Chapter 4
The East Pacific Ecosphere

Abstract This chapter examines the systemic components and performance of KSI of the East Pacific ecosphere that include the People’s Republic of China, Japan, the Republic of Indonesia, and the Commonwealth of Australia. These include the humanitarian, socioeconomic, infrastructure, and governance components. It summarizes the key national systemic priorities of each and examines the transformational changes that are likely to be faced in the coming century, as the world evolves into a planetary society. The humanitarian challenges of the East Pacific ecosphere are summarized. Both Australia and Japan with their strong economies will become advanced technological societies by 2035 and influence the development and direction of nations of the East Pacific ecosphere. In the interim, China and Indonesia will continue to address and respond to immense and pressing humanitarian and population management challenges. By 2060 Indonesia will become a preeminent Islamic force and leader throughout the Moslem world. After 2065, China will come to dominate the East Pacific ecosphere, as it becomes a predominant global superpower. All four KSI nations of Australia, China, Indonesia, and Japan will be critical determinants of the contours, direction, landscape, and shape of tomorrow’s planetary systems.

Keywords China superpower future · Pacific humanitarian priorities · Transforming Australia · Transforming China · Transforming Indonesia · Transforming Japan.

There are four KSI nations of the East Pacific including the People’s Republic of China, Japan, the Republic of Indonesia, and the Commonwealth of Australia. The systemic challenges of each are presented.
4.1 China: The Awakened Red Dragon

The People’s Republic of China (Zhōnghuá Rénmín Gònghéguó) is a one of the world’s juggernauts—a nation of superlatives with the largest agricultural, energy and industrial production and exporters (Hoffmann & Enright, 2007; Luttwak, 2012; Naisbitt & Naisbitt, 2010; Xing, 2004). China has become an economic giant without serious confrontations and is becoming part of an evolving global civilization (Jin, 2019). China will become a preeminent world colossus by the middle of the twenty-first century. Its prosperity and stability are of vital concern to all humanity who seek peace and social justice.

4.1.1 Humanitarian Systems

4.1.1.1 Water

China’s coastlines are over 19,880 mi (32,000 km) along its coastlines that include the Bohai Sea, the East China Sea, Huanghai (Yellow) Sea and South China Sea—all gateways to the North Pacific. Among its major river and waterway systems are the: Chang-Jiang, Heilongjiang, Huang He, Lancang Jiang, Nu Jiang, Tarim, Xi, Yarlung Tsangpo (The Everest of Rivers) and Zhujiang Rivers. China’s largest lakes include the Poyang, Qinghai, and the Xingkai. Yet, China has an overall shortage of water resources with under 2000 m$^3$/capita. Moreover, over 64 million Chinese do not have access to clean and safe water supplies; over 334 million lack access to adequate sanitation facilities; and another 660 million are at risk of clean and safe water shortages in the future. Over 30% of China’s area include ever-expanding deserts, such as the Gobi, Taklimakan and Tengger in North and Northwest China. The construction of desalination plants; the expansion of water distribution networks from the Xizang Autonomous Region and from the Russian Federation; and water conservation and recycling may alleviate these shortages in the future. Finally, improved sanitation levels and wastewater treatment systems require urgent attention across China.

4.1.1.2 Food

Although China has over 11% of its land mass in productive agricultural use, it is insufficient as it relies on food imports for more than 44% of its massive population needs. Moreover, over 92 million Chinese suffer from hunger and malnutrition, with an additional 310 million are at risk of serious food shortages in the future. China has the potential to expand its arable lands over an extra 200,000 mi$^2$ (518,000 km$^2$) and can harvest more ocean and seafood resources from its lakes, rivers, seas and the and the North Pacific.
4.1.1.3 Health Care

