Chapter 2
The West Atlantic Ecosphere

Abstract This chapter examines the systemic effectiveness and performance of Key Strategic Influencer (KSI) nations of the West Atlantic ecosphere, as each faces significant humanitarian, socioeconomic, infrastructural, and governance challenges. These include the United States of America (USA), Canada, the Federative Republic of Brazil, and the United Mexican States. It summarizes the national priorities of each and presents the transformational changes that each will confront in the coming century, as the world evolves into a planetary society. The chapter highlights the salient humanitarian challenges of the West Atlantic ecosphere. As with other ecospheres, many nation-states may collapse and crumble under the weight of herculean humanitarian and socioeconomic problems. Increased human suffering will no doubt form part of the wave of their failures. Yet it is posited that after 2065, these four KSI nations will likely be actively collaborating as a cogent, progressive, and promising ecosphere that will forge the foundations of a safer and more stable planetary society.

Keywords American superpower future · Atlantic humanitarian priorities · Transforming Brazil · Transforming Canada · Transforming Mexico · Transforming the USA

The Key Strategic Influencer (KSI) nations of the West Atlantic ecosphere include: The United States of America (USA), Canada, Brazil, and Mexico.

2.1 USA: From Denali to the Promised Land

With its motto of “In God is our trust” (Francis S. Key, 1814), the USA remains one of the most innovative and inspiring nations of the planet. It is an evolving planetary civilizational state that faces many challenges in the coming century, but one that
will continue to inspire humanity with dreams and hopes of freedom for generations to come. As the renowned American writer Emma Lazarus (1883/2006) expressed it. “Give me your tired, your poor,/Your huddled masses yearning to breathe free,/The wretched refuse of your teeming shore,/Send these, the homeless, tempest-tost to me,/I lift my lamp beside the golden door!” Indeed, this abiding Western colossus will continue to forge, inspire, and shape the contours of the emerging planetary society. Denali, the highest mountain peak in North America, symbolizes the formidable heights of this world colossus, it continues to strive to bring peoples everywhere to tomorrow’s “Promised Land” (Martin Luther King, Jr., 1968).

2.1.1 Humanitarian Systems

2.1.1.1 Water Resources

The USA has excellent water resources at over 9500 m³/capita with variable distribution throughout its vast geography. With coastlines at over 82,836 mi (133,312 km) along the Atlantic, Pacific and Arctic Oceans and the Gulf of Mexico, the USA has one of the world’s most extensive waterway systems. Moreover, it has excellent access to the Great Lakes system, including Lake Erie, Lake Huron, Lake Ontario, Lake Michigan, and Lake Superior. In addition, the USA is well endowed with significant rivers, such as the Arkansas, Colorado, Columbia, Mississippi, and Rio Grande. Yet, over an estimated 2.7 million Americans do not have access to clean and safe water. Acute water shortages are endemic in the desert regions, such as the Chihuahua Deserts (Arizona, New Mexico, and Texas), the Great Basin Desert (Nevada and Utah) and both the Mohave and the Sonoran Deserts (California and Nevada). Effective water distribution networks and desalination plants will become more important in the future.

2.1.1.2 Food Resources

The USA is self-sufficient in food resources with an over 17% of its land in productive agricultural use. Yet, the distribution of adequate sustenance varies between regions and socioeconomic classes throughout this vast land. An estimated six million Americans face food insecurity, hunger, or malnutrition. The expansion of arable lands, judicious harvesting of lake and ocean food resources, more efficient distribution and supply chain systems, and the reduction of food wastage would help alleviate this problem.
2.1.1.3 Health Care

At a score of over 88%, the USA has excellent health care outcomes relative to the Japan benchmark. Yet, over 40 million Americans do not have access to adequate health care due to regional resource variations and socioeconomic barriers across the nation. The greatest health care challenges are in Alabama, Alaska, Kentucky, and Mississippi. Yet the overall health care system capacity to expand in times of crisis is weak at 28% of its potential. Unforeseen events, such as natural disasters and massive pandemics risk overtaxing the current health care system. Cardiovascular disease and cancers remain the leading causes of mortality. Over 1.3 million Americans are HIV+ with AIDS accounting for over 16,000 deaths. Moreover, there are over 41,100 road-related deaths and over 45,500 suicides each year. Road trauma, suicides, and violence cost the economy over USD 228 billion annually.

2.1.1.4 Education

The USA has excellent educational systems with a literacy rate of 99% and world-renowned universities, such as Harvard, MIT, Princeton, Stanford, and Yale. Yet over 3.3 million Americans are still illiterate with the greatest literacy challenges in Alabama, Arizona, and Texas.

2.1.1.5 Environmental Health

Overall, the USA has a good environmental performance score of 71% with an environmental health score of 94%. Nevertheless, significant air pollution from lead and particulate matter compromises air quality in all major urban areas, especially in Arizona, California, New York, and Pennsylvania. Over 110,000 deaths annually are attributable to air pollution at an economic loss of over USD 243 billion annually. Deforestation due to massive wildfires adversely affect ecosystem vitality that stands at 56% across the USA. Inadequate biome and species protection are reducing biodiversity and viable habitats. Moreover, significant carbon, methane, nitrogen dioxide and sulfur dioxide emissions have deleterious effects on agricultural productivity, air quality, plant life, and fertile soil. These environmental challenges adversely and directly affect over 96 million Americans across its vast lands.

2.1.1.6 Summary

Overall, the USA has excellent humanitarian resources to meet the basic needs of its population with a score of over 92%. Yet at least 30 million Americans face food insecurity, hunger, limited access to adequate health care, basic education, clean water resources, or poor environmental conditions. Despite the abundance of water, arable land and food supplies, the equitable distribution of these resources poses
significant problems that the nation will strive to overcome over the next 10 years. The USA also must assure that its declining ecosystem vitality is reversed, that its environmental health is not compromised and that air quality issues are resolved.

2.1.2 Socioeconomic Systems

The USA has the world’s second largest economy at USD 20.5 trillion that is attributed to economic efficiencies, growth and productivity increases (Chandler, 1977; Cowen, 2017). Ironically, the nation faces growing income disparities between its wealthiest and poorest citizens (Freeman, 2017; Reich, 2010; Stiglitz, 2013, 2016; Targ, 2006). The USA has nine key economic regions that include the following key cities and states.

1. The South Atlantic (Jacksonville) with over 67 million in Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, and the District of Columbia.
2. The Pacific (Los Angeles) with over 55 million in Alaska, California, Hawaii, Oregon, and Washington.
3. The East North Central (Chicago) with over 47.7 million in Illinois, Indiana, Michigan, Ohio, and Wisconsin.
4. The Mid-Atlantic (New York) of over 41.6 million in New Jersey, New York, and Pennsylvania.
5. The West South Central (Houston) of over 40.6 million in Arkansas, Louisiana, Oklahoma, and Texas.
6. The Mountain (Phoenix) with over 24.4 million in Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.
7. The West North Central (Twin Cities) with over 21.3 million in Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.
8. The East South Central (Memphis) of over 19.2 million in Alabama, Kentucky, Mississippi, and Tennessee.
9. The New England (Boston) states of over 15.2 million in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

The USA currently has three megalopolises of Chicago, Los Angeles, and New York with Houston likely to become one by 2050. The key national economic engines include California, Florida, New York, and Texas.

2.1.2.1 Fiscal Health

Fiscal policy shapes income levels, taxation systems and influences the employment rates and levels of poverty. The USA overall fiscal health is strong with one of the world’s highest average income per capita of over USD 62,600. The USA has an unemployment rate of over 5% and over 15% of its citizens live below the poverty
level. Over 66 million Americans are in socioeconomic distress and do not share in the benefits of the larger economy. The poorest states include Arkansas, Louisiana, Mississippi, New Mexico, and West Virginia; the wealthiest include California, Maryland, Virginia, and the New England states; The taxation levels in the USA are relatively weak at 40% of a potential of over USD 10 trillion, leaving significant taxation space to expand its socio-economic programs. Equitable and fair distribution of tax revenues across diverse regions, states and socioeconomic classes are an important means to combat the humanitarian and socioeconomic challenges of many Americans.

2.1.2.2  Corruption and Crime

At 69%, the USA has moderate levels of corruption, including of bribery, embezzlement, fraud, human and illicit substance trafficking, and money laundering. Over USD 318 billion are lost to the American economy annually through corruption and crime. Moreover, there are a high number of homicides of over 17,600 annually across the nation. Crime rates are especially high in Alaska, Louisiana, Maryland, Missouri, and New Mexico; whereas the New England states have comparatively low rates.

2.1.2.3  Monetary Health

The Federal Reserve System in Washington DC controls the monetary system of the USA. Two challenges faced are those of export performance and national debt. The USA has an exceedingly high debt-to-GDP ratio of 108%, or over USD 22,000 trillion. This suggests that austerity and fiscal readjustment will be inevitable within the next 10 years. Healthy exports and trade surpluses would assist socio-economically disadvantaged Americans to rise out of poverty and unemployment. The USA has weak export performance at slightly over 48%, or USD 1.6 trillion, out of a potential of over USD 3.32 trillion. The major American exports include processed petroleum oil products, cars, including accessories and parts, and electronics, as well as agricultural products. Although Canada and Mexico remain its major trading partners, the USA must increase its export markets to Brazil, China, the EU, India, Indonesia, Japan, Nigeria, and the Russian Federation. The nation has significant export potential, particularly in agriculture, biotechnologies, database technologies, medicine, new energy technologies, oceanography, robotics, space technologies and superintelligence systems. The creativity and ingenuity of the American people are second to none. The continued emphasis on engineering, mathematics, sciences, and technology will propel the export industries of the future.
2.1.2.4 Summary

At an overall socioeconomic score of 58%, the USA faces challenges that may take over 20 years to overcome. A stronger economy would suggest the development and expansion of new export industries and markets, the broadening and equitable redistribution of tax revenue bases to eliminate poverty levels, while increasing employment opportunities for its peoples. Above all, it must eliminate its significant public debt.

2.1.3 Infrastructure Systems

2.1.3.1 Transportation Systems

Transportation systems remain important in national cohesion, responding to national disasters and emergencies, and sustaining effective supply distribution networks. For its extensive geographical size, the USA has excellent transportation networks with over 81% of its potential. The nation has the world’s largest airports including Chicago O’Hara International, Dallas-Fort Worth International, Hartfield-Jackson Atlanta and Los Angeles International. Its seaport networks are excellent and include major ports, such as Long Beach, Los Angeles, New York, Savannah, and Seattle. However, its railway and roadway systems remain marginal in the less populated regions, especially in Alaska and in the Mountain states of Montana, New Mexico, and Wyoming. The USA has the potential to apply its innovative expertise to transform its rail and road systems. Moreover, the nation continues to be a world leader in the space industry with major facilities that include the Cape Kennedy Space Center (Florida), the Mid-Atlantic Spaceport (Virginia), the Mojave Spaceport and Vandenberg Complex (California), the Spaceport America (New Mexico) and the SpaceX South (Texas).

2.1.3.2 Energy Systems

The USA has excellent hydro-electrical power production at 4 trillion kWh (over 14 trillion MJ) that meets most of its basic needs. The largest hydroelectrical facilities include the Grand Coulee (Washington); the Bath County Station (Kentucky/Virginia); the Chief Joseph Dam (Washington); and the Robert Moses Plant (New York). Moreover, the nation has over 98 nuclear reactors that generate over 20% of the nation’s electricity. Among the largest include the Grand Gulf (Mississippi), the Palo Verde (Arizona) and the Blue Castle facility (Utah) slated to open before 2030. The USA will continue to diversify and expand clean and renewable energy sources through ocean, solar and wind technologies in the coming decades. This transition with decreased reliance on non-renewable and highly polluting resources including coal, natural gas, and oil will be a difficult one.
2.1.3.3 Sociotechnical Systems

With over 290 million netizens, the USA is technologically advanced. Yet over 42 million Americans are not online, as the nation continues to close regional disparities. Whereas internet usage penetration is highest in New Hampshire, Washington, and Utah; it is lowest in Montana, Pennsylvania, Tennessee, and West Virginia. The USA will mature into a full knowledge society with superintelligence technologies pervading all its sectors within the next 15 years.

