 Gas Production. Macrosouth (1980–2020)

Given the fact that electricity consumption in both regions primarily comes from fossil fuels, this implies a higher per capita concentration of greenhouse gas emissions (CO2) in one region than in another. For this analysis, we reproduce the table below, which shows the total CO2 emissions per capita in the Microsouth by region during the analysis period

TABLA 3.4 MACRO-SUR Emisiones Totales de Gases Efecto Invernadero (1980-2020) (Millones Ton. /Per cápita)						
Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Golfo de México	1.1	2.1	4	7.1	13.4	6.40%
Pacífico Sur	0.1	0.1	0.2	0.5	11.7	14.10%
Sureste	1.7	2.4	3.4	4.7	6.6	3.50%
Total Regional	2.9	4.7	7.7	12.2	31.7	8.00%

FUENTES:
 1. Elaboración propia a partir de datos de INEGI. Varios años.
 2. INEGI: <https://www.inegi.org.mx/temas/vivienda/>
 3. Banco Mundial: <https://datos.bancomundial.org/indicador/EN.ATM.CO2E.KT?locations=M>
 4. BBVA: <https://www.bbva.com/wp-content/uploads/2024/01/2024-Emisiones-y-fuentes-GEI-Mexico.pdf>
<https://www.bbva.com/wp-content/uploads/2024/01/2024-Emisiones-y-fuentes-GEI-Mexico.pdf>

Where we find out that the per capita production of CO₂ by regions, from highest to lowest, is in the first place the Gulf region (13.4) million tons p.c. growing at an average annual rate of 6.4%, followed in second place by the South-Pacific (11.7) million tons p.c., with an average yearly rate of 14.1%, and in third and last place, the Southeast region (6.6) million tons p.c., with an average annual rate of 3.5%. Altogether, the entire Macrosur region generates a combined total of 31.7 million tons per capita, with an average annual rate of 8.0% for the period.

CO₂ Gas Production. Macronorth (1980–2020)

To examine the greenhouse gas (CO₂) production situation in the Macronorth region, we used the figures reported in the following table, which reports information for the four regions comprising this macroregion during the period under analysis

TABLA 3.5 MACRO-NORTE Emisiones Totales de Gases Efecto Invernadero (1980-2020) (Millones Ton. /Per cápita)						
Región	1980	1990	2000	2010	2020	TMAC (1980-2020)
Norte	3.8	5.6	8.1	11.3	16.4	3.70%
Noroeste	0.6	1.5	3.7	8.1	19.6	8.90%
Occidente	0.8	2.3	6.4	16	43.9	10.40%
Centro	6.4	7.9	9.9	12	15	2.20%
Total Regional	11.7	17.3	28	47.4	94.9	6.30%

1. Elaboración propia a partir de datos de INEGI. Varios años.
 2. INEGI: <https://www.inegi.org.mx/temas/vivienda/>
 3. Banco Mundial: <https://datos.bancomundial.org/indicador/EN.ATM.CO2E.KT?locations=MX>
 4. BBVA: <https://www.bbva.com/wp-content/uploads/2024/01/2024-Emisiones-y-fuentes-GEI-Mexico.pdf> <https://www.bbva.com/wp-content/uploads/2024/01/2024-Emisiones-y-fuentes-GEI-Mexico.pdf#:~:text=URL%3A%20https%3A%2F%2Fwww.bbva.com%2Fwp>

From the previous information, it is clear that CO₂ gas production level in the Macronorth shows higher CO₂ levels during the period compared to its Macrosouth counterpart. Consumption by region in this macroregion, in terms of importance (in millions of tons per capita), by the end of the period (2020), comes firstly the Western Region (43.9 million tons per capita) (growing at pace of 10.4%); secondly, comes the Northwest Region (19.6 million tons per capita) (with an average annual rate of 8.9%); thirdly comes the Northern Region (16.4 million tons per capita) (with an average annual rate of 10.4%); and finally the Central Region (15.0 million tons per capita) (with an average annual rate of 6.3%).

Altogether, this entire macroregion produces 94.9 million tons of CO₂ per capita, growing at an average rate of 6.30% during the analysis period. This volume is almost triple the volume of CO₂ produced by the entire Macrosouth region.

Accordingly, the high production of CO₂ is closely associated with the high levels of industrialization in the Macronorth, but which also inflicts other unwanted effects beyond the environmental ones such as various externalities related to health, human and industrial

overcrowding in the regions, entities, and municipalities included in this macroregion.

Environmental Outlook's Preliminary Conclusions:

The environmental implications observed in both macroregions are intimately associated with several factors, including, firstly and foremost, the degree of industrialization prevailing in each region over time. However, this is in turn directly a function of the emphasis on capital flows channeled by the Mexican state to each macroregion.