China has good health outcomes at 77% of the Japan benchmark with excellent standards in Beijing, Hong Kong (Xianggang), Shanghai, and Zhejiang. However, its overall health care system capacity is relatively weak at 43% of its potential. This makes the nation vulnerable in times of mass emergencies, natural disasters, such as earthquakes, massive floods, and pandemics. An estimated 330 million Chinese citizens need improved access to adequate health care across its vast territory, particularly in Gansu, Guizhou, Qinghai, Yunnan, and the Xizang Autonomous Region. Cardiovascular diseases and cancers are the greatest causes of mortality in China. Over 1.5 million Chinese are HIV+ and AIDS claims over an estimated 18,000 lives annually. Moreover, annual road-trauma deaths of over 260,000, suicides of over 138,000 and homicides of over 8,500 cost the Chinese economy over USD 260 billion each year.

4.1.1.4 Education

At a literacy rate of over 96.5%, China has excellent educational systems overall. The highest literacy rates are in Beijing, Jilin, Guangdong, and Liaoning. Renowned post-secondary university systems include Peking University, Tsinghua University (Beijing), Shanghai Jiao Tong University, Zhejiang University (Hangzhou) and Fudan University (Shanghai). Yet, over 50 million Chinese remain illiterate, with the lowest literacy rates in Anhui, Gansu, Guizhou, Qinghai, and the Xizang Autonomous Region.

4.1.1.5 Environmental Health

China’s overall environmental performance score is poor at 51%. For over a century, economic development and social upheavals across China have exerted pressure on air quality, clean water resources, forestry, and productive agricultural lands. China’s environmental health is poor at 32% with over 1.3 million deaths that are directly attributable to air pollution at an annual economic loss of life cost of over USD 800 billion. Carbon dioxide, household solid fuels, lead exposure, particulate matter, nitrogen oxide and sulfuric dioxide emissions directly and significantly contribute to air toxicity across China. Among China’s most polluted and toxic cities and regions include Beijing; Chongqing; Lanzhou in Gansu; Baoting in Hainan; Cangzhou, Handan, Shijiazhuang, and Xingtai in Hebei; Anyang in Henan; Jinan in Shandong; and Linfen and Taiyuan in Shanxi. The rate of environmental degradation and pollution in China has outpaced the capacity to implement effective environmental protection measures. For example, nitrogen pollution has damaged valuable arable regions, such as the fertile Huai River areas (Anhui), known as China’s breadbasket (Economy, 2011). At a marginal ecosystem vitality of 63%, significant deforestation and inadequate biome, species and wildlife protection are
problematic. Over 700 million Chinese are directly and adversely affected by growing environmental challenges.

4.1.1.6 Summary

China has good humanitarian resources at 65%, given its vast population of over 1.42 billion. Although there is significant progress in education and health care, at least 515 million Chinese need basic amenities of either safe water, food, education, health care or healthy environments—all significant humanitarian challenges that must be addressed. It may yet require 35 years for the Chinese to fully address critical water and food shortages in key regions across its vast lands. Moreover, declining environmental degradation will accentuate the need for potable water and food and limit the quality of life for well over 55% of its population.

4.1.2 Socioeconomic Systems

China has the world’s largest economy with a GDP of over USD 25.4 trillion. Its six key regions, cities and provinces include the following.

1. East China (Shanghai) with over 438 million includes the provinces of Anhui, Fujian, Jiangsu, Jiangxi, Shandong, and Zhejiang, as well as the unofficial province of Taiwan (Republic of China).
2. South Central China (Guangzhou-Shenzhen) with over 413 million includes Guangdong, Hainan, Henan, Hubei, and Hunan provinces, the Guangxi Zhuang Autonomous Region, and the special administrative regions of Hong Kong (Xianggang) and Macau.
3. Southwest China (Chongqing) with over 208 million includes Guizhou, Sichuan and Yunnan provinces, the Xizang Autonomous Region, and the municipality of Chongqing.
4. North China (Beijing) with over 178 million includes Hebei and Shanxi provinces, the Nei Mongol Autonomous Region, and the municipalities of Beijing and Tianjin.
5. Northeast China (Shenyang) with over 118 million includes the provinces of Heilongjiang, Jilin, and Liaoning.
6. Northwest China (Xi’an) with over 104 million includes Gansu, Qinghai, Shaanxi provinces and both Ningxia Hui, and Xinjiang Autonomous Regions.