2.1.3.4 Public Protection and Security Systems

The USA have one of the world’s largest and most developed public protection and security capabilities at over 2.4 million in defence and police forces. Yet this is at over 75% of its potential capacity for its population size. The nation may face significant challenges to effectively respond to growing national threats, such as border insecurity, dust storms, earthquakes, environmental disasters, forest fires, hurricanes, massive floods, pandemics, social anarchy and violence, terrorism, and tornadoes across its vast territory. Moreover, the USA is currently overextended in its significant defence commitments and deployments internationally through many military commitments in Europe, the Middle East, and the East Pacific at a substantial public cost. The future may likely see a consolidation of its cogent forces closer to its North American periphery with more effective and rapid responses to increasing internal vulnerabilities.

2.1.3.5 Summary

Overall, the USA has one of the world’s strongest infrastructures at over 83%. Further development of its railway and roadway systems in Alaska and the Mountain states, the reduction on its reliance on nonrenewal energy sources and the consolidation and expansion of its public protection and security systems at home will strengthen the nation’s infrastructures even further.

2.1.4 Governance Systems

2.1.4.1 Population Management

The USA has a current population of over 332 million with a population density of 94 persons/mi² (936 persons/km²). At a growth rate of over 2.3 million annually, the 2050 projected population will be over 400 million. New sustainable communities will likely be built in low-density populated states, such as Alaska, North and South Dakota, and the Mountain states of Idaho, Montana, Nevada, Utah, and Wyoming.
These will accommodate Americans from high-density population states, such as California, Florida, Illinois, Michigan, and New York. Each coming decade may also see 18 million new immigrants from heavy weight nations, such as China, the EU, India, Japan, Mexico, Nigeria, and the United Kingdom, as well as from the Caribbean and Central American nations.

2.1.4.2 Sociocultural Cohesion

The predominance of English and Christianity with its over 75% adherents are strong cohesive forces in the USA. Of the population, 16%, or 53 million, are Hispanic-Americans mainly in California, Florida, and Texas; and at 13%, or 43 million, are Afro-Americans (Douglass, 1995) mainly in Florida, Georgia, New York, North Carolina, and Texas. Moreover, there are over seven million Americans of the Jewish faith, mainly in California, Florida, and New York; and over five million Muslims adherents mainly in Illinois, New York, and Virginia. The USA has over five million indigenous peoples in over 500 groups across its vast land (Dunbar-Ortiz, 2015; Neihardt, 2014). These include: the Cherokee with over 700,000 (Oklahoma); the Navaho with over 300,000 (Arizona); the Chippewa with over 170,000 (Minnesota and North Dakota); the Choctaw (Oklahoma) and the Oglala Lakota. Or Sioux (South Dakota) with over 160,000 each; the Niitsitapi (Montana) and the Apache (Arizona and New Mexico) with over with over 100,000 each; and the Iroquois with over 80,000 (New York). These indigenous peoples will increasingly seek direct representation in the Senate, as they struggle for greater social equity and justice in American society.

2.1.4.3 Sociopolitical Systems

The USA is a constitutional republic with 50 states and the District of Columbia. The American Congress is bicameral with a House of Representatives of 435 seats and a Senate of 100 seats with two directly elected per state. There are two major political parties: The Democratic Party and the governing Republican Party, each having the support of well over 10% of the electorate. The House appears to have an estimated excess of 103 members at an estimated extra cost of over USD 150 million/year. The Congress has relatively low female representation at 42% of its potential. The numbers of Afro-Americans and Hispanic-Americans serving in Congress also do not reflect their actual proportion of the population. Moreover, there are 25 geographically small states of under 58,000 mi² (150,220 km²), mainly in the New England, Mid-and South Atlantic states. There are also five states of under one million people, notably Alaska and the Dakotas. Overall, the USA is socio-politically strong at a score of over 77%.
2.1.4.4 Summary

Increased female representation in Congress, more proportional numbers of Afro-American and Hispanic Americans, greater involvement of indigenous peoples, the consolidation of its smaller states and the streamlining of its House might make for more cogent and effective sociopolitical systems. Nevertheless, at a score of over 88%, the USA remains one of the world’s strongest governance systems with enormous growth potential.

2.1.5 Systemic Priorities

The boundless energy and innovative spirit of its people have made the USA one of the world’s most advanced nations. Its overall systemic effectiveness stands at 80% overall considering its humanitarian, socioeconomic, infrastructure and population governance domains. Yet the nation is not without its systemic challenges. High public debt, weak taxation levels and export performance are affecting the nation’s capacity to fully respond to the basic needs of Americans. The USA will continue to experience high crime rates, internal tensions and violence until the humanitarian and socioeconomic problems are fully addressed. The key national priorities include the following. Transitioning to clean and renewable energy. More effective measures are required to protect environmental health and promulgate the ecosystem vitality. Poor air quality in high-density regions requires urgent attention. As the nation decreases its reliance on oil, significant investments in clean and safe renewal energy resources through ocean, solar and wind technologies are essential. Tax revenues and exports. Effective and equitable redistribution of tax revenues are important in the fight against poverty and despair. The expansion of export markets with Brazil, China, the EU, India, Japan, and West Africa will afford more employment opportunities for Americans. Health care. The expansion of adequate health care systems to underserved regions are important. Prevention strategies to mitigate, if not eradicate, cardiovascular diseases, cancer, infectious diseases, road trauma, suicides, and violence are also crucial. Food supply distribution. The expansion of productive agricultural land and both lake and ocean food resources are important to eliminate hunger. The food distribution systems must become more effective in underserved regions. Socio-economic barriers to adequate nutrition need to be eliminated. Public debt. The avoidance and elimination of the nation’s substantial public debt that threaten to the quality of life and living standards across the nation is paramount. Water conservation. The expansion of its future clean and safe water through conservation and recycling, effective distribution networks and desalination plants will become increasingly important in regions faced with growing desertification. Congressional representation. Greater gender parity and fair representation of Afro-Americans, Hispanic Americans and indigenous peoples in Congress is important for social justice. Hyper-speed rails. Significant investments into the development of efficient high-speed railway networks will reduce its American
dependence on air and road transportation systems. **PPS consolidation.** The consolidation and re-enforcement of public protection and security resources to a North American periphery will allow for more effective response to future national threats and vulnerabilities.

### 2.1.6 Transformations

*Let freedom ring …. When we allow freedom to ring-when we let it ring from every city and every hamlet, from every state and every city, we will be able to speed up that day when all of God's children, black men and white men, Jews and Gentiles, Protestants and Catholics, will be able to join hands and sing in the words of the old Negro spiritual, “Free at last, Free at last, Great God Almighty, We are free at last. (Martin Luther King, Jr., 1963)*

#### 2.1.6.1 World Leadership

The full potential of the USA as a civilizational state has yet to be realized. Currently, the USA has the world’s highest military expenditures that result from an overextension of its global commitments (Chang, 2007). This is not sustainable given the high levels of national debt (Bacevich, 2009; Bishop, 2009; Cowen, 2017; Falk, 2016; Greer, 2016; Johnson, 2004, 2007, 2010; Stiglitz, 2017; Targ, 2006). Indeed, the USA is in a transitional period as it redefines its global obligations and develops soft power strategies to international affairs (Nye, 2015, 2009; Reich, 2019; Schapiro & Morson, 2015; Strauss & Howe, 1997; Turchin, 2016; Zakaria, 2011). Doubtless, the next 30 years will be marked by major world realignments and the consolidation of USA defence forces to a North American periphery. The need to mitigate its national public debt and readjust to new world order realities will drive these world leadership changes.

#### 2.1.6.2 Sociopolitical Restructuring

The Atlantic and Pacific Oceans, the Caribbean Sea, the Great Lakes, and the Gulf of Mexico will be central to the strategic growth and transformation of the future USA. The next decades will see substantial waves of immigrants from the Caribbean nations, Central America, East Asia, Europe, the Indian subcontinent, and West Africa. These new Americans will continue to impact and transform the demographic composition of the nation. As the USA increasingly becomes a multiracial nation, Afro-Americans and Latinos will become far more prominent in national governance. The USA will increasingly accommodate and reconcile with its indigenous peoples with the formation of autonomous state regions with direct Senate representation. The latter part of this century may see the formation of new states
within Alaska, the Caribbean and the Pacific regions and the merger of the Carolinas, the Dakotas, and the Virginian states.

2.1.6.3 North Atlantic Tryst

With Brexit, the USA will forge closer economic ties with the United Kingdom in the immediate future. However, the next 30 years will likely see the demise of the North Atlantic Treaty Organization (NATO), as the USA cannot sustain the disproportional onus on its economy and resources indefinitely. The economic and political ties between the USA and the EU will likely remain stable in the medium term, as the EU increasingly becomes a Eurasian nation.

2.1.6.4 North American Union?

The USA will increasingly harmonize and integrate its links with Canada on many fronts. Canada’s economy is already highly dependent on and well-integrated with the North Central and Western states. The next decades may see the evolution and formation of an economic and political union with Canada with its vast resources and immense potential (Francis, 2013). Provincial accession as new American states remains a distinct political possibility before the end of the century. A North American Union would be a compelling and countervailing force to the rise of China and India as global superpowers.

2.1.6.5 The Mexican Nexus

The future economies of the states bordering Mexico, such as Arizona, California, New Mexico, and on the Gulf of Mexico such as Louisiana and Florida will be increasingly integrated with the Mexican economy. The demographic growth of Latino-Americans may lead the state legislatures of Arizona, California, Colorado, Florida, New Mexico, and Texas to recognize Spanish as official regional languages. Moreover, the USA might well become officially bilingual by the end of the twenty-first century.

2.1.6.6 Caribbean American states?

The future economies of the South Atlantic states will increasingly integrate with the those of the Caribbean nations. The American territories of Puerto Rico and the Virgin Islands may become new states. Moreover, Antigua, the Bahamas, Barbados, Jamaica, and St. Lucia will likely consolidate into one new American state. If Spanish becomes one of the USA official languages, the door may well be open to
Cuba and the Dominican Republic becoming new American states towards the end of the century.

### 2.1.6.7 Pacific Treaty Organization?

By 2050 China and Japan will substantially increase their presence in the Pacific Ocean. Palau and the American territories of Guam and the North Mariana Islands may well become geopolitical flashpoints. To safeguard American influence in the region, these territories may well become American states, as may American Samoa, Kiribati, the Marshall Islands and Nauru. Moreover, the USA, along with Australia and New Zealand, may well forge stronger strategic links in the form of a Pacific Treaty Organization. This future alliance will likely include the Federated States of Micronesia, Fiji, Papua New Guinea, the Philippines, the Solomon Islands, Tonga, and Vanuatu, as well as the territories of French Polynesia and New Caledonia. However, the sustainability and viability of such an alliance into the next century, given the world prominence of China and India remains an open question.

### 2.1.6.8 The New North

It is highly likely that the Danish territory of Kalaallit Nunaat (Greenland) will become a territory of the USA if Canada does not exert its influence in the Arctic. Moreover, Alaska and the Far East of the Russian Federation will likely see more international economic collaboration and partnerships. One promising potential development is that of international land bridges and tunnels across the Bering Strait between Alaska and the Russian Federation. This Beringia project would join the Eurasian and North American continents with immense economic growth and development implications for the USA and the world.