Situation, which is also reflected in the higher or lower per capita levels in each macroregion studied. In the Macronorth, for example, a higher level of motorization as opposed to the Macrosouth, as a consequence of people's higher purchasing power in the first macroregion. Likewise, energy consumption in Macronorth is closely linked to its level of industrialization, which in turn impacts the level of production of greenhouse gas (CO₂) in both macroregions.

Therefore, the concentration of greenhouse gases in the Macronorth results explainable by the high industrial concentration and human overcrowding in this macroregion. Which also obeys

as well to the industrialization policies' focus to foster growth in this macroregion to the detriment of the Macrosouth. Policies which have remained behind and unchanged by previous governments throughout almost the entire period of analysis, with socioeconomic implications such as economic inequality and low living standard (HDI) observed in both macroregions, which become more apparent in the Macrosouth.

III. PART II. TOWARDS THE RESCUING OF MACROSOUTH

Background

Based on the regional asymmetry analyzed and depicted in the first part of this article between Macronorth and Macrosouth, it becomes clear and explainable why Mexico's decision to embark on the rescuing of the latter through large federal investments aimed at promoting growth and social well-being in the latter under a completely new strategy is already mentioned. Most of these findings come from a recent analysis carried out by the author, Vid, Luis-Pineda, O. (Dec 10, 2023).

Under the basic premise of furnishing a brief overview of the iconic megaprojects implemented by previous regime, AMLO administration (2019–2024), the Mayan Train and the Tehuantepec Transoceanic Corridor, we briefly highlight herein some of the author's findings on their implications, taking as a reference departure an investigation led by the author entitled "The Trans-Isthmus Megaproject and the Maya Train in Mexico: Some Implications at the State and Municipal Level," vid, Luis-Pineda, O. (2021), and complemented by other more recent publications of the author, vid, Luis-Pineda, O. (Jul 23, 2023), Luis-Pineda, O. (Oct 14, 2024.a), Luis-Pineda, O. (Oct 14, 2024.b), Luis-Pineda, O. (Dec 10, 2023).

From which we extract some pertinent information and elements of judgment on the relevance of both megaprojects, which are closely linked, both logistically and geographically, lying in the same Macrosouth region, which represents the main object of our particular attention in this section. Likewise, the importance of capital flows toward these megaprojects in stimulating growth and well-being in such macroregion and, paralleling diminishing the existing socioeconomic asymmetry between the two macroregions through a sustainable and socially inclusive approach within the framework of the current economic strategy

advocated by the past and present regimes, vid, PND(2025–2030).

On this regard is important to underline herein that asymmetry observed between the two macroregions, is neither circumstantial nor fortuitous, but nurtured on policies implemented by the past Mexican regimes during the neoliberal period, which make possible among other measures, the massive and unrestricted entry of foreign capital into Mexican territory, particularly along its Mexican-US border's federal states and major Mexican municipalities. This explains the emergence of the export-oriented maquiladora industry. The illusion that Mexico would create a "containment curtain" along its border to stem the flow of migration into the U.S. Through a program called BIP (Border Industrialization Program), which had been in effect since World War II, which initially led to the United States unilaterally canceling the Bracero Program, which had been in effect since World War II. As a counterpart, the US government persuades Mexico to accept the implementation of these maquiladora plants on its northern border as an alleviation valve for the cancellation of the Braceros program, affecting thousands of laborers stranded overnight at the US border expecting to enter into the US through this Program. The Bracero Program and other measures were implemented during Díaz Ordaz's administration, one of the worst presidents of México, vid, Luis-Pineda, O. (1998).

Lured by the expectation that the assembly industry would generate foreign currency, formal jobs and technological transference for Mexico through its operation (under the so-called off-shore production or offshoring productive scheme), aiming to absorbing the lagging labor of thousands of Mexican braceros who had been stranded on Mexico's northern border in search of employment in the United States as part of the Bracero Program canceled by the US government, as previously mentioned. Although the maquiladora industry effectively generates growth in the border states through formal jobs, albeit low-paying, and foreign currency for the country. Albeit associated with the economic boom in the northern states, it also generated significant social and environmental costs and myriad externalities upon them, vid, Luis-Pineda, O. (1998bis).

Under this framework, the Mexican government in those years intervened but favoring foreign investors to "freeze" or undervalue labor prices throughout the country, making it "more

attractive" to foreign investors in general and maquiladoras in particular. This had social implications for the rest of the national workforce in its various economic sectors, thus contributing to the impoverishment of the Mexican workforce compared to its foreign counterparts. This opportunity was naturally seized by investors, mostly with American capital, to increase their profits and the competitiveness of American products in the world market, which had sharply declined during the postwar period.