China’s key world megalopolises include Beijing-Tianjin, Chongqing, Guangzhou-Shenzhen, and Shanghai, as well as Chengdu, Hangzhou, Harbin, Jinan, Nanjing, Shantou, Shenyang, Wuhan, Xianggang (Hong Kong), and Xi’an. The noted economic drivers include Guangdong and Henan in South Central China; Hebei in North China; Jiangsu and Shandong in East China; and Sichuan in Southwest China.
4.1.2.1 Fiscal Health

China has a low average income per capita at USD 18,200, an unemployment rate of 5% and 3% of its citizens live under the poverty level. Over 115 million Chinese, or 8% of the population, still live in socioeconomic distress and do not fully share in the benefits of China’s massive economy. The wealthiest provinces include Fujian, Guangdong, Hubei, Jiangsu, Shandong, Zhejiang, and the Nei Mongol Autonomous Region; the poorest include Gansu, Guizhou, Shanxi, Yunnan, and the Xizang Autonomous Region. At over 25%, China has a weak tax revenue base out of an extra potential of over USD 9.5 trillion. Equitable and fair distribution of broadened tax revenue base across its diverse provinces and regions are important in improving the lives of its citizens.

4.1.2.2 Corruption and Crime

At 41%, China has high corruption rates with bribery, criminality, cybercrime, extortion, fraud, gangs, human and illegal substance trafficking, money laundering and theft that cost the Chinese economy over USD 750 billion annually. Along with rampant gambling practices, this detract from the overall socio-economic health of the Chinese economy (Chang, 2001; Domenach, 2012). The homicide rates are about 10 per million and there are at least 14,250 homicides across China annually. Moreover, crime rates are notably higher in Chongqing, Gansu, and Guangdong, and in Guangxi Zhang and Xinjiang Autonomous Regions.

4.1.2.3 Monetary Health

The People’s Bank of China in Beijing controls the monetary policy of China. China is among the world’s greatest exporters at USD 2.2 trillion annually. With the USA and Japan as its significant markets, the major Chinese exports include clothing, cotton, electrical and computer machinery, furniture, medical technology, rice, salt, tea, and textiles. Yet at 15%, China has weak export performance relative to its potential of over USD 14 billion. Its Silk Belt Road Initiative underscore’s China’s strategy to encourage the growth of global, new and stable export markets (Domenach, 2012; Maçães, 2018). Expanding trade and building partnerships with Brazil, the EU, India, Indonesia, Japan, Nigeria and other African nations, the Philippines, the Russian Federation, and Vietnam will be also increasingly important. China has considerable potential in developing adaptive habitation technologies for desert and mountainous environments, biotechnologies, and knowledge management. Moreover, developing expertise in technologies in genomics, mass transportation, renewable energy, oceanic management, robotics, space exploration and super intelligence systems will be crucial for China’s future growth. China has a high public debt-to-GDP ratio of 65% that requires careful monitoring to avoid potential monetary problems as the nation continues to develop.
4.1.2.4 Summary

At over 39%, China’s socioeconomic challenges may take another 40 years to fully address. Strong socioeconomic performance will depend on the development and expansion of export industries and new markets, the redistribution of a broadened tax revenue base, the elimination of corruption and crime, and the lowering of the socioeconomic distress of millions through higher employment opportunities.