### 2.2 Canada: Between the Inuksuk and the Red Maple Leaf

Canada is one of the planet’s sleeping giants with enormous economic and social potential within the global village (Axworthy, 2004; McLuhan, 1962; Saunders, 2019). Yet, a great silence lingers over this vast land with its majestic lakes, mountains, and rivers (Casey, 2009; MacGregor, 2017; MacLennan, 1961). As the Canadian musician Ian Tyson (1963) wrote: “Four strong winds that blow lonely/Seven seas that run high/All those things that don’t change come what may.” Its immense Northern regions are a source of deep inspiration and Canadians have an indomitable will for survival against great geographical challenges (Atwood, 1972; Lopez, 1986; Shoalts, 2016, 2019). The inuksuk and red maple leaf are reflective of this vast land. The inuksuk, symbolic of direction, guidance, and unity towards common goals, is a human made cairn and stone landmark with ancient roots in the
culture of the Inuit and circumpolar regions. The red maple leaf prominent on the Canadian flag represents the diverse cultural heritage and the immense natural resources of Canada.

2.2.1 Humanitarian Systems

2.2.1.1 Water Resources

Canada is blessed with massive water resources at close to 80,000 m³/person with enormous potential for its future. It has the world’s most extensive coastlines at over 165,000 mi (265,523 km) along the Arctic, Atlantic and the Pacific Oceans, as well as Hudson Bay and James Bay. Among its major lakes are Great Bear Lake, Great Slave Lake, Lake Erie, Lake Huron, Lake Ontario, Lake Superior and Lake Winnipeg (Casey, 2009). Its enormous and noteworthy river networks include: the Churchill (Newfoundland and Labrador), the Columbia, the Fraser, the Mackenzie, the Nelson, the Saskatchewan, the St. Lawrence, the Peace, and the Yukon Rivers (MacGregor, 2017). Yet despite this abundance of water, an estimated 400,000 Canadians do not have access to clean and safe water supplies. This is particularly the case for those in many indigenous communities and in rural and arid regions, such as the Okanagan Desert in British Columbia (Barlow, 2016).

2.2.1.2 Food Resources

For its immense geographical size, Canada has a relatively small agricultural land base of 4.5% with a capacity to expand its arable land by an additional 425,000 mi² (1,100,750 km²). Food insecurity, hunger and malnutrition still plague at least one million Canadians, particularly in rural regions and in indigenous and Northern communities. Limited distribution and supply systems and prohibitive transportation costs make affordable basic food staples difficult to obtain in some regions. Fish stocks appear to be declining and require more judicious harvesting of nutritional food resources from its enormous lakes, rivers, and ocean coasts.

2.2.1.3 Health Care

Canada’s health care outcomes are excellent at over 93% of the Japan benchmark. Despite its reputation of excellent major medical research centers, such as those in Montreal, Toronto and Vancouver, Canada’s health care system capacity is weak at 25% of its potential. The system risks being overwhelmed in the event of disasters, emergencies, and pandemics. Furthermore, over 2.7 million Canadians still lack accessible, adequate, and equitable basic health care. This is particularly the case for those living in sparsely populated Northern and rural regions and many
indigenous communities across Canada (Caro, 2002c). Furthermore, health care across Canada is highly fragmented with little continuity of care (Caro, 1983, 1994, 2002a, 2002b). As in many nations, cancer, and cardiovascular disease are the greatest causes of mortality among Canadians (Caro, 1989). Over 65,000 Canadians are HIV+ and AIDS account for almost 800 deaths each year. Moreover, over 2100 Canadians die from road-trauma (Caro, 1997, 2011), and 3750 from suicides annually at a loss of almost USD 1.35 billion to the economy.

2.2.1.4 Education

Canada has a literacy rate of 99% and has internationally renowned educational institutions, such as McGill University, the University of British Columbia and that of Toronto. Yet literacy rates vary across its diverse land with an estimated 0.36 million illiterate Canadians, who face social obstacles to employment and experience socio-economic poverty. Alberta and British Columbia have the highest literacy rates, while Newfoundland and Labrador, and Québec have the lowest.

2.2.1.5 Environmental Health

Canada has a good environmental performance score of 72%. Although its environmental health is still comparatively high, its ecosystem vitality is declining from 55% with its decreasing biodiversity and increasing deforestation rates. Black carbon, carbon dioxide, methane, nitrogen, and sulfur emissions contribute to air pollution and adversely affect agricultural plants and soil. Courtenay and Vanderhoof (British Columbia), Montreal, Regina, Sarnia, and Toronto are among Canada’s most polluted cities. Over 8000 deaths across Canada are attributable to air pollution at an economic loss of over USD 13.4 billion. Environmental changes adversely and directly affect over 10.5 million Canadians.

2.2.1.6 Summary

With an overall score of over 92%, Canada has excellent resources for its close to 38 million citizens with abundant water resources, excellent education, and health care relative to international standards. Yet, over three million Canadians do not have adequate access to food, education, health care, clean water, or healthy environments. Despite the abundance of these resources, the equitable distribution poses major challenges, particularly across isolated Northern communities and rural regions. Canada also needs to take every measure to assure that its ecosystem vitality is safeguarded, and that environmental health is promulgated, as over 28% of its citizens are directly and negatively impacted.
2.2.2 **Socioeconomic Systems**

According to the former Premier of Saskatchewan, Tommy Douglas (1951): “When we build a society based on greed, selfishness, and ruthless competition, the fruits are economic insecurity at home and international discord.” Canada has the world’s tenth largest economy of the KSI nations with a GDP of over USD 1.8 trillion. Its six key economic regions include:

1. Ontario (Toronto) with over 14.6 million.
2. Québec (Montréal) with over 8.5 million.
3. The West (Calgary) with over seven million, including Alberta, Manitoba, and Saskatchewan.
4. British Columbia (Vancouver) with over five million.
5. Atlantic Canada (Halifax) with over 2.3 million, including New Brunswick, Newfoundland and Labrador, Nova Scotia, and Prince Edward Island.
6. The North (Yellowknife) with over 125,000, including the Northwest Territory, Nunavut, and Yukon.

Ontario is the main economic engine with Toronto likely to become Canada’s only world megalopolis before the end of the century.

2.2.2.1 **Fiscal Health**

Fiscal policy shapes income levels, taxation systems and influences the employment rates and levels of poverty. Canadians have a high income per capita of USD 48,000. Yet Canada has an unemployment rate of almost 6% with over 2.2 million unemployed and 9% living below the poverty level. Over 15% of Canadians, or over 5.7 million people, live in socioeconomic distress. The poorest provinces are Nova Scotia and Prince Edward Island, whereas the wealthiest are Alberta and Saskatchewan. Canada has cogent accounting practices, legislative controls and taxation structures that contribute to positive social development. With good taxation levels at 73%, there is still extra taxation room for over USD 243 billion. Yet the equitable collection and fair redistribution of revenues across regional jurisdictions under changing economic conditions present ongoing challenges.

2.2.2.2 **Corruption and Crime**

With a corruption index of 77%, Canada has low levels of corruption and high levels of corporate and governance transparency. Yet bribery, crimes, human trafficking, illicit substance trade and money laundering still occur at an economic loss of almost USD 21 billion annually. The West (Manitoba and Saskatchewan) and North (Northwest Territories and Nunavut) have the highest crime rates. There are over
650 homicides across Canada at an estimated loss of USD 1.1 billion annually to the economy.

2.2.2.3 Monetary Health

The Central Bank of Canada in Ottawa controls the national monetary system. Two challenges faced are those of export performance and national debt. Employment is intrinsically linked to strong export industries, such as crude oil, gold, petroleum oil products and vehicles, including accessories and parts. Canada is also a major world agricultural producer of canola, flax, lentils, and rapeseed. Overall, Canada has good export performance at over 76% of its potential. No doubt the nation will continue to foster new export industries in agriculture and food production, biotechnologies, medicine, minerals, pollution reduction technologies and renewable energy technologies. Although the USA remains its most important export market, Canada would benefit from expanding trade with China, the EU, India, Japan, and Mexico. Canada’s high debt-to-GDP level of over 88% is unsustainable and jeopardizes the living standards and socioeconomic health of Canadians. With looming austerity, Canadians will face arduous economic and political choices in the face of massive readjustments to sustain robust economies over the next 10 years.

2.2.2.4 Summary

Overall, Canada has a fair socioeconomic score of 69%. The nation has a good tax revenue base, excellent export performance and low corruption and crime levels. Nevertheless, its national debt threatens its long-term socio-economic prosperity. That over 5.7 million Canadians live in poverty is unbecoming of this richly endowed nation.

2.2.3 Infrastructure Systems

2.2.3.1 Transportation Systems

Given its vast size and low population density, Canada’s transportation systems are significantly underdeveloped at 14% of its potential. Socioeconomic development and growth in Canada depend on effective transportation networks across its vast expanses. Railways and roads are well-developed in Southern Ontario and Québec, particularly in the Windsor to Québec corridor, and in most of the major urban regions. However, Canada is at less than 15% of its railway capacity for its enormous geographical size. Canada’s largest major ocean ports include Halifax and Vancouver, and Toronto Pearson remains Canada’s largest and busiest international airport. However, effective rail and road systems are essential for export development
and growth and sustaining supply and distribution networks in Canada’s North and West. Canada’s Space Agency is nurturing has a small, but growing space industry with a planned spaceport in Canso in Nova Scotia to replace its defunct one in Churchill in Manitoba.

2.2.3.2 Energy Systems

Canada has ample and exceptional hydro-electrical power production at 650 billion kWh (2.3 trillion MJ) energy resources that meets most of its economic and population needs. The largest hydro-electrical power stations include the La Grande and Robert-Bourassa in Québec, the Churchill Falls Dam in Newfoundland and Labrador, and the Bennett Dam in British Columbia. Canada has 19 nuclear reactors that produce over 17% of the nation’s electricity. The largest include the Bruce, Darlington, and Pickering plants in Ontario. Hydro-electrical power systems and renewable resources, such as ocean tide, solar and wind energy, hold enormous potential for Canada’s energy future.

2.2.3.3 Sociotechnical Systems

With over 33 million netizens, Canada is on the road to becoming a full knowledge society within a decade. The challenge remains that of equalizing technological access across its diverse rural and vast isolated regions.

2.2.3.4 Public Protection and Security Systems

Over 130,000 Canadians are engaged in public protection and security services, including defence and police forces. At 37% of its potential for its population, Canada is not able to protect its people nor secure its vast territory adequately nor effectively. The nation is highly vulnerable and cannot effectively protect its coastlines, nor guarantee its territorial integrity, particularly in its Arctic regions. Many regions across Canada are particularly vulnerable to natural disasters and emergencies, such as blizzards, earthquakes, environmental disasters, ice storms, massive floods, forest fires, pandemics, and tornadoes. Mutual aid agreements and strategic alliances, particularly with the USA, are essential for future effective responses to potential threats in the face of Canada’s limited PPS resources.

2.2.3.5 Summary

At over 60%, Canada overall has marginally good infrastructures. Its relatively small population over its vast land mass makes it difficult to create effective transportation systems, particularly in its northern and western regions. Its massive
hydro-electrical and potential renewal energy resources hold great promise, but this is countervailed by its limited transportation and PPS resources.

2.2.4 Governance Systems

2.2.4.1 Population Management

As a vast and expansive northern land with a projected 2050 population of over 41 million, Canada remains underpopulated by global standards with its current population density of 10.3 persons/mi² (4 persons/km²). This open space nation holds enormous potential for an additional population of over 100 million, particularly in British Columbia, the North, Ontario, Quebec, and the West regions. Over each of the next three decades, Canada will likely see over 3.6 million immigrants primarily from China, the EU, India, Japan, Mexico, Nigeria, the United Kingdom, and the USA, as well as from the highly populated Caribbean nations, such as Haiti and Jamaica, and other West African nations.