In addition to artificially cheapening the Mexican labor force as a public policy, the Mexican state also intervenes to grant additional concessions to this largely North American-owned industry as an "ad hoc" regulatory framework to allow it to pay taxes only on the Mexican inputs (5%) used in its processes and then re-export its finished (assembled) products to the US. Along with lax environmental legislation, this promotes environmental degradation on the northern border municipalities through its productive processes, along with concomitant labor overexploitation due to low wages and long working hours, etc. Upon the acquiescence of corrupt local authorities and a docile state completely permeated by corruption, vid, Luis-Pineda, O. (2000).

In short, with all this support granted from Mexico, the flourishing of this industry in the northern border zone is understandable, giving rise to a disintegrated industry from the rest of the Mexican productive apparatus and failing to achieve a technology transfer to Mexico. Operating de facto as a truly "industrial enclave" in northern Mexico, among other externalities. Although undeniably generated large flows of foreign currency and permanent jobs for Mexico over the years, it has also produced urban imbalances with high social and environmental costs and other externalities over major border municipalities where it has established itself, vid, Luis-Pineda, O. (1998bis).

The historical lesson for Mexico behind this important industry result more than evident for the nation in particular for the current nationalistic government, in the sense that without the strong economic intervention of a democratic State capable of implementing public policies to achieve a balance between growth and well-being a region and striving for a sustainable environment in it, an unbalanced and unsustainable regional development along with a socially exclusive nature

as that generated in the northern border as well as in other regions within Mexico where this industry has established to the date in search of cheap labor vis-a-vis the shortage of cheap labor on the Mexico and thus promoting an "exodus" of maquiladoras to the interior of the country in search of abundant cheap labor force and thereby mimicking the imbalances and externalities produced on northern Mexico, Vid, Luis-Pineda, O. (2006).

Accordingly, these kind of public policies implemented by Mexico in the past in northern region for many years, undoubtedly contributed to exacerbate the existing asymmetry between North-South, and worsen the type of "dual economy" which has characterized Mexico's development since the beginning of the country industrialization which generated an unequal economy or "Two Mexicos" in the nation, one in the north, with better living standards and use of modern productive technology (Macronorth) versus another lagging south, with low wages and using obsolete or traditional technology (Macrosouth) as we have already analyzed in the first part of this document, Vid, Gollás, Manuel (1982).

MACROSOUTH: The Mayan Trailway, Mexican Transoceanic Corridor, and Other Concurrent Megaprojects in the Macrosouth Region

Given the industrial concentration and unbalanced development on the northern border (Macronorth) due to the aforementioned unrestricted foreign investments and the neoliberal strategy adopted by Mexico during this period, vis-a-vis imperative for Mexico, on the one hand, to reduce the asymmetry between both macroregions, and on the other, a distancing from the neoliberal approach adopted by previous governments and most of the Latin American countries (Washington Consensus), vid, Martinez, R. Rubi et al. (2016). This explains the current government's nationalist emphasis on adopting an unprecedented, socially inclusive economic strategy focused on simultaneously stimulating growth and social well-being, as highlighted in the National Development Plan, past and present, vid, PND (2025-2030). And Mexico's departure from hegemonic policies such as the Washington Consensus proposed by the IMF has led to significant social and economic costs for many economies within the Latin American region, including Mexico, in particular which has specifically applied these kind "anti-development policies"

during the past neoliberal regimes, as Arturo Guillén points out, *vid*, Guillén, Arturo (2012).

Under this context, it is clear that the emphasis granted by the current nationalistic Mexican government to channeling significant public investments in productive infrastructure throughout the country. With particular emphasis on long-standing lagging regions such as the Macrosouth region, with a focus on the oil industry, such as the Dos Bocas Refinery in Tabasco (to achieve energy self-sufficiency and reduce dependence on foreign energy), *vid*, García Karol (Sep 9, 2019). And also promoting two iconic mega-projects as the Mayan Trailway and the Trans-Isthmus Corridor, already inaugurated by the previous administration and currently put operation, as we already mentioned above. These large capital public funds come along an inclusive regional development strategy under the concept of "Well-being Poles" implemented for the Maya Train (based on the tourism industry) applied in the Maya-Gulf of Mexico geographic corridor and, on the other hand, around the Trans-Isthmus Corridor, which runs along the trans-isthmus belt, which logistically connects the South-Pacific and Gulf of Mexico regions (based on trade and industrialization), *vid*, PODEBIS.Gob.Mexico (2023).

Macrosur: Towards an Inclusive and Sustainable Development as an Economic Strategy in this Macroregion

However, speaking of social inclusion in the context of a country or region under the current global environment in which we are immersed in Mexico necessarily refers us to the concept of a balanced versus unbalanced economy, *vid*, Luis-Pineda, O. (2021a). Although given the complexity of the concepts involved and the brevity of this space, we will attempt to only outline some of the author's findings stemming from the aforementioned research.