4.1.3 Infrastructure Systems

4.1.3.1 Transportation Systems

At 27% of its potential, China has underdeveloped transportation systems over its vast challenging territory. It does have excellent waterway systems with major seaports, such as Dalian in Liaoning, Guangzhou, Hong Kong (Xianggang), Ningbo in Zhejiang, Qingdao, Shanghai, Shenzhen, Suzhou in Jiangsu, Tianjin, and Xiamen. Although railway systems at only 24% of its potential, China, nevertheless, has the world’s fastest rail lines, including the Fuxing Hao that links Beijing with Shanghai, and the innovative Shanghai Maglev. Although China has some of the world’s busiest airports such as Beijing’s Capital International, Guangzhou Baiyun International, Hong Kong International and Shanghai Pudong International, it currently meets only 13% of its potential airport capacity across its vast land. China is increasing its roadway capacity to over 50% to accommodate its growing number of over 150 million vehicles. China also has an ambitious and robust space program with major spaceports, such as Jiuquan in Gansu, Taiyuan in Shanxi, Wenchang in Hainan, and Xichang in Sichuan. Aside from its successful rover mission to the far side of the moon, China is building a space laboratory (Tiangong) and permanent space stations and will build self-sustaining lunar bases (Yuegong) with plans to explore Mars and Jupiter (Harvey, 2019).

4.1.3.2 Energy Systems

China is the world’s largest hydroelectrical producer at over 6 trillion kW h (over 21 trillion MJ) and is a world leader in the use of renewable energy sources, such as solar and wind energy. Massive hydroelectrical power stations, include the noted Three Gorges Dam in Hubei; the Jinping in Sichuan; the Laxiwa Dam in Qinghai; the Nuozhadu and Xiaowan dams in Yunnan; the Xiluodu and Xiangjiaba dams in both Sichuan and Yunnan; and the Longtan Dam in Guizhou Zhang Autonomous Region. Moreover, the Baihedan and Wudongde hydroelectrical plants in Sichuan and Yunnan will soon operate, as will one of the world’s largest on the Yarlung Tsangpo river in Xizang Autonomous Region. Over 46 nuclear energy reactors currently supply over 5% of the nation’s needs. The largest nuclear facilities including
Haiyang in Shandong, Hongyanhe in Liaoning, the Fuqing and Ningde in Fujian, Tianwan in Jiangsu, Yangjiang in Guangdong, in Fangchenggang in Guangxi Zhuang Autonomous Region. Yet even these impressive endeavours meet only slightly over 42% of the needs, or 14 trillion kW h (over 50 trillion MJ), for its massive population. China will continue to develop its renewable energy sources through ocean, solar and wind technologies to meet its burgeoning energy needs.

### 4.1.3.3 Sociotechnical Development

With over the world’s greatest number of netizens are over 900 million, China is still not at its full Internet usage. Beijing, home to China’s Silicon Valley (Zhongguancun), is the heart of China’s AI and computer industry (Lee, 2018) but there are at least 16 other technological hubs, including those in Chengdu, Guangzhou, Hangzhou, Shanghai, Shenzhen, and Xianggang. Within the next 25 years, the nation will be a world technological leader in the knowledge society.

### 4.1.3.4 Public Protection and Security

China has the world’s largest public protection and security resources at well over 4,330,000, including both defence and police services. However, this is at 30% of its potential capacity relative to its vast population. China may not be effectively able to respond to national disasters and emergencies across its vast lands. Many of China’s regions, such as Hebei, Henan, Shaanxi, Sichuan, and Yunnan, as well as Ningxia Hui Autonomous Region are particularly vulnerable to massive earthquakes and inundations. Other potential threats include droughts, dust storms, environmental disasters, famines, massive fires, landslides, pandemics, severe storms, social anarchy and unrest, technological mishaps, and typhoons.