2.2.4.2 Sociocultural Cohesion

Canada is officially bilingual and a relatively cohesive nation with English spoken by over 86% and French by over seven million, primarily in Québec and New Brunswick. Over 25 million or 66% of Canadians are Christians. In addition, over 1.2 million are of the Muslim faith mainly in Ottawa, Toronto, and Vancouver; and close to 400,000 people of the Jewish faith, mainly in Toronto and Montréal. In Canada, there are over 1.7 million indigenous peoples, including the First Nations, the Inuit, and the Métis. These include the First Nations of the Cree of over 120,000 and Anishinabek of over 110,000 in Manitoba, Ontario, and Québec; the Dene (Tlicho) nation of over 30,000 in Alberta, Saskatchewan and the Northwest Territories; the Nishga in British Columbia among many others. The Inuit include over 40,000 across Nunavut, Nunavik in Québec and Nunatsiavut in Newfoundland and Labrador. Finally, Canada recognizes the Métis of over 500,000 in Ontario and Western Canada. Reconciliation and social justice for indigenous peoples remains a key national priority in Canada (Frideres & Gadacz, 2011).

2.2.4.3 Sociopolitical Systems

Canada is a constitutional monarchy with a Parliament composed of a House of Commons and a Senate that represent ten provinces and three territories. There are three major political parties, including the governing Liberal Party, the Conservative Party, and the New Democratic Party—each of which have at least 10% of the support of the electorate. The political party system is weak in that there are no
mechanisms, such as a second round of voting to assure that one party or political coalition receives over 50% of the electoral vote. The House of Commons with its over 345 members is excessive in a nation with a relatively small population. Political consensus and decision-making are complex, difficult, and slow at an estimated extra cost of USD 300 million annually. Moreover, the House seats are not proportionally allocated and do not necessarily reflect the electoral vote. Nor does the Senate as a non-elected upper chamber equitably reflect the regions. The Senate is over-represented by Atlantic Canada and under-represented by Western Canada and the North. The First Nations are not directly represented in the Senate. At 54% of its potential, Canada has good female participation and gender parity in national governance. Finally, three of Atlantic Canada’s four provinces are geographically under 58,000 mi² (150,220 km²) and along with Newfoundland and Labrador have under one million people. Canada’s overall sociopolitical effectiveness stands at 30% and is comparatively weak from a world perspective.

2.2.4.4 Summary

Canada is a socio-politically stable nation with enormous potential to increase its population and accommodate new sustainable and viable communities across its vast territory. Its overall governance effectiveness is weak at 40% given its relatively small population. One of Canada’s critical and pressing challenges is to reform its costly and inefficient parliamentary structure with its lugubrious bureaucracy. Canada has inherited colonial governance structures with a monarchy that may not reflect the political realities of the twenty-first century as both an Arctic and North American nation. As Canada evolves and becomes more politically mature, it will likely move away from its constitutional British monarchy and adapt more effective governance forms that fairly and equitably represent its citizens.

2.2.5 Systemic Priorities

Of the three North American nations, Canada has the greatest growth potential, but faces difficult sociopolitical governance choices in this century. Its vast land remains largely underpopulated with immense possibilities. Its overall national systemic strength stands at 65%. The next 35 years will determine its future direction and place among the world nations. Canada faces ten key national priorities over the next decades. Population growth. The expansion of its population and judicious planning of new sustainable and viable communities in the northern regions of its provinces and the North is essential for Canada’s long-term future. With increased immigration, particularly from China, the EU, India, Japan, Mexico, the United Kingdom, the USA, West Africa, and the Caribbean nations, will be important for Canada’s future. Public debt. The elimination and mitigation of public debt through sound measures that entail the broadening export markets, economic growth and
increased tax revenues. Without urgent action, Canada’s social achievements and socioeconomic health will be at risk. **Food resources.** Significant investments in expanding productive agricultural opportunities and ocean, lake and river food resources are needed to not only adequately feed its own peoples, but to develop new export markets. **Transportation systems.** Significant investments in expanding railways, roadways, bridges, and tunnels to open the nation up to new sustainable and viable communities is critical to Canada’s future. New transportation networks are particularly needed in the northern regions of British Columbia, the West, Ontario, Quebec, and the North. Land tunnel connections across the Straits of Belle Isle between Point Amour in Labrador and Yankee Point in Newfoundland and the development of rail and roadway networks through Quebec regions of Manicouagan and Duplessis will also be crucial in opening new lands to future settlement. **Fiscal health.** Poverty and unemployment are unacceptable in a well-endowed nation as Canada. Increasing employment opportunities and mitigating poverty through equitable and fair tax revenue redistribution, the expansion of exports and the elimination of public debt are all instrumental in alleviating and mitigating these problems. **Indigenous peoples.** The humanitarian concerns of Canada’s indigenous peoples to access to clean and safe water, education and health care are a national priority if social justice is to be served. The proactive sociopolitical engagement of First Nations, the Dene and the Inuit in Canada’s governance is key. **Health care.** Access to effective health care and increased health care system capacity are essential in addressing the needs of over 2.7 million Canadians. Prevention is key in the reduction of road-related trauma, suicides and all forms of violence and diseases associated with unsafe physical and social environments. **Environmental health.** The protection of ecosystem vitality and promotion of environmental health is essential, as Canada’s population grows. **Public protection and security.** Canada must expand its public protection and security resources, particularly in air, ground, and marine forces; border control and security; cybersecurity; emergency preparedness and response; environmental protection; fire and rescue services; forest and wildlife protection; paramedical, and paramilitary forces. The feasibility of a Canadian National Guard with compulsory service obligation may help integrate Canadians as a nation, while providing the means to effectively meet and prepare for future disasters and emergencies. **Governance systems.** A downsizing of its House of Commons and consolidation of its Atlantic provinces would bring about greater governance efficiency, while lowering overall governance costs. The replacement of the Senate through a directly elected Canadian Federal Council with equitable and fair representation of citizens, including its indigenous peoples is long overdue. At stake is Canada’s long-term sociopolitical viability.
2.2.6 Transformations

The Québécois poet and musician, Gilles Vigneault (1964/2007) wrote: « Mon pays ce n’est pas un pays, c’est l’hiver » “My country is not a country; it is Winter.” Indeed, Canada is North America’s sleeping giant that has enormous potential as an Arctic and North American KSI nation (Axworthy, 2004; Saunders, 2019). Yet, it remains an underdeveloped nation in that its comparative population is relatively small, given its vast geographical size. The effective integration of new future immigrants into Canadian society will define, forge, and transform Canada into a strong independent nation. Superb national leadership with inspiring visions are and will continue to be critical. Yet, there are substantial challenges. In the absence of substantial socioeconomic and sociopolitical reforms and cogent national leadership, Canada’s future as an independent and united nation will be at risk. Future Canadians may well face two existential scenarios: Québec sovereignty and its ensuing chaos; and economic and political union with the USA.

2.2.6.1 A Canadian Federation?

Canada’s current parliamentary structure is not sustainable given the emerging new world order. The nation will face increasing pressures for constitutional change and will likely adopt a Federative model with a President as Head of State. It is also likely that the Senate will be replaced with a directly elected Federation Council with equitable and fair regional and direct indigenous representation across Canada. Without substantial electoral and Parliamentary reform and the elimination of its public debt, the risk of sociopolitical instability over the next decades will be manifest.

2.2.6.2 Embracing Indigeneity

Canada’s First Nations, Inuit and Metis may find political expression as key autonomous regions within a future Canadian Federation. Accommodation, compromise, mutual respect, and understanding is essential, if Canada is to remain a unified nation in the future. The stability of Canada will depend on the degree to which its governance structures are efficient, equitable, inclusive, and socially just. The proactive participation and representation of the First Nations, Inuit and Metis in a new Canadian Federation Council that replaces an obsolete Senate as the upper house is important. Canada may well recognize Cree and Inuktitut as official languages, alongside English and French in the coming decades.
2.2.6.3 Arctic Consciousness

Canada is an Arctic nation with almost 33% of its land mass above the 60° latitude. Between the years 2030 and 2060, this realization will become more evident to all Canadians. Climatic changes will make the North more habitable and Northern development of sustainable communities to accommodate growing populations more feasible. Creating unique housing solutions and transportation networks in the North will be among the greatest challenges for the next two generations of Canadians. Canadians of the future will be called on to innovate, learn and share with other Arctic circumpolar nations, such as the EU (Finland, Sweden), Kalaallit Nunaat (Danish territory of Greenland), Norway, the Russian Federation (including the Republic of Sakha) and the state of Alaska. As the Canadian North develops, economic and political questions of the integration of Kalaallit Nunaat into Canada’s Federation will arise. This might well occur after 2090, once the current Arctic territories have larger populations and become new provinces. As an Arctic nation, Canada is geographically situated to become a natural peace broker and mediator between the Russian Federation and the USA. With greater internal development and peace, Canada’s world impact will be increasingly important whatever the political form a future Canada takes.

2.2.6.4 Québec Independence

Canada has come a long way from what Hugh MacLennan (1952) called the “two solitudes” of anglophones and francophones. The Québec independence movement is currently dormant, but remains a sword of Damocles over the political future in Canada (Levesque, 1968; Parizeau, 2010; Young, 1997). Québec continues to assert itself as a distinct nation and society within Canada with different priorities and values. Endless Federal concessions have resulted in asymmetrical national development that constrain the aspirations of other Canadians for economic and social development and growth. Without substantial sociopolitical reform and justice, the specter of Québec sovereignty may become a reality through protracted negotiations and consensus across Canada. The risks for acrimony and contention in this unsettling scenario still exist. Disputes over the ownership and resources of Newfoundland and Labrador, the political future of Acadians in New Brunswick and other francophones across Canada and the territorial demands of the Cree and Inuit in Northern Québec will come to the fore.

2.2.6.5 A North American Union?

Since 1933, Canada has increasingly embraced the USA to become part of the American hegemony culturally and economically. Moreover, Canada is dependent on American protection, such as the North America Aerospace Defence Command. Many have touted the idea of a North American Union (Grubel, 1999; Pastor, 2001)
and even outright merger with the USA (Francis, 2013). The specter and hope for such a union with the amero, as the proposed common currency, is not a forgotten dream, but rather a postponed one (Grubel, 1999; Pastor, 2011). The North American Free Trade Agreement (NAFTA) of 1994 was an initial assertion of the principle of commonality and interdependence that had initially increased continental trade. Recent renegotiated trade deals between Canada and the USA are largely bilateral with a clear focus and dominance on American national interests. Moreover, globalization has pushed the pursuit of continental solutions to common challenges into time future. However, as a new world order emerges and new threats become manifest, a new reality will face Canadians. Climatic, environmental, and economic changes will compel North American solutions. Sooner or later, both Canada and the USA will return to the realization that they have far more to gain from collaboration, cooperation, and integration. Economic and political union may yet become the order of the day towards the end of the century.

2.3 Brazil: An Emerging Luso-Civilizational State?

The Federative Republic of Brazil (República Federativa do Brasil) is one of the most promising of the planet’s nations with enormous potential. Brazil has seen economic and political transformations over the last 20 years and is currently transitioning into an emerging Luso-civilizational state (Alston, Melo, Mueller, & Pereira, 2016; Davidson, 2012; Eakin, 1997; Grivoyannis, 2017; Reid, 2016; Schneider, 2016; Skidmore, 2009). Yet many problems abound. Deprivation, disease, hunger, poverty, and squalid living conditions still plague millions of Brazilians as the nation copes with environmental destruction, massive public debt and uncontrolled inflation (Carolina de Jesus, 2003; Da Silva, 2018; Machado de Assis, 2018; Skidmore, 2009).