To achieve a balanced economy, there should be a balance between the binomial economic growth and social well-being, *vis-à-vis* a sustainable environment in an economy. However, to achieve this balance, the economic leadership of the State results unavoidably as the legal guarantor *par excellence* to assess the equilibrium between three fundamental elements: economic growth, social well-being, and a sustainable environment. Furthermore, under such a premise, the State should be capable of promoting the generation of widespread social basic needs for the country's

population demands, such as employment, food, healthcare, housing, education, and social security. Without overlooking the imperative to emphasize investment in science and technology (%GDP), social spending (%GDP), and a moderate Gini coefficient or income distribution within the country or region with minimal wealth polarization within it, as is currently the case in the most balanced market economies under today global context, such as the Scandinavian countries, i.e., Sweden, Norway, Denmark, Finland, but also Switzerland and Canada in America, etc.

Although the above definition is a summary or extreme simplification of the problem involved in classifying the type of development prevailing between peripheral and developed economies in a global context, it is nonetheless a useful representation. It shows a reality that allows us to classify or differentiate the degree of development between the two groups of countries under the current global context. This finding was observed based on an empirical sample of indicators on the behavior of both groups of countries worldwide with information from the period 1980–2020, with statistics from international organizations such as the World Bank and Interamerican Bank for Development, ECLAC, OECD, etc., *vid*, Luis-Pineda, O. (2021b).

Under the above premise, it is clear that in the Americas, only Canada fits the prototype of a balanced and socially inclusive economy. Mexico, although on the right path, does not yet fit into this category. Although we are confident it will possibly achieve this status in the medium and long term, provided the current path of inclusive and sustainable growth, characterized by strong state involvement in the economic stewardship of national economic activity, is maintained for the coming years.

Unfortunately, in the Latin American region, as well as in most of the peripheral regions, including high-growth emerging economies such as the BRICS, do not yet fit into this category either. As we previously highlighted, only countries such as the Scandinavian countries and other and other economies of the European Union, such as Switzerland, meet these standards. Namely, countries characterized by having "welfare economies" where the State plays a decisive role in designing the country's economic path and characterized by having mature democratic regimes, with no racism, poverty and social

exclusion practices are allowed by the State, where on the contrary, there exist a strong social participation and political awareness to determine the best economic path for the country according to the best social demands of the population, vid, Luis-Pineda, O. (2021b).

Under the current global context, in either peripheral or emerging States like Mexico, the role of the State is not only necessary but fundamental. It cannot overlook its social responsibility to foster the levels of growth and well-being that its population demands, and not leave it to the free market forces as happen during the neoliberal framework that has dominated the political scene in Latin America and other peripheral states, including Mexico, for the last forty years, as we advocate in a recent analysis by this author, vid, Luis-Pineda, O. (Dec. 27, 2024).

Therefore under the above basic premise, the role and involvement of the State is then unavoidable in establishing routes for balanced growth within the regions and entities that make up the Macrosur in Mexico, up to the municipal level (urban development) and directing socially inclusive regional policies that take advantage of the productive vocation of each municipality and respective federative entity to promote productive linkages (economic and commercial) with their municipalities with their municipal counterparts at the level of the entity itself and the regional level, seeking to integrate them under a regional development plan using the "Well-being Poles" approach, and thus minimizing the risk of economic and social polarization and the generation of externalities associated with these mega-investments, by the political power in charge of implementing development plans at the local level, in the absence of a regional planning framework by the State, at its different levels. And to deter repeating the regrettable experience of the maquiladora industry in the north of the country, discussed above, as well as other existing regional and urban imbalances in the country, such as the macrocephaly of Mexico City and myriad externalities affecting important region such as Mexico's Central Region, vid, Luis-Pineda, O. (2022.B).

IV. PERSPECTIVES

The economic strategy implemented by Mexico since the previous administration, vid (PND-AMLO), has been generating so far good

results for Mexico, to the point that there is currently talk of a new or second "Mexican Miracle" for the country, the first reflections of which are manifested at the macro level with the high growth rates observed after the pandemic, highlighting a strong trend toward greater growth for the coming years, vid Torres, O. (Aug 18, 2023). An economic path that is beginning to produce its first fruits in the Macrosouth region and its englobed economic regions and federal states, which had been traditionally lagging behind the rest of Mexico, as some analysts report, are now reported growing at twice the rate of the national economy, vid, Yorio, Gabriel (Sep 24, 2023).