### 4.1.3.5 Summary

At an overall score of 36%, China has weak infrastructure capacities relative to its immense potential. Its public protection and security resources and its sociotechnical capacities have the potential for further development relative to its population needs. Its transportation networks and impressive hydro-electrical resources are relatively weak for its land mass and population size. Stronger infrastructures require the expansion of airport and railway networks across Northwest and Southwest China. Moreover, further development and expansion of its renewable energy resources is needed, as it continues to develop its full technological potential.
4.1.4 Governance Systems

4.1.4.1 Population Management

With over 1,422 million, China is a heavy-weight and severely overpopulated nation with a projected 2050 population of over 1470 million. Its population density is 386 persons/mi² (149 persons/km²). Over 540 million Chinese, or over 38%, are under 30 years, making for a youthful nation. China’s population is particularly heavy along its coastlines of East, Northeast and Southeast China including the provinces of Fujian, Guangdong, Hainan, Jilin, Jiangsu, Jiangxi, Liaoning, Shandong, and Zhejiang. New sustainable and viable communities in Qinghai province and in Nei Mongol, Xinjiang and Xizang Autonomous Regions will likely be constructed and grow to accommodate millions (Hayes & Clarke, 2016; Yeh, 2013). Moreover, over 20 million Chinese will likely emigrate to open space nations, particularly Australia, Brazil, Canada, Mongolia, the Russian Federation, and the USA over the coming decades.

4.1.4.2 Sociocultural Cohesion

Mandarin, the national language and spoken by over one billion Chinese, is a cogent cohesive force in China. Other key languages, include Wu with 75 million in Fujian; Min with 75 million in Fujian, Guangdong and Hainan; Yue with 70 million in Guangdong and Guangxi Autonomous Region; Hakka with 50 million in Fujian, Guangdong and Jiangxi; Xiang with 38 million in Hunan; and Gan with 30 million in Jiangxi. Religious affiliation in China remains weak with 18% of the population. As a basic tenet of the Chinese Communist Party, atheism prevails over one billion Chinese and accounts for strong ideological cohesion. Nevertheless, there are over 255 million Buddhists and 110 million Taoists across China. Moreover, 3%, or over 40 million, are Christians and close to 2%, or over 30 million, are adherents to Islam, particularly among the Uyghurs in Xinjiang Autonomous Region; and the Hui in Gansu and Qinghai provinces, and Ningxia Hui Autonomous Region. As a diverse multicultural nation, Chinese nationality is not limited to the 92% Han Chinese of over 1.32 billion. It also includes ethnic groups, such as the: the Uyghurs of over 25 million in Xinjiang Autonomous Region; the Zhang of over 16 million in the Guangxi Zhuang Autonomous Region and Yunnan; the Hui of over 12 million in Henan, Qinghai and Ningxia Hui Autonomous Region; the Manchus of over 11 million in Liaoning; the Miao of over ten million in Guizhou and Yunnan; the Yi of over nine million in Yunnan; the Tujia of over eight million in the Wuling Mountains of Guizhou, Hubei and Hunan provinces and the municipality of Chongqing; the Zang (Tibetans) of over 6.5 million in Xizang Autonomous Region; and the Mongols of over six million in Nei Mongol Autonomous Region. Moreover, among over 56 other recognized ethnic groups in China there are the Dong (Kam people) of over...
three million in Guizhou; and the Li people of Hainan and She people in Fujian of close to one million each.

### 4.1.4.3 Sociopolitical Systems

China with its 22 provinces (not including Taiwan), four municipalities, five autonomous regions and two special autonomous regions is a unitary socialist republic founded in 1949. Taiwan (Republic of China) is not officially part of the People’s Republic. With its unicameral system, there are two major political parties: the governing Communist Party of China and the United Front. The National People’s Congress has over 3,000 representatives. This appears to be over 1570 for its population at an extra annual cost of USD 2.4 billion. Chairman Mao Zedong is quoted as saying “Women hold up half the sky” (Cook, 2014). Yet, China is 54% of its potential of female representation in Congress. The People’s Political Consultative Conference of 2,200 members is analogous to an upper house but is not directly elected by the electorate. With representations from political parties, organizations, economic sectors, and administrative regions, it does not explicitly represent China’s provinces, autonomous regions nor its diverse ethnicities. None of China’s provinces are under one million and six provinces are under 58,000 mi² (150,220 km²). Thus, an overall governance effectiveness score of 57%, the Chinese is marginally weak from a sociopolitical systemic stance.