2.3.1 Humanitarian Systems

2.3.1.1 Water Resources

At 41,000 m³/capita, Brazil has excellent water resources with an Atlantic Ocean coastlines of over 20,740 mi (33,380 km) and one of the world’s most extensive and massive river systems, including the Amazon, the Madeira, the Paranaiba, the Paraná, the Purus, the São Francisco, the Tocantins, and the Xingu Rivers. However, over an estimated five million Brazilians do not have access to clean and safe water. This is notably the case in the semiarid Jalapão regions in Tocantins, as well as in large areas of Bahia, Ceará, Minas Gerais and Pernambuco. Furthermore, São Paulo state has suffered under severe drought conditions that caused serious water
shortages for millions. Also, over 36 million Brazilians do not have adequate access to basic sanitation facilities and wastewater treatment.

2.3.1.2 Food Resources

According to Luiz (Lula) Da Silva, the former President of Brazil: “Where there is hunger, there is no hope. There is only desolation and pain. Hunger nurtures violence and fanaticism. A world where people starve will never be safe” (Wainwright, 2003). Although almost 10% of Brazil’s vast lands is currently in productive agricultural use, over 18.2 million Brazilians face food shortages and hunger. Of these 11 million suffer from acute malnutrition, particularly in lower socioeconomic classes in the urban favelas and rural regions. Brazil has the potential to expand its productive arable lands by over 235,000 mi² (608,000 km²) to feed its burgeoning population. Furthermore, there is a need for more judicious planning to harvest supplemental food resources from its rivers and ocean coasts to alleviate the growing problems of hunger. Finally, more effective and extensive transportation linkages are essential to support food distribution and supply systems throughout its vast territory.

2.3.1.3 Health Care

At 69% relative to the Japanese benchmark, Brazil has good overall health care outcomes with the highest in the southern state of Santa Catarina and the southeast states of Espírito Santo and São Paulo. Yet, over 65 million Brazilians across its vast territory still need greater access to adequate care. Moreover, its health care system capacity in the event of mass emergencies, natural disasters and pandemics remains weak at 22% of its potential. Infectious diseases, such as Chagas disease, dengue fever, malaria, schistosomiasis, yellow fever and the Zika virus, are endemic, especially in Brazil’s north states of Amazonas, Pará and Rondônia and the northeast states of Alagoas, Maranhão, and Piauí. Over 850,000 Brazilians are HIV+ and AIDS accounts for an annual loss of life of 14,000,000 per year at a cost of over USD 8 billion. Moreover, poor health conditions have contributed to the spread of these afflictions throughout the nation posing a threat of mass epidemics. Brazil also struggles with high road-related deaths of over 49,200 and suicides claim over 12,800 annually. Together with homicides, the cost to the economy amounts to over USD 71 billion annually.

2.3.1.4 Education

Brazil has a high literacy rate of over 93% and has excellent universities, such as the Federal University of Rio de Janeiro, the University of Campinas, and the University of São Paulo. Yet over 15 million Brazilians remain illiterate and face social
obstacles to employment that engender crime and poverty. The highest literacy rates are in Brazil’s South and Southeast states, including of Espírito Santo, Rio de Janeiro, Paraná, Santa Catarina, and São Paulo; the lowest rates are in the Northeast states of Alagoas, Ceará, Maranhão, Paraíba, and Piauí.

2.3.1.5 Environmental Health

Brazil has an overall marginal environmental performance score of 61% and a declining environmental health score of 67%. Over 66,000 deaths are attributable to air pollution at an estimated economic loss of over USD 36 billion annually. Belo Horizonte, Curitiba, Rio de Janeiro, and Sao Paulo are among its most polluted metropolitan areas. Moreover, Cubatão, known as the Valley of Death, and Santa Gertrudes in Sao Paulo state are particularly recognized as among Brazil’s most toxic regions. Noxious emissions of black carbon, carbon dioxide, ethanol, methane, nitrogen, and sulfuric emissions not only compromise air quality, but also adversely impact agriculture, plant life, and fertile soil (Viola & Franchini, 2018). Furthermore, the ecosystem vitality of 56% in Brazil is declining, as deforestation continues to destroy and threaten the habitats of many unique species. Overall, deleterious environmental changes directly affect over 83 million Brazilians.

2.3.1.6 Summary

Brazil has good humanitarian resources at 78% for its over 212 million people. Yet at least 47 million Brazilians do not have access to either clean and safe water, adequate sanitation, food, health care, basic education, or healthy environments. Despite the abundance of resources in Brazil, the equitable distribution of the necessities of life across socioeconomic classes and states will continue to pose serious challenges for the next 20 years. Moreover, Brazil will have to place a high priority on resolving its environmental challenges that are directly and adversely affecting close to 40% of its population.

2.3.2 Socioeconomic Systems

Brazil has the world’s eighth largest economy of over USD 3.4 trillion yet faces a high public debt of over 84%. Unemployment and the shortage of quality jobs makes it difficult to finance social development across this great nation of contradictions (Dane, 2013). Brazil’s two key megalopolises include Rio de Janeiro with over 13.3 million and São Paulo with over 22 million and with Belo Horizonte in Minas Gerais, Brasilia, and Salvador on Bahia likely join these ranks by the end of the century. Brazil has the following five key economic regions, key cities, and states.
1. The Southeast (São Paulo) is Brazil’s key economic heartland with over 90 million and include the states of Espírito Santo, Minas Gerais, Rio de Janeiro, and São Paulo.
2. The Northeast (Salvador) with over 60 million that includes Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, and Sergipe.
3. The South (Curitiba) of over 30 million that includes Paraná, Rio Grande do Sul, and Santa Catarina.
4. The North (Manaus) of over 18 million that includes Acre, Amapá, Amazonas, Pará, Rondônia, Roraima, and Tocantins.
5. The Central West (Brasilia) of over 16 million that includes Goiás, Mato Grosso, Mato Grosso do Sul and the Federal Capital of Brasilia.

2.3.2.1 Fiscal Health

Fiscal policy shapes income levels, taxation systems and influences the employment rates and poverty levels. Brazil has a low average income per capita of over USD 16,000. With an unemployment rate of 12.5% and over 13% of Brazilians living under the poverty level, over 54 million Brazilians live in socioeconomic distress, mainly in the rural regions and urban favelas. The Northeast states are Brazil’s poorest, the richest are those of the Southeast. There is growing alienation and frustration of many Brazilians at the growing gap between wealthy plutocrats and Brazil’s dispossessed (Kingstone & Powers, 2017; Robb, 2005; Schneider, 2016). Brazil’s tax revenue base is weak at 36% of its potential of USD 1.7 trillion. Equitable and fair distribution of a broadened tax revenue base across its diverse states and socioeconomic classes are essential for social development and in the fight against poverty.

2.3.2.2 Corruption and Crime

At a score of 35%, Brazil suffers from high levels of corruption with rampant bribery, cybercrime, embezzlement, extortion, gang formation, money laundering, and theft at a cost of USD 111 billion annually to the Brazilian economy. Poor governance transparency and corrupt legal and policing systems complicate the growing anarchy and poverty throughout the nation. Brazil has the world’s highest rate of homicides of over 65,000 per year, particularly in the Northeast states of Bahia in Salvador, Ceará in Fortaleza, and Pernambuco in Recife. In addition, Belem in Pará, Maceio in Alagoas, and Manaus in Amazonas are among the most violent urban regions of the planet. Confronting rampant corruption, crime, and violence across Brazil is a national and urgent priority (Amado, 1943; Reid, 2016; Robb, 2005).
2.3.2.3 Monetary Health

The Central Bank of Brazil in Brasilia controls the monetary system of Brazil. Two challenges faced are those of export performance and national debt. Healthy export levels and trade surpluses would help socioeconomically distressed Brazilians. Yet, at over 10% of its potential, Brazil’s overall export performance is weak. Currently, Brazil’s major trading partners include China and the USA, and its major exports include ethanol, iron ore and crude petroleum. Moreover, Brazil is the world agricultural producer of citrus fruits, coffee, poultry, soybeans, and sugar cane. Continued investments in innovation and scientific research will catalyze the development of export industries, notably biofuels and solar energy technology (Da Silva & Chandel, 2014). Brazil’s involvement in the Southern American common market of Mercosur with Argentina, Paraguay, and Uruguay promises to enhance its export performance. Moreover, increased trade with the emerging Andean Community nations of Bolivia, Columbia, Ecuador, and Peru; the EU; Japan; Mexico; Nigeria; and the emerging African nations of Angola, Mozambique, and South Africa hold great economic potential for Brazil. Finally, Brazil’s debt-to-GDP is high at 84% and is of significant concern. It is imperative for the Government to rein in its national debt levels, so as not to impede its socioeconomic development and growth in the future.

2.3.2.4 Summary

At an overall score of over 32%, Brazil has an urgent socioeconomic crisis that may take over close to 50 years to fully overcome. A stronger Brazilian economy depends on the elimination of its public debt, the expansion of its tax revenue base, the growth of new export markets (Stuenkuel, 2015), the equitable income redistribution to alleviate poverty, and zero tolerance of corruption and crime (Skidmore, 2009).

2.3.3 Infrastructure Systems

2.3.3.1 Transportation Systems

At a weak score of 18%, Brazil has underdeveloped transportation systems for its vast land mass. Although its airport, railway and roadway networks are limited, the nation has excellent waterways along its extensive Atlantic coastlines and its vast river systems. Brazil’s major ocean port is in Santos in São Paulo state; and the Rio de Janeiro Guarulhos and São Paulo Galeao are among its major international airports. Yet, much of the Brazilian population is concentrated within 200 mi (323 km) of the Atlantic coast, leaving the Brazil’s interior open for development. In particular, the states of Amazonas, Bahia, Goiás, Maranhão, Mato Grosso, Pará, and Tocantins need significant development and investments in transportation networks.
Weak transportation infrastructures hampers food distribution and adversely affects economic growth, export performance and socioeconomic development. Interestingly, Brazil has a burgeoning space industry with space ports at Alcantara in Maranhão and Cuiabá in Mato Grosso (Ricco, 2017; Stepan, 2016).

2.3.3.2 Energy Systems

At over 27% of its potential, Brazil has insufficient hydro-electrical power production energy resources for its population needs and technological development. Annually it produces 568 billion kW h (more than 2 trillion MJ) over a needed 2.1 trillion kW h (7.6 trillion MJ). Brazil’s rapid economic growth over the last decade has provoked a huge demand for new and stable sources of energy. Brazil’s enormous hydroelectric power plants produce over 85% of the national energy supply. Among others these include the Belo Monte and Tucuruí Dams in Pará, and the Itapu Dam in Paraná—one of the world’s largest. Brazil’s Angra nuclear power plant in Rio de Janeiro state accounts for over 3% of the nation’s electrical production. Two more nuclear reactors are slated to be operational in the 2020s in Minas Gerais and Pernambuco. Furthermore, Brazil is investing heavily in biofuels, solar and ocean technologies to meet its future energy needs.

2.3.3.3 Sociotechnical Systems

Over 144 million Brazilians, or over 68%, are netizens and the nation is on the road to becoming a knowledge society within 30 years. Yet currently there is a digital divide within Brazil between socioeconomic classes and regions. Brazil’s South and Southeast states lead the nation in the deployment of technology, whereas the North and Northeast states remain in the greatest need of technological development.

2.3.3.4 Public Protection and Security Systems

With its public protection and security, including defence and police, resources, estimated at over 0.75 million, Brazil is at 37% of its potential of over 2.12 million. Moreover, Brazil is limited in its ability to protect and safeguard its territorial integrity given its vast geographical size. The nation cannot adequately respond to national disasters and emergencies including droughts, environmental disasters, heatwaves, landslides, major floods, pandemics, tornados, and wildfires that affects all Brazilian states. The growing anarchy, rampant crime and violence is the bane of Brazilian cities and states and civil unrest and violence remain endemic across Brazil, particularly in the Northeast states and urban favelas. Moreover, the states of Acre, Amazonas, Mato Grosso, Pará, and Roraima face growing and significant border control and security issues, particularly along its borders with Bolivia,
Columbia, Peru, and Venezuela. These are national challenges that require urgent attention and redress.