The aforementioned is a consequence of the substantial investments channeled by Mexico toward this macroregion, but along with sound management and implementation of macroeconomic variables and public policies by the Mexican state at the federal level, and their implementation at the regional level. Approach with a stark contrast to that applied in Mexico during past neoliberal regimes in the neoliberal era, which prioritized at-all-cost growth, overlooking social well-being and the environment. Its obsolescence and the imperative to reorient it were previously highlighted, as it was economically and socially unviable for the country, as we have been pointing out for over a decade, vid, Luis-Pineda, O. (2008).

Accordingly, the new strategy implemented by Mexico in Macrosouth implies a close involvement of Mexican state in the supervision of federal investments focused into Macrosouth to the above referred megaprojects to fulfill the targets envision in the national strategy PND 2018-2024 (AMLO's administration) and its continuation for 2025-2030 period (Sheinbaum's administration) aims to promote growth and social inclusion and sustainable use and preservation of natural resources and implement regional strategies in close supervision by Mexican state, vid, Luis-Pineda, O.(Dic27, 2024).

However, for Mexico, achieving a shift in its economic model toward one with social inclusion and sustainability, despite having in its front door a neighbour such as the US, considered to be the world's leading military power, with a warlike history behind, this is not an easy task. It entails a huge challenge for Mexico. Since it implies more than good desires and goodwill from the US to accept this change. Especially under the historical background that the US has invaded Mexico several

times in the last two centuries, during which in XIX took place the largest US invasions into a Latin American country in American history (Mexican-US war, 1845–48) where the US came out seized more than 50% Mexican territory by force, *vid*, Mendez S., Ricardo (2022). And later on, the country faced subsequent diplomatic harassment and meddling for myriad political excuses, as noticed by Dominguez, A., *vid*, Dominguez, Arturo (Aug 28, 2024). Especially in recent years, since Mexico decided to shift its economic strategy, departing from the hegemonic IMF recommendations, and AMLO's historically courageous decision to implement Mexico's new economic growth path according to its real domestic interests. A strategy that has fortunately been endorsed by Mexico's current new president, Claudia Sheinbaum, to date until 2030 at least.

V. GENERAL CONCLUSIONS

- Mexico's Macrosouth recovery can then be explained as the result of a democratic regime for the first time in Mexican history featuring a non-neoliberal orientation and a nationalist and left-wing vision seeking to implement a non-neoliberal economic path, advocating a socially inclusive strategy committed to reducing poverty and the evident socioeconomic asymmetry between the two aforementioned macroregions, with ancestrally unequal and asymmetrical development, as we have overwhelming shown based upon the indicators examined above.
- However, despite its abundant natural resources, the Macrosouth region has remained mired in poverty for years (*vid*, Correa, Ernesto (Aug 3, 2014), and with a population plagued by poverty, seeking to always "improve" its social and human development for decades, *vid*, Candelas R., Roberto (2014). In the face of the indolence and corruption prevailing in previous regimes, focused on irrational exploitation of the resources of this macroregion, such as the unsustainable extraction of oil resources during the oil boom (Tabasco and Campeche), as well as the unrestricted exploitation of the Mayan region's tourism wealth until recent years.
- That is why during AMLO's regime, started implementing a socially inclusive economic strategy, using the country's domestic savings to finance large megaprojects such as the Mayan Train itself and the Tehuantepec Trans-Isthmus Corridor, as well as other important collateral megaprojects

that are also relevant to the region and the country, such as the Dos Bocas Refinery in Tabasco, within this region. The bottom line was to foster the creation of regional development hubs along the Transisthmian belt of the Gulf of Mexico with the idea of connecting both regions through the implementation of the Mayan Train, and the other, on the Gulf and South Pacific side, through the Trans-Isthmus Corridor. Each with different, albeit complementary and closely linked, objectives.

- On the other side, the Maya Train megaproject, the flagship project of the previous administration, according to some sources such as Infobae, *vid*, Infobae (January 24, 2020), seeks to decentralize investment and capital from the tourism industry around the Maya zone up to the Gulf Region, and to spread its benefits and impact currently concentrated in the Maya zone to other tourist communities in the Southeast, far away such as Coatzacoalcos, Veracruz, a distance of more than 1,500 km from the Mayan Riviera, along the Gulf Region, on the Atlantic coast.

The whole idea behind this strategy was to integrate and stimulate the economic growth in the communities (and stops) where this train arrives and to promote greater economic and commercial activity among them, for the direct benefit of their local populations. Municipalities were largely ignored by the traditional tourism industry, but also by federal authorities throughout the neoliberal period, highlighting the fact that the population of this macroregion has been the only one to see its standard of living decline over the years, *vid* Ataide, Melania, (2017).