### 4.1.4.4 Summary

China’s overall governance systems score is marginally good at 62%. A downsizing of the National People’s Congress; direct elections of provincial, regional and minorities representatives in an upper house in the form of a Federal Council; and greater gender parity would greatly strengthen China’s governance systems. Moreover, despite its strong national cohesion, China still faces significant overpopulation challenges, particularly in its coastal regions with significant potential for new communities and growth in North and West China.

### 4.1.5 Systemic Priorities

China’s considerable advances in education, science & technology, socio-economic development, and public health over the last decades is complicated by its massive population, growing resource scarcities, environmental degradation, and climate change (Hu, 2012). With an overall systemic effectiveness score of over 50%, China is facing significant humanitarian, socioeconomic, infrastructural and governance challenges that may take 30 years to resolve. Its key national strengths lie in its sociocultural coherence and in the creativity and ingenuity of the Chinese people.
China’s key strategic governance priorities include the following. **Water.** Desalination plants, water conservation and recycling, and water distribution networks will critical in meeting China’s future water shortages. **Environmental policy.** Immediate and urgent measures are needed to raise the environmental health standards and ecosystem vitality of the nation. **Population.** Given the very-high population density regions particularly in China’s coastal provinces will require the expansion of new sustainable communities in Qinghai province and throughout Nei Mongol, Xinjiang and Xizang Autonomous Regions. **Health care.** Assurance that all citizens have access to effective health care, particularly in Northwest and Southwest China and in the Nei Mongol Autonomous Region. Prevention measures are paramount for the eradication and mitigation of infectious diseases, AIDS, road trauma fatalities, and suicides. **Food.** Expansion of productive agricultural lands and ocean and seafood resources to mitigate food insecurity and hunger through effective distribution systems is crucial. **Fiscal policy.** The mitigation of unemployment and poverty levels; the redistribution of increased tax revenue base; and zero tolerance of all forms of corruption and criminality would strengthen China’s economy. **Monetary policy.** The development and expansion of new export industries and the expansion of the Silk Belt Initiatives across the world is vital for China’s export markets, **Education.** The increase of the literacy rates and educational opportunities in disadvantaged regions in Northwest China, Southwest China and among its ethnic minorities, and indigenous peoples remains important. **Transportation.** Substantial investments in and expansion of air and land transportation networks, particularly in Northwest and Southwest China, would open and greatly benefit these remote regions. **Energy.** Expansion of hydroelectricity and renewable energy sources using ocean, solar and wind technologies will be key for the continued economic and technological development. **Governance.** Streamlining the People’s National Congress; the establishment of a directly elected People’s Federal Council with clear representation of its many ethnic groups; and gender parity would greatly strengthen China as a world KSI nation.

### 4.1.6 Transformations

Nei Mongol, Xinjiang and Xizang autonomous regions will see explosive growth and new viable communities and settlements, as China’s population expands northward and westward. Moreover, the years 2020–2050 will likely see a major geopolitical shift in East Asia with a waning of the presence of the USA in this region. By 2050, Taiwan will be officially reunited as a province with the mainland and Xianggang (Hong Kong) will likely become an integral part of Guangdong province.
4.1.6.1 China’s Wild West

As new communities and settlements are built in Northwest China, including Qinghai province and the Xinjiang Autonomous Region, China may encounter ethnic strife where almost 60% of the population are Uyghurs and adherents of the Islamic faith. Moreover, the nation will increasingly confront the emerging rise of the East Turkestan independence movement, as it grapples with growing unrest along its borders with Kazakhstan, Kyrgyzstan, and Tajikistan. With the expansion of new communities and settlements in the challenging mountainous terrain Xizang Autonomous Region, China may encounter increased tensions with India that is home to the Tibetan Government in Exile located in Dharamshala in Himachal Pradesh and that is agitating for the political independence of Tibet. Growing unrest on the borders with Nepal, a key buffer state between China and India, is also likely. China may exert more pressure to have Arunachal Pradesh in India become an integral part of the Xizang Autonomous Region after 2050.