### 2.3.3.5 Summary

With an overall score of 38%, Brazil’s infrastructure, such as transportation systems, hydro-electrical energy resources and public, protection and security systems, remain weak and may take over 40 years of further development and investment. Its technological base, however, shows great promise, as Brazil evolves into a knowledge society.

### 2.3.4 Governance Systems

#### 2.3.4.1 Population Management

With over 36% of its people, or over 75 million under 30 years, Brazil remains a vibrant and young nation of the future. With its population density at over 65 persons/mi² (25 persons/km²) and a current population of over 210.3 million, Brazil remains an open space nation with the potential of accommodating over ten million more new Brazilians each decade. Even with a projected 2050 population of over 250 million Brazilians, the frontier states of the Central West and the North regions could accommodate more people in new communities and settlements in this century. This includes the states of Acre, Amapá, Amazonas, Goiás, Mato Grosso, Mato Grosso do Sul, Pará, Rondônia, Roraima, and Tocantins. No doubt over each of the next decades, Brazil will attract of 14 million new immigrants from China, the EU, India, Japan, and Nigeria, as well as from the heavily populated Caribbean and Central American nations.

#### 2.3.4.2 Sociocultural Cohesion

Overall, Brazil is a highly cohesive and homogeneous nation with over 96% of the population speaking Portuguese and over 88% Christians. Over 90 million Brazilians are pardos, or of mixed race. Moreover, Afro-Brazilians, or pretos, number over 15 million mostly in the states of Bahia, Mato Grosso, Minas Gerais, and Rio de Janeiro. Racism and the social advancement of Afro-Brazilians remains a national challenge and issue (Collins, 2015; Robb, 2005). Moreover, there are almost one million indigenous peoples in over 100 tribal groups mainly in the states of Amazonas, Maranhão, Mato Grosso, Mato Grosso do Sul, Pará, and Roraima. The largest are the Ticuna at over 36,000 in Amazonas; the Je-Kiangang of over 33,000 in Pará; the Makuxi of over 30,000 in Roraima; the Terena of over 25,000 in Mato Grosso; the Guajajara of over 24,000 in Maranhão; and the Guarani of over 18,000 in
Mato Grosso do Sul. The extension of social justice and integrating these peoples into Brazilian society remains an active challenge. Brazil continues to struggle to balance sustainable ecologies in the development of its frontier regions, while promulgating social justice to its indigenous peoples (Campbell, 2015; Hemming, 2004).

2.3.4.3 Sociopolitical Systems

Brazil is a Federal presidential constitutional republic with 26 states and one Federal District of Brasilia. Brazil’s National Congress is composed of a Chamber of Deputies with 513 seats and a Senate of 81 members with three directly elected per state. There are three major political parties, including the governing Social Liberal Party, the Workers Party, and the Democratic Labour Party. There are two rounds of voting to assure that the President has over 50% of the electoral support. Out of an ideal of 210, the Chamber appears to have a surcease of over 300 deputies at an additional cost of over USD 450 million annually. At an overall 30% of its potential, there is weak female representation in Brazil’s Congress. Also, Afro-Brazilians and indigenous peoples are underrepresented. Nine Brazilian states are comparatively small at under 58,000 mi$^2$ (150,220 km$^2$) and three have under one million people. Overall, Brazil’s sociopolitical effectiveness still remains good at over 70%.

2.3.4.4 Summary

With an overall governance score of 76%, Brazil is a strong state with enormous potential as one of the world’s key strategic influencers. Its high level of social cohesion and amble open spaces to expand its population are key strengths. Increased Afro-Brazilian, indigenous and women participation in governance would enhance social justice. Moreover, with a streamlining of its Chamber of Deputies and a consolidation of its smaller states, the Brazilian Government has considerable potential to becoming even stronger.

2.3.5 Systemic Priorities

Brazil is blessed with excellent water resources and among the world’s largest river networks and Atlantic coastlines. It is on the road to technological maturity with enormous future potential. It also has a cogent educational system and high socio-cultural cohesion. With an overall national systemic score of 56%, Brazil faces many key challenges, particularly those of significant crime and poverty, particularly in its North and Northeast states, rural regions, and urban favelas. The key strategic governance priorities include the following: Environment policy. It is urgent that Brazil focus on its environmental issues. Brazil has an important world leadership role in the creation and implementation of cogent world environmental
laws. Proactive enforcement measures are essential to stop environmental degradation and the erosion of Brazil’s ecosystem vitality. **Water.** Brazil needs to assure that clean and safe drinking water resources and adequate sanitation facilities are available to Brazilians across its vast lands. **Food.** Brazil needs to expand its productive agricultural lands and ocean and river food resources to eliminate hunger and malnutrition. Moreover, adequate transportation systems in Brazil’s Northeast, Central West and North regions are essential as food supply conduits. **Health care.** Significant investments are needed to provide adequate health care for millions, particularly in Brazil’s North and Northeast regions. Prevention strategies for a range of infectious diseases, AIDS, road trauma and suicides are paramount. **Education.** Brazil needs to assure that educational opportunities, particularly for its indigenous peoples and pretos are open to all where the literacy rates are below national levels. Doing so would open the door to greater social justice and participation in Brazil’s future. **Fiscal policy.** Brazil must provide full employment and raise the economic levels of millions of its citizens mired in poverty. The expansion and promotion of exports to new markets, the broadening and redistribution of tax revenues is essential, as is the zero tolerance of corruptive practices and crime. **Public debt.** Brazil needs to mitigate and eliminate its public debt that threatens its economy and arrest the economic and social development of its peoples. **Public protection and security.** The substantial investment in its PPS resources would also create employment options, while more effectively ending rampant crime and violence; preparing for national disasters, emergencies, and pandemics; protecting environmental integrity; and effectively securing its borders. **Population management.** The judicious development of ecologically sustainable and viable communities in Brazil’s Central West and North states could accommodate growing numbers of Brazilians and new immigrants.

### 2.3.6 Transformations

Brazil is a KSI nation whose future world leadership potential has yet to be fulfilled. By 2050, Brazil’s population will exceed 250 million and its national impact will be felt across South America, including Argentina, Bolivia, Chile, Paraguay, Peru, and Uruguay and the entire West Atlantic ecosphere. The major strength of Brazil lies in its vast land and resources and in its educated, energetic, vibrant, and young population. There is enormous pressure on the Brazilian wealthy elites to share its vast control and resources with the burgeoning populations across the nation. Until this happens, Brazil will continue to be plagued with significant systemic weaknesses and will remain mired in a vortex of internal unrest and instability. Until the gap between the socioeconomically poor and rich is bridged, Brazil will continue to be essentially at war with itself. The insidious social ills of corruption, crime, gang formation and illicit drug trade will only surcease over the next decade, unless there is a concerted effort to overcome endemic mass poverty. Moreover, without strong measures, the full potential of the Brazilian youth, who deserve a better future, will
not readily materialize. If that happens, Brazil’s dream of potential a Luso-
civilizational state will remain elusive.

2.3.6.1  The Andean Community

Brazil’s future will increasingly be influenced by the emerging Andean Community
of Bolivia, Columbia, Ecuador, and Peru with its projected 2050 population of over
140 million. Formed in 1969, this Community may well evolve into a political
union with the indigenous languages of Aymara and Quechua as official languages,
along with Spanish. Close relationships with this community will be important to
Brazil as it seeks outlets on the Pacific Ocean coastline and seeks to develop the
economies of its Central West and North regions. This community may expand to
include Venezuela in the future.

2.3.6.2  The Guianas

Currently, French Guiana is an overseas territory of France and the EU maintains a
key spaceport at Kourou. Yet, the economic and sociopolitical futures French
Guiana, Guyana and, Surinam will become more intricately linked with that of
Brazil. As Brazil may seek greater access to and expand its influence and markets
throughout the Guianas and the Caribbean nations.

2.3.6.3  Mercosur Union?

In 2008 the Union of South American Nations (Unión de Naciones Suramericanas),
also known as UNASUR, formed to create a continental common market of over
400 million. Despite its considerable promise this initiative became moribund after
the withdrawal of Argentina, Brazil and Columbia. Instead, Brazil’s economic
future may rest in Mercosur a Southern American Common Market formed in 1991
and formalized in 1994 through the Ouro Preto (Minas Gerais) Protocol. With
Argentina, Brazil, Paraguay, and Uruguay as its principal partners, its first fully
constituted Parliament met in 2001 in Montevideo. As they work towards political
union by 2060, the hope is to expand Mercosur to include Chile and Venezuela.
With this eventuality, Brazil would have easier market access to both the Caribbean
Sea and Pacific Ocean to the immeasurable benefit of its peoples.

2.3.6.4  Brazil’s Indigenous Peoples

As the population of in Brazil’s North and Central West grows, Brazil will be
increasingly challenged to accommodate and bring social justice to its all indige-
nous peoples. This might take the form of autonomous states that protect these
peoples and their native ancestral homelands. Moreover, the issues of social justice will transcend Brazilian borders, as in the case of the Guarani across Paraguay, Argentina and Bolivia, the Makuxi across Guyana and Venezuela; and the Ticuna across Columbia and Peru. The Andean Community’s official recognition of Aymara and Quechua and Mercosur’s inclusion of Guarani as an official language serves as models for Brazil’s accommodation of indigenous peoples. Brazil has an opportunity to become a world leader in equity, fairness, and social justice to its indigenous population who, though smaller in numbers, will be pivotal in the future economic and social development evolution of the nation.

2.3.6.5 A Luso-Civilizational State?

Brazil will become a major South Atlantic KSI nation with increasingly significant interactions with the African nations, particularly with Angola, Mozambique, Nigeria, and South Africa. Its large population of Afro-Brazilians and the growing importance of Portuguese will likely assist the development and growth of Brazil’s Northeast state economies as trade increases with Africa. Building on Brazil’s European roots, this century will see a dramatic shift as Brazil and the African nations develop closer links. The black jaguar is the quintessential symbol of Brazil not only for its importance in the rainforest ecosystems, but also of inherent courage and valor of Brazilians in the face of immense struggles as they forge into the future. As Brazil evolves as a Luso-tropical civilizational state, it will ultimately become the quintessential and unique interracial model for the planetary society of the future.

2.4 Mexico: Reconciling with Anahuac and Quetzalcoatl

The United Mexican States (Estados Unidos Mexicanos) is one of the pivotal KSI nations that will shape the West Atlantic ecosphere and the planetary society of the future. Quetzalcoatl, the feathered serpent and the Mesoamerican god of wind and wisdom, reflects Mexico’s deep indigenous roots of the Nahua and Maya peoples. Mexico’s national identity is essentially an ongoing reconciliation of European culture with its ancient Anáhuac and Zapotec civilizations (Coe, Urcid, & Koontz, 2019; Khasnabish, 2010; Taylor, 2009). Through this continual sociocultural process, Mexico finds itself in a labyrinth of solitude (Paz, 1961).
2.4.1 Humanitarian Systems

2.4.1.1 Water

Mexico has significant coastlines of over 14,765 mi (23,761 km) along the Gulf of California, the Gulf of Mexico, and the Pacific Ocean. Its key rivers include the Colorado, the Grijalva–Usumacinta and the Rio Bravo del Norte. Yet, Mexico has marginal water resources at 3600 m$^3$/capita that meets 45% of its overall needs. Over five million Mexicans do not have access to clean and safe water and over 19 million lack adequate sanitation systems. The expanding Northern deserts, such as the Baja Californian, Chihuahua, and Sonoran deserts, underscore a growing national water shortage crisis (Spring, 2011). As its population increases, over 47 million Mexicans may be potentially at risk of water shortages in the future. The conservation and recycling of water resources, the construction of desalination plants, and water distribution networks will be increasingly important across its vast territory.