- On the other side of the Macrosouth region, the Transisthmian-Mexican Corridor, just over 300 km long, has a social outlook not far from that depicted for the Maya Train municipalities. However, the economic perspectives for this Corridor are more promising than the Mayan railway, albeit complex, for Mexico. Given its great geostrategic location and geoeconomic and geopolitical importance for Mexico, particularly under the current global context in which we are immersed, with a length of barely 300 km but with branches that rival the length of the Maya Train (1,500 km), it is crucial for Mexico at this time for the following reasons, *vid* Luis-Pineda, O. (Jul 23, 2023).
- The Corridor is expected to fully rival, at least in the medium and long run, the Panamanian Canal, facilitating not only the flow of goods and passengers between the ports of Coatzacoalcos

(Atlantic) and Salina Cruz (Pacific) through Line FA–railway (of the Transisthmian Railway) and its connection to the Mayan Railway in Palenque, Chiapas, but also, through its another branch (Line K), making it possible to connect Ixtepec, Oaxaca (in the Isthmus region) to Cd.Hidalgo, Chiapas at the very border of Guatemala and South America, thus triggering economic growth in the South Pacific region (Guerrero, Oaxaca, and Chiapas) through the flow merchandise and passengers between the all the connected communities served by the Transisthmian Railway (Line K) and the Mayan Railway along the Gulf of Mexico.

- Accordingly, the integration of all this railway and associated logistics infrastructure within the Corridor will enable the integration of nothing less than a Trans-Isthmus Corridor Railway System within the Macrosur, since its interconnection with the Mayan Train through the FA line of the trans-isthmus with the Maya zone but also with South America through the K line from Ixtepec, Oaxaca, in the Isthmus of Tehuantepec zone, to the border with Guatemala, making it possible to close the "virtuous railway system" and boost, via rail, the flow of cargo and passengers within the entire Macrosouth for the coming years and thereby stimulate the economic growth within this macroregion and the social inclusion in this important and geostrategic Mexican macroregion, vid, Luis-Pineda, O. (Oct 10, 2023) and also vid, Luis-Pineda, O. (Oct 14, 2024).

VI. FOR SEVERAL REASONS

Firstly, the imperative of leveraging the USMCA (TMEC) between Mexico, the US and Canada. In the current global context, leveraging Mexico's comparative and competitive commercial and economic advantages to maximize the Macrosouth's advantages and the country's overall position in global trade becomes of utmost importance. Accordingly, these megaprojects and logistics created in the Macrosouth attempt not only to foster growth but also to promote people's well-being and a sustainable environment within this macroregion and in Mexico in general, compared to other trading blocs in today's global market. And seeking to minimize the impact of crises arising from geopolitical and geoeconomic pressures from Mexico's main trading partner, as it is already happening nowadays, as Trump's Tariffs' current war against Mexico and other countries, vid, Renshaw Jarret et Al. (Jul 12, 2025).

Secondly, because Mexico is one of the most open economies in the world, as reflected in the more than 46 international treaties signed with other economies, and the opportunity to take advantage of this situation, vid, KensaLogistics (2023). The current bottleneck in the Panama Canal makes the Mexican Corridor, becoming overnight an unprecedented competitive advantage for Mexico as opposed to other nearby interoceanic crossing options, becoming a key element in triggering growth in the trans-isthmus region of Tehuantepec, vid, DW.com (Apr 10, 2024).

Thirdly, the interconnection between the Mayan Train and the Trans-Isthmic railway in Coatzacoalcas will expand the tourism and cargo flow between the Mayan zone and the South Pacific along the Trans-Isthmic belt on the Pacific coast. This will contribute to accelerating the expansion of the existing Transisthmian railway network, which connects Ixtepec (Oaxaca) to Ciudad Hidalgo (Chiapas) on the border with Guatemala in Central America. Hence, boosting growth and jobs in the Macrosouth region through this rail network, to the rest of the region. Furthermore, the Corridor expects to move at least 1.4 million containers shortly, vid Forbes (Nov. 9, 2022).

Fourthly, but no less important, the imminent incoming of foreign investment in the trans-isthmus belt, lured by a nearshoring productive scheme, will take advantage of the Corridor's geostrategic location and the facilities granted by Mexico to establish itself in that region, generating growth and jobs but also potential negative implications for Mexico if the necessary measures are not taken from the Mexican States to prevent once again the bitter experience of Mexico's Northern states with the assembly industry (Maquiladora) given the growing interest of foreign capital in investing in the Macrosur region vid, Ávila R. Agustín (Apr 12, 2018). Thus the expected economic dynamism stemming from the crossing of passengers and cargo between the Atlantic and Pacific oceans, and vice versa and its connection with the Mayan Railway system along the Gulf of Mexico, is likely to impact economic growth and jobs within the entire Macrosouth since will involve not only the crossing of goods and people but also entails adding aggregate value to the incoming goods entering the Corridor, whether coming from abroad or domestically, for their eventual re-exportation to the global market, through this transoceanic facility.