4.1.6.2 A Sino-Federation?

As a world KSI, China will impact the future direction of India, the Russian Federation, and the USA (Bellacqua, 2010; Gaskarth, 2015). Growing major trade disputes, the political instability on the Korean Peninsula, and maritime incidents in the South China Sea and Taiwan Strait risk provoking undesirable international conflicts with serious and unpredictable consequences (Allison, 2010; Hawksley, 2018). Yet regional frictions will ultimately be resolved towards the end of the twenty-first century (Kueh, 2013). By 2050, Korea will likely be reunited under one Government. The following 30 years will likely see increased collaboration between China, Japan, Korea, the Philippines, Thailand, and Vietnam. China will inevitably come to dominate the East China Sea (Sea of Japan), the Gulf of Thailand, the Huanghai (Yellow Sea), the Philippines Sea, the South China Sea, and the Taiwan Strait. By 2080, China may well form a common market with Japan, Korea, Myanmar, the Philippines, Thailand, and Vietnam whose economic futures will be increasingly interlinked. This may become the basis of a future political union, or Federation, in the twenty-second century.

4.1.6.3 A Chinese Siberia?

Between 2050 and 2080, as the number of communities increases in the Nei Mongol Autonomous Region, the Republic of Mongolia with its three million people may join its 6,200,000 Mongol cousins in integral part of China. From the years 2070 to 2100, it is likely that China will exert increased economic and political influence on the Siberian and Far East regions of the Russian Federation. The twenty-second century may well see most of Russia’s Siberian regions east of the Lena, Ob and Yenisei rivers economically and politically integrated with China. This includes the
Irkutsk, Kemerovo, Krasnoyarsk, Novosibirsk, Omsk, Tomsk, and Tyumen oblasts of the Siberian regions, as well as Amur, Magadan, Kamchatka, Khabarovsk, Primorsky, Sakhalin, and Zabaykalsky oblasts of the Far Eastern regions and the Chukotka Autonomous Okrug. The Republics of Altai, Buryatia, Khakassia, Tuva, and Yakutia may also become integral to a future Chinese Federation.

4.1.6.4 The Bengla Hot Zone

The nations bordering the Andaman Sea and Bay of Bengal will become an important and socio-politically unstable part of the planet. By 2050, over 450 million will inhabit this region, including Bangladesh, Myanmar, the Northeast Indian states, West Bengal, and the Union territory of Andaman and Nicobar Islands. The high regional population density and competition for scarce water and food resources will invariably bring China, India, Indonesia and Myanmar into increased contact and potentially serious conflict. This will particularly become the case if Myanmar (including its Bamar, Jingpo (Kachin) and Shan ethnicities) militate to become autonomous regions within China.

4.1.6.5 Chinese World Leadership

The Silk Belt and Road Initiative (BRI) of 2013 is the first phase of China’s global influence and reach. Over the next 25 years, infrastructure investments will develop the Chinese and global economy to unprecedented levels through new trade corridors. These belts include land and maritime highways, such as those from Beijing to Berlin; Beijing to Irkutsk; Beijing to Katmandu; Dalian to Bergen; Fuzhou to Venice; Kunming to Kolkata; Kunming to Singapore; Urumqi to Istanbul, Urumqi to Kazan; and Xi’an to Almaty. China also is constructing super grid networks across Asia with hydroelectrical plants and wind energy stations. Moreover, China is also constructing integrated railway networks in the emerging East African Federation, Ethiopia, and Nigeria. If successful, this BRI initiative will inevitably include key Chinese links with Australia, Brazil, Canada, India, Indonesia, Japan, Mexico, Nigeria and West Africa, and the USA after 2050. Clearly, China is extending its global influence that will transform not only itself, but the future world.