2.4.1.2 Food

Mexico’s productive agricultural lands stand at 12% of its territory and at least 50,000 mi$^2$ (130,000 km$^2$) could be brought into production. Currently, 20%, or an estimated over eight million Mexicans suffer from food insecurity, hunger, or malnutrition. In the future, over 25 million Mexicans may potentially be at risk as nitrogen pollution continues to adversely affect arable land and soil. Aside from expanding arable land capacity and food imports, Mexico has the potential to harvest more ocean, river, and sea resources to feed its burgeoning population.

2.4.1.3 Health Care

Mexico has good health outcomes at 78% of the Japan benchmark overall. The Mexican states of Hidalgo, Nayarit, and Sinaloa are among the best health, whereas Chiapas, Chihuahua, Guerrero, and Puebla have the poorest health outcomes. Over 28 million Mexicans still lack adequate access across its vast territory. Moreover, its health care system capacity remains very weak at 14%, leaving the population vulnerable to emergencies, natural disasters including cyclones, earthquakes, pandemics, and volcanic eruptions. Whereas cardiovascular diseases remain the greatest cause of mortality, Mexico combats a range of infectious diseases, such as Chagas disease, Chikungunya, Covid-19, dengue fever, hepatitis, malaria, rabies, typhoid and the Zika virus. Over 380,000 Mexicans are HIV+ and there are an estimated 7,200 deaths from AIDS annually. Each year road-related accidents and suicides claim close to 16,000 and 7,000 Mexicans, respectively. Together with homicides, these amounts to an economic cost of over USD 43 billion each year.
2.4.1.4 **Education**

Mexico has an excellent literacy rate of 95% and has renowned universities that include the National Autonomous University of Mexico, the Monterrey Institute of Technology, and the Universidad Autónoma Metropolitana (Mexico). Yet, over 6.5 million Mexicans remain illiterate and face significant barriers to employment and social development. Illiteracy rates are highest in Chiapas, Guerrero, and Oaxaca and the lowest in Coahuila, the Federal District, and Nuevo Leon.

2.4.1.5 **Environmental Health**

Mexico has a declining environmental performance score of 60% and an environmental health score of 66%. Mexico’s environmental problems are particularly evident in Mexico City, one of the planet’s most polluted urban regions, along with Guadalajara, Ciudad Juarez, and Monterrey. Black carbon, household solid fuels, lead exposure, particulate matter, and toxic emissions compromise air quality and account for over 18,500 deaths annually. This amounts to a cost of over USD 34 billion annually to the Mexican economy. Mexico’s declining ecosystem vitality score of 56% is evidenced through inadequate biome and species protection and significant deforestation across its vast territory. Environmental degradation adversely affects over 52 million Mexicans.

2.4.1.6 **Summary**

Overall, Mexico with a score of 71% meets the basic needs of its citizens. Yet at least over 32 million Mexicans face a lack of access to either clean and safe water, adequate sanitation, food, health care, education, or healthy environments. The increase and equitable distribution of these humanitarian resources across the Mexican states presents ongoing challenges that may take 30 years to fully resolve. Finally, Mexico must assure that its environmental issues are fully addressed, and that its ecological degradation is halted and reversed.

2.4.2 **Socioeconomic Systems**

With a GDP of USD 2.5 trillion and the ninth largest economy of the KSI nations, the nation is undergoing rapid and pervasive economic, political, and social transformations within a globally competitive economy (Boyd, Ibarrarán, & Vélez-Grajales, 2019; Fuentes, 1997; Obrador, 2018; O’Neil, 2013; Schultz & Williams, 1995). Yet, it remains a land of extreme gaps of inequality with intractable poverty, rampant corruption, and violence (Azuela, 2008; Castañeda, 2012; Corchado, 2013; Fuentes, 2009; Gibler, 2011, 2015; Martinez, 2015). Mexico City with its over
20 million people is Mexico’s key megalopolis with Guadalajara and Monterrey likely joining the ranks of global cities of over 10 million by the end of the twenty-first century. The states of Jalisco, Mexico (known as Edomex with the Mexico City) and Veracruz are the key national economic engines. Mexico’s four key regions, and states include the following.

1. Central Mexico (Mexico City) with over 48 million in the states of Hidalgo, Mexico (Edomex), Morelos, Puebla, Tlaxcala, and Veracruz.
2. Central Northern Mexico (Guadalajara) with over 30 million in the Bajío states (Aguascalientes, Guanajuato, Jalisco, and Querétaro), Colima, Michoacán, Nayarit, San Luis Potosí, and Zacatecas.
3. North Mexico (El Norte) (Monterrey) with over 29 million including Baja California, Baja California Sur, Chihuahua, Coahuila, Durango, Nuevo León, Sinaloa, Sonora, and Tamaulipas.
4. South Mexico (Mérida) with 20.5 million including the Mexico’s poorest states of Campeche, Chiapas, Guerrero, Oaxaca, Quintana Roo, Tabasco, and Yucatán.

2.4.2.1 Fiscal Health

Mexico, with its low income per capita of over USD 20,000, faces socioeconomic challenges with an unemployment rate of almost 7%. With over 46% of Mexicans living under the poverty line, over 68 million Mexicans are in socioeconomic distress. The wealthiest areas of Mexico include the Bajío states of Central North Mexico, the Federal District, and the El Norte states of Coahuila, Nuevo León, and Sonora. The poorest regions are in the South Mexico states of Chiapas, Guerrero, and Oaxaca and the Central Mexico states of Puebla and Tlaxcala. The Mexican tax revenue base remains weak at 25% of its potential of over USD 1.2 billion. Expanding and strengthening the tax revenue base are essential in Mexico’s fight against poverty and socioeconomic distress.

2.4.2.2 Corruption and Crime

At 29%, Mexico has high levels of corruption that cost the Mexican economy over USD 50 billion annually. The Mexican government has the daunting task of eliminating rampant corruption and entrenched and powerful drug cartels and nefarious criminal activities, such as bribery, embezzlement, extortion, gang formations, human and other illicit substance trafficking, and money laundering (Gibler, 2011). Ineffective and weak taxation infrastructures and the inequitable distribution of needed revenues encourages rampant criminal activity and violence across the nation. Aside from having the world’s largest cocaine cartels, Mexico has one of the planet’s highest crime and homicide rates at over 32,000 annually. It is particularly rampant across all the El Norte states and notably in the urban areas of Chihuahua, Ciudad de Victoria, Culiacan, Ensenada, Reynosa, and Tijuana; across Central
Northern Mexico states, notably in Acapulco and Irapuato; and across South Mexico, especially in Cancun. Crimes have a significant spillover effect on other nations, including the USA that is confronted with transborder criminal activities and violence. International security efforts, such as the Mérida Initiative between Mexico, the Central American republics, and the USA, to combat drug trafficking, money laundering and transnational organized crime have met with little success.

2.4.2.3 Monetary Health

The Central Bank of Mexico (Mexico City) controls the monetary policy that influences the nation’s export performance and debt. Mexico has relatively weak export performance at 32% of its potential of over USD 1.3 billion. The major Mexican exports include vehicles and car accessories and parts, trucks, computers, and mobile phone technologies, as well as agricultural products, such as avocados. Trade with the USA, Mexico’s largest export market, grew substantially with the 1994 North American Free Trade Agreement (NAFTA) and the establishment of maquilas across North Mexico (Sable, 2014). Expanded export markets with Brazil, Canada, China, the EU, India, Nigeria, and the emerging Andean Community nations (Bolivia, Columbia, Ecuador, and Peru) will become increasingly important. Mexico has a high debt-to-GDP ratio at 55%. It is important for the Government to control and mitigate public debt to avoid economic measures that would undermine the nation’s future growth and socioeconomic development.

2.4.2.4 Summary

At an overall score of 33%, Mexico has serious socioeconomic issues that may take over 45 years to fully overcome. A stronger Mexican economy depends on the development of new export industries, the elimination of poverty and unemployment, the expansion of its tax revenue base and zero tolerance of corruption and crime.

2.4.3 Infrastructure Systems

2.4.3.1 Transportation Systems

Mexico has underdeveloped transportation systems at 25% of its potential across its diverse and vast territory. Mexico has excellent seaports, such as those in Altamira in Tamaulipas, Ensenada and Isla de Cendros in Baja California, Lázaro Cárdenas in Michoacán, Manzanillo in Colima, and Veracruz. Although its airport networks are relatively underdeveloped for its vast lands, Mexico has excellent airports, such as those in Mexico City, Cancún, Guadalajara, and Monterrey. By and large,
Mexican railway networks are weak at 17% of its potential and roadways remain limited by world standards. The most developed roadways are in the Bajío states and the Edomex region; the less developed include Baja California Sur, Campeche, and Colima. Of note is the 200 mi Trans-Isthmic Tehuantepec rail line that connects the Gulf of Mexico from Coatzacoalcos (Veracruz) to the Pacific coast at Salina Cruz (Oaxaca). Significant investments in railways and roadways would reinforce Mexico’s ability to bring products and resources to market, to sustain effective supply distribution networks, and thus stimulate economic growth and export development. Finally, although Mexico has a space agency (Agencia Espacial Mexicana) and a satellite system, there are no planned investments for spaceports, yet.

2.4.3.2 Energy Systems

Investments in hydro-electrical and renewal energy resources are essential for the continued technological development of the nation. With an annual hydroelectrical energy production at 3.7 billion kW h (13.3 billion MJ), Mexico currently meets about 24% of its potential energy needs of 1.27 trillion kW h (4.6 trillion MJ) its largest being the Chicoasen Dam in Chiapas on the Grijalva River. Moreover, Mexico’s only nuclear power plant at Verde Laguna in Veracruz supplies close to 5% of the nation’s electrical energy. Mexico has considerable potential in exploiting ocean, solar and wind technologies to meet its burgeoning renewable energy needs.

2.4.3.3 Sociotechnical Systems

Over 65% or over 84 million Mexicans are netizens. Baja California, Baja California Sur, Nuevo Leon, and Sonora have the highest Internet penetration, whereas Chiapas, Guerrero, Oaxaca, and Pueblo have the lowest. As Mexico evolves into a knowledge society over the next 15 years, it will face the challenge of equalizing technological access across its diverse states and socioeconomic classes.

2.4.3.4 Public Protection and Security Systems

With a total of over 868,000 Mexicans in defence and police forces, the nation has good public, protection, and security personnel resources at over 68% of its potential. Nevertheless, Mexico continues to face grave internal security challenges (Kenny, Serrano, & Sotomayor, 2011). In particular, the nation has not been able to effectively curb its drug cartels, human trafficking, illicit substance trade, gang wars and rampant violence, particularly in the El Norte states and in South Mexico. The nation is stymied in its attempts to control and secure its Southern borders with the mass influx of desperate Central American immigrants from Belize, El Salvador, Guatemala, Honduras, and Nicaragua that are escaping poverty and violence. Moreover, Mexico faces limitations in its ability to effectively respond to disasters
and emergencies, such as drought, earthquakes, floods, heat waves, hurricanes, landslides, massive fires, pandemics, social unrest, and volcanic eruptions across its vast lands.

2.4.3.5 Summary

With an average score of over 45%, Mexico still has underdeveloped infrastructures that may take at least 35 years to develop. A stronger Mexican infrastructure would require significant investments in effective airports, railways and roadways, hydro-electrical and other renewable energy resources and more effective public protection and security capabilities.