Lastly, in this respect, it is worth mentioning the case of China's foreign capital inflows into the Macrosouth region, as it encompasses a wide range of important sectors such as energy and transportation. As shown by China's interest and strong investments into Mexican oil industry megaprojects implemented in the region, such as the construction of the Dos Bocas Refinery in Tabasco, along the Gulf of Mexico, and the Mexican Corridor megaproject along the Tehuantepec transisthmian belt, since the very beginning of both megaprojects, *vid*, Expansión (Jan 13, 2020).

The aforementioned interest from China becomes clear and explainable since this country expects to use this interoceanic facility to move at least 30% of its total exports through the Mexican corridor, which entails an expected and unprecedented economic impact for the Macrosouth region in the coming years, *vid*, CM.org (Jul 29, 2020). Which entails a very important challenge for Mexican authorities to bear in mind and assess that along the expected benefits for the region come also likely negative impacts and externalities spilled over effects over the region which might eventually override and compromise Mexico's regional balanced and socially inclusive targets sought in Mexico's current national economic strategy, Plan Nacional de Desarrollo(PND), *vid*, PND(2025-2030).

VII. RECOMMENDATIONS

We deem pertinent herein to highlight some foreseeable challenges and pertinent recommendations in this regard, which we consider unavoidable or essential for the Mexican State if it attempt to implement a socially inclusive and sustainable approach in the Macrosouth region by the current economic path proposed by the federal government within the framework of the National Development Plan (2025-2030). This approach also leverages the flow of investments already channeled toward this macroregion and maximizes the use of the aforementioned megaprojects, as well as other foreign and domestic investments focused on this macroregion in the coming years.

- First, it is imperative to consider the productive integration of the municipalities and entities served by both trains. Through the implementation of the concept of "Wellbeing Hubs" across all nearby communities (municipalities) where these megaprojects (both the Mayan Train and the Trans-Isthmus Corridor) converge through

productive linkages (supply chains) to be able to export their surpluses within and outside the Macrosouth region and abroad. In this way, it is expected to boost the local economy of these communities and foster inclusive regional development around them.

- Under the above premise, prioritizing the integration of the local productive apparatus (SMEs) into the production process of foreign companies to be established or established in the regions as partners (non-maquiladoras) with direct mediation and support from the Mexican State to support them with federal financing or support and the organization of local producers, so that they are not marginalized from the growth fostered by these major investments. And promote agreements between the State and transnational companies to effectively achieve a technology transfer to the local producers through agreements between the government and these companies, thus avoiding the experience of the export-oriented maquiladora industry in northern Mexico.

- Leverage local resources and infrastructure available through the Mayan Train and Transisthmian Corridor as a means of transporting cargo and passengers within the Macrosouth region to strengthen the local productive apparatus, aiming to generate added value for locally produced products (agricultural, artisanal, etc.), oriented to firstly to meet local demand and then export surpluses via the Trans-Isthmus Corridor in the South Pacific region as an export platform to international markets.

- Under the context of a largely backward and impoverished macroregion, prioritization of hiring primarily local labor over labor from other regions of the country or from abroad becomes of utmost importance, particularly that coming from abroad and South America. Unless there is a tacit agreement from Mexican authorities have not yet established "employment quotas" for the foreign labor force once the local supply of human capital for production is met. Without prejudice to the federal and local governments' promotion of the imperative specialization or retraining of Mexico's workforce in response to the domestic demand from foreign or Mexican companies to establish themselves in the Macrosouth in industrial parks, along the Transisthmian belt but also in accordance to Mexico's priorities or strategic areas, under the national strategy on the matter and the educational infrastructure of local universities.

- To inhibit the imminent local workforce overexploitation by either foreign or domestic investors established or to be established in the region, given all the facilities (savings) granted by the Mexican government, the State must intervene on behalf of Mexican workers, establishing wage policies to systematically revalue Mexican local labor prices compared to that prevailing among our trading partners, the US and Canada, and other industrialized economies seeking to establish themselves in Mexican territory. This is something that is beginning to be partially implemented on the northern border to reduce the asymmetric labor cost between the US and Mexico. Likewise, promote schemes to restrict or discourage the wave of immigrants or labor from other regions of the country or abroad. Although this represents a serious problem for Mexico, particularly for the Macrosouth region in the years to come, as this region is the natural gateway to the United States. Unfortunately, many immigrants blend in with the local population and generate externalities for the region's major municipalities, *vid*, Angeles Cruz, Rogelio (Angeles, 2007). This situation is particularly worrying given the start of establishing the first five foreign companies out of the ten planned industrial hubs in the trans-isthmus belt offered by Mexico through the Ministry of Economy, *vid*, Tapia C., Patricia (Tapia, 2023).