4.1.6.6 The Maoist-Confucian Fusion?

As China’s global influence increases, it is attempting to present a human face to its strict Communist ideology. The evolving China model of a political meritocracy is being touted as a superior governance model to Western liberal democracies (Bell, 2010, 2016). Its Humane Authority Way is based on Confucian principles and are the basis of a harmonious civilizational state (De Mente, 1996; Hu, 2012; Jacques, 2009; Jin, 2019; Qing, 2016; Zhang, 2012). A House of Constituent Democracy and
a House of Tradition and Culture form the pillars of this novel governance model that moves away from centralized control and decision-making (Shambaugh, 2016). The synergy of innovative super-intelligence systems with leaner and streamlined governance structures and processes are in effect a Fourth Revolution and one that China is hoping to lead (Micklethwait & Wooldridge, 2014). Either way, this Red Dragon has awakened, and the world will be shaken to its core.

4.2 Japan: The Pacific Rising Sun

Japan (Nihon/Nippon) is one of the most innovative and effective world nations with great economic power (Hughes, 2013). This proverbial land of the Rising Sun faces key resource limitations, despite significant achievements in education and health care that may curtail its full potential.

4.2.1 Humanitarian Systems

4.2.1.1 Water

Japan has one the world’s longest coastlines of over 18,032 mi (29,020 km) along the North Pacific, the East China Sea, the Philippine Sea, the Sea of Japan (East Sea) and the Sea of Okhotsk. Yet, the nation faces a potential shortage of clean and safe drinking water with 3373 m³/capita for its over 126 million citizens. Key Japanese river systems include the Ishikari, the Kitakami, the Shinano, the Teshio, and the Tone Rivers. The Arakawa and Takanawa rivers that lead into Tokyo Bay supply most of the safe water resources for Tokyo and most of the Kanto region. However, water pollution, notably in the toxic Ayasegawa River in Saitama prefecture, are ongoing concerns across Japan where over 14 million may face the risk of safe water shortages. Desalination plants along its coastlines and water conservation, purification and recycling will continue to be important across Japan.

4.2.1.2 Food

With over 11.5% of its area in productive agricultural use, Japan’s arable lands are inadequate for its population of over 126 million. Japan is 40% dependent on food imports, although it has the potential to increase its arable land by an additional 28,000 mi² (72,500 km²). Over 1.2 million Japanese face hunger and malnutrition in disadvantaged socioeconomic regions with an additional 8.7 million at risk of food shortages in the future. Fisheries and harvesting of ocean and seafood resources from the East China Sea, the Sea of Japan, the Sea of Okhotsk, and the North Pacific will continue to be vital in mitigating food scarcities. Food imports from Australia,
Brazil, Canada, the Russian Federation, and the USA will also be increasingly important.

4.2.1.3 Health Care

With the world’s highest life expectancy of 85 years and a low infant mortality rate of 1.9/1000, Japan is an international benchmark for excellent health care outcomes. Moreover, Japan has an excellent health care capacity at almost 100% of its potential. As in many advanced nations, cancer and cardiovascular diseases are the greatest causes of mortality among the Japanese. An estimated 110,000 Japanese are HIV+ with a death rate from AIDS of over 1,320 annually. Moreover, Japan has a relatively low rate of deaths from road-trauma and homicides that, nevertheless, claim over 5200 lives/year at an annual economic loss of over USD 8.5 billion. However, the nation has a high rate of suicides of over 18,000 per year for an added loss of USD 27.4 billion. The lowest life expectancies