2.4.4 Governance Systems

2.4.4.1 Population Management

With its current population of over 127 million and a population density of over 170 persons/mi² (65 persons/km²), Mexico is a relatively young nation with over 40%, or over 51 million of its people under the age of 30. The nation is projected to reach over 150 million by 2050 at which time Mexico may have an emigrant pool of over 1.65 million Mexicans between 20 and 30 years of age who will likely seek to settle in open space nations. Currently, Mexico has the potential to accommodate new sustainable and viable communities in its large El Norte states, such as Baja California, Baja California Sur, Chihuahua, Coahuila, and Sonora, and in Campeche in South Mexico. The population growth of the Caribbean and Central American nations, as well as from China, the EU, India, and Japan, assures the influx of over two million immigrants to Mexico for each of the coming decades.

2.4.4.2 Sociocultural Cohesion

At over 96%, Mexico is a socio-culturally cohesive nation with Christianity, particularly Roman Catholicism, as the key binding force and with Spanish as the primary language of over 95% of Mexicans. More than 70% of the population are Mestizos of mixed-Spanish and indigenous roots. Twenty percent or over 26 million are indigenous peoples, mainly across Central and South Mexico. The largest are the Nahuas (Aztecs) with over 2.5 million in Oaxaca, Morelos, Puebla, and Veracruz; the Yucatec (Maya) with over 1.5 million in Chiapas, Tabasco, and Yucatan; the Zapotec with over one million in Oaxaca and Puebla; and those groups of under one million, such as the Mixtec in Guerrero, the Otomi in Michoacán, and the Totonac in Hidalgo.
2.4.4.3 Sociopolitical Systems

With its population of over 127 million, Mexico is a constitutional republic with 31 states and a Federal District. Three major political parties that each command over 10% of the electoral vote, include the governing Morena Party (National Regeneration Movement), the National Action Party, and the Institutional Revolutionary Party (PRI). There are two voting rounds to assure that a party receives the electoral majority. The Union Congress consists of a Chamber of Deputies with 500 seats and a Senate of 128 members. Relative to its population, there appears to be a surplus of 370 seats in the Chamber with an estimated added cost of USD 550 million annually. The Senate is directly elected by the electorate with each of the 31 states having two representatives and an additional 32 seats determined through proportional representation. At over 96% of its potential, Mexico has excellent female representation in its Congress compared to other KSI nations. Of the 31 Mexican states, 28 states are relatively small at under 58,000 mi² (150,220 km²) and three have less than one million. Ideally, the consolidation of states into 12 larger ones would be more efficient and cost-effective. Nevertheless, Mexico’s sociopolitical effectiveness score at 74% is good.

2.4.4.4 Summary

Overall, Mexico’s governance effectiveness stands with a strong score of 84%. A more effective governance of a stronger Mexican state would point to a streamlining its Chamber of Deputies and the consolidation and integration of its many small states.

2.4.5 Systemic Priorities

Of the four KSI nations in the West Atlantic, Mexico presents the greatest challenges with an overall systemic effectiveness score of 56%. Mexico’s full potential may take another 25 years to be realized. It is a largely insular and reclusive nation with substantial poverty and wide socioeconomic gaps. These are at the heart of gang violence and its narco-culture, the bane of Mexico’s society. There are at least 68 million Mexicans facing socioeconomic distress and challenges accessing to clean and safe water, adequate food and nutrition, health care, education, or safe environments. If the humanitarian and socio-economic challenges issues are not adequately addressed, Mexico will find itself in a very dire situation, particularly after 2050. The Mexican Government controls the petroleum industry, finances public education and universities, is a major supplier of electricity, supports the Federal armed forces, health care and retirement programs. Yet its inability to control of drug cartels and trafficking engenders state disintegration and opens the risk of Mexico becoming a failed state (Grayson, 2009). It is a potent of what nations might
become in the future in the absence of equitable income redistribution, rising unemployment, and mass socioeconomic distress. Mexico faces multiple systemic priorities that include the following. **Water.** The expansion of its clean and safe water resources through conservation and recycling, water networks and the construction of desalination and wastewater treatment plants are all important. **Food.** The expansion of adequate productive agricultural and ocean and sea food resources to feed its growing populations is essential. **Health care.** The expansion of health care system capacity to underserved regions, particularly in the South Mexico states, is crucial. Prevention strategies to reduce infectious diseases, road trauma, suicides and AIDS remains important throughout the nation. **Environmental health.** The growing environmental problems of air pollution and degradation need urgent attention. The over-concentration of population in Central Mexico, Edomex, and the Federal District and concomitant high toxic emissions and lax environmental regulations need immediate redress. **Education.** Expansion of literacy programs and universities, particularly in South Mexico are needed. **Fiscal policy.** The broadening of the tax revenue base and redistribution of wealth to assure greater social investments and the elimination of poverty is essential. **Exports and innovations.** The diversification and expansion of export markets, particularly to Brazil, Canada, China, the EU, India, and the USA is important. Significant investments in agronomy, cogent infrastructures, hydrological engineering, science and technologies, space industries, and oceanography will open employment opportunities and new industries that will provide hope for millions of Mexico’s youth. **Corruption and crime.** Mexico must work towards zero tolerance of all forms of corruptive practices and crime. Its illicit human and substance trafficking with its concomitant rampant violence must be eliminated. Expanding PPS resources with cogent international alliances to battle crime and drug cartels is crucial. **Transportation networks** Significant investment in airports, railways, and roads, particularly in North and South Mexico are needed to effectively open markets and strengthen supply distribution systems. **Energy.** Mexico needs to decrease its reliance on petroleum and increase its investments in clean and safe renewable energy resources through ocean, solar and wind technologies. **Population management.** The development of new sustainable, and viable communities in the El Norte states and in Campeche in South Mexico are needed to decentralize the high-density regions of Edomex, the Federal District and Central Mexico.

### 2.4.6 Transformations

#### 2.4.6.1 The Vortex of Solitude

Mexico with its projected 2050 population of over 150 million people will have significant strategic influence over the Caribbean nations and Central American republics. As a potentially strong KSI nation, Mexico will be key to economic and regional stability in the future. Currently, Mexico remains indeed a labyrinth of
solitude (Paz, 1961). As the leadership deals with its challenges, it will remain mired in a vortex of instability and unrest with adverse impacts on the region. Until the gap between the socioeconomically poor and wealthy is bridged, Mexico will continue to be essentially at war with itself. The insidious social ills of corruption, crime, gang formation and illicit drug trades will likely only surcease over the next decades delaying the promise of a better future for Mexican youth. If these problems are not addressed, a future Mexico may face problems of acute water shortages and widespread famine and hunger. Future generations of Mexicans will look back on the events of today’s Mexico and consider how their leadership has failed them. The Zapatista Army of National Liberation in Chiapas declared war against exploitation, oppression, and racism under the 1994 grito of “¡Ya basta!” [Enough already!] (Khasnabish, 2010). If the humanitarian and socio-economic challenges issues are not adequately addressed, Mexico will find itself in a very dire predicament and the cries of “¡Ya basta!” will resonate throughout the nation and beyond. Mexico risks becoming a vortex of solitude and violence.

2.4.6.2 The Conflictual “El Norte”

As North Mexico economies increasingly integrate with those of Arizona, California, New Mexico and Texas, there is a conflictual relationship with the USA that is becoming evident (Riding, 2011). In these regions, known as Aztlán, a process of “Mexicanization” is becoming evident through a rising Chicano culture (Navarro, 2005; Rudolfo, 2017; Selee, 2018). The Mexican-American border pressures result in part from Mexico’s inability to share its vast control and wealth equitably with its burgeoning populations living in poverty. In response, Mexicans (and Central Americans) are voting with their feet and trekking northward as migrants to the USA, all in search of a better and safer future. The next 10 years will likely be chaotic as the USA takes a more assertive stance to control and secure its own borders with Mexico. The years of 2030–2060 will be potentially pivotal years between Mexico and the USA. Mexicans recall the bicentennial of Mexico’s loss of a third of its territory under the stinging defeat of Santa Anna. By 2050, the growing Hispanic-American populations may militate to have Spanish as an official language in state legislatures in Arizona, California, Colorado, New Mexico, and Texas. Eventually, the USA Congress may even declare the entire nation officially bilingual. As a quid pro quo, the legislatures of the El Norte states may themselves declare English as an official language, along with Spanish.

2.4.6.3 The Gulf of Mexico Front

The Bay of Campeche, the Gulf of Mexico, and the West Caribbean Sea will also be important gateways to Mexico’s future. Its trade with the American Gulf states of Alabama, Florida, Louisiana, Mississippi, and Texas will increase, as will its trade with Brazil, the EU, and the emerging nations of West Africa. Mexico may abandon
its Estrada policy of non-interference in the internal affairs of other nations as interactions with Cuba, the Dominican Republic, Haiti, and Jamaica become more important. Should the proposed canal project of the Isthmus of Tehuantepec linking the Caribbean Sea to the Pacific Ocean come to fruition, Mexico’s role as a KSI world nation will become manifest.

2.4.6.4 The Pacific Front

The Gulf of California and the Mexican Pacific coastlines will also become more vital to Mexico as it expands export markets with Canada and the USA; the emerging Andean Community nations of Bolivia, Columbia, Peru, and Ecuador; and with the East Pacific ecosphere nations, such as China, Indonesia, and Japan. Moreover, the Pacific Ocean will provide an important source of food and other needed resources for future Mexicans. It will be important to the Mexican scientific community engaged in exploring and understanding ocean ecosystems and environments.

2.4.6.5 El Sur Nuevo (The New South)

The cultural and economic future of the South Mexico states will particularly be interlinked the Central American nations of Belize, Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua. Mexico will become more involved in the economic growth and political stability of these nations over the next 50 years. Eventually, these Central American nations may well accede to and become part of the United Mexican States, thus becoming the New South of Mexico. Such an integration would greatly raise the economic and social development of all Central American nations and transform Mexico into a significant KSI nation. A cogent vision and political leadership will focus on regional commonality, rather than regional differences. In keeping with other nations, the indigenous languages of Nahuatl (Aztec) of over two million and Quiché (Mayan language) may become official languages along with Spanish in a future united Mexico.

2.4.6.6 Re-nascent North American Union?

In 1994, the North American Free Trade Agreement was to herald the first steps towards a close economic union of Mexico, the USA and Canada in the form of an integrated North American common market. Reactive conservative forces in the USA have reduced, but not eliminated, that possibility in the future. A North American common market and currency, such as the amero, may yet become part of the international discourse after 2030 and may become a reality before 2090. It is highly likely that the Caribbean nations will become integral economic and political parts of this larger economic and political union in the twenty-second century.
2.5 West Atlantic Ecosphere

The economies of both Canada and the USA will likely become more integrated and stronger by 2035 at which time they will become full knowledge societies. Brazil and Mexico will achieve the goal of strong economies and knowledge societies by 2055. Both Brazil and Mexico will have to overcome grave socioeconomic and infrastructure challenges, as they struggle to meet the basic humanitarian needs of their peoples. In Canada, the greatest challenge is fundamentally sociopolitical in nature. Canada needs effective and cogent governance to strengthen its infrastructures and develop its considerable potential as an independent KSI nation. Without compelling and strong leadership, Brazil, Canada, and Mexico will lag the USA that will continue to dominate the West Atlantic ecosphere. In the case of Canada, union with the USA will likely be inevitable, unless cogent leadership advocates for substantive effective internal governance reform. Canada cannot continue to hobble into the twenty-first century without substantive economic and sociopolitical reform. By 2045, both Brazil and Mexico will clearly emerge as KSI world nations. Beyond 2065, all four KSI nations well be actively collaborating as a cogent West Atlantic ecosphere and forging the foundations of a safer and more stable planetary society.

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