On the environmental front, nurturing sustainable production schemes by foreign and Mexican companies established in the Macrosur region becomes important, both on the Maya Train railway and the Trans-Isthmus Corridor side, so that their processes adhere to local and international regulations. This is to prevent a repeat of experiences such as those of the mining companies of Grupo México, a transnational corporation that obtained multiple concessions during the neoliberal era and systematically caused environmental disasters with high social costs, pollution of rivers and seas, and toxic substances, harming the country and communities in the localities where they have established themselves, as in the case of Grupo México, *vid*, Rojas, Ana Gabriela (Aug 6, 2019). In the face of the acquiescence of neoliberal governments, the current administration has inexplicably been unable to withdraw these concessions, as it did in the Ferrosur case for a section of the Trans-Isthmus Corridor, *vid* Luis-Pineda, O. (Jul 23, 2023).

Under the same previous line of thought, discouraging obsolete and unsustainable

agricultural production practices in domestic agriculture, such as "cut-and-burn forest clearing" for corn planting ("roza y quema"), a pre-Columbian American culture's practice in agriculture, etc. At the urban level, prioritize environmental education among the population, including in schools and local authorities, to preserve water resources and garbage recycling and solid waste, etc., and, in general, to preserve the vast biodiversity located in this region. Likewise, encouraging appropriate territorial reorganization for human and industrial settlements, aimed at reducing regional and rural imbalances associated with the ongoing industrial, tourist, and residential expansion in the region, stemming from uncontrolled urban growth of the region's main municipalities in response to new investments.

In order to promote local permanent job generation within the region, it is very important to support the exporting of handicrafts and, in general, local goods produced within the region, preferably adding value to them for export via the Corridor. Without neglecting the pursuit of formal policies of inclusion and respect for local culture and idiosyncrasies, in the local public schools and universities within this macroregion (which, entails as well the strengthening Mexican indigenous languages such as Mayan, Zapotec, Zoque, etc., along with the exposure of major foreign languages such as Chinese, English, French, German, etc.), as well as fostering the labor profiles from local formal education system of the universities in this macroregion, this way facilitating its incorporation into labor force of established enterprises located the region and those required by the local economy. Along with the implementation of public policies aiming to discourage the ongoing transculturation process of Mexican cultural wealth in this macroregion and strengthen it in the face of current economic and cultural globalization, with a US vision. In other words, nurturing local cultures and idiosyncrasies becomes imperative as it contributes to achieving a socially inclusive society in this macroregion based on respect for Mexican ancestral sociocultural values and heritage vis-à-vis the rest of the world.

Lastly, but not least important, prioritize consumption of local products and support local small and medium-sized enterprises (SMEs) that produce local products with local inputs in the Macrosur region for the export market through the Corridor.

Deterring food practices for local population such as the consumption of "junk food" in this macroregion by favoring nutritious local foods consumption and the on going predatory culture devastating our natural resources and waste disposal practices and exacerbated consumerism prevailing in our northern neighbors, namely US, with the consequence social and environmental implications, along with other externalities such as the recent gentrification problem on highly touristic areas in the Macrosur (such as the Mayan Riviera zone), vid, Busby Matha(Sep 19, 2022) and other regions of the country, in light of the recent boom of the Mexican economy as opposed to other countries in the Latin American region and also incoming immigration from other countries outside the region, such as Mexico's northern neighbors, as the United States and Canada and China stemming from Mexico's laxity of its immigration laws but also lured by the abysmal living cost differential between Mexico and such countries. Thus encouraging this inflow into Mexican territory, with myriad effects and thus impacting local Mexican inhabitants of such municipalities (mostly touristic zones, Mayan Riviera, etc.) and displacing local inhabitants toward other regions, making property and services more expensive in the municipalities where these foreigners settle. Where indigenous people are affected especially around tourist hotspots on the Riviera Maya, such as Tulum and Cancun are facing losing their homes as land is sold for luxury housing. And other important urban areas such as Mexico city metropolitan area, vid, López, Oscar (Jul 15, 2025). Albeit in this particular case there has been an awakening of the State intervention to tackle this ongoing problem after the recent mass protests, Vid, Lemos, Gerardo et al. (Jul 17, 2025).

However, all of these last recommendations, additionally to those mentioned above, necessarily entail the State intervention or involvement to protect local producers and people's social interests, under the basic premise of a State with strong support and social vision committed to the well-being of the majority, to achieve a truly socially inclusive and sustainable development within this strategic macroregion of the country in the years to come, vid, Luis-Pineda, O.(Dec 27, 2024).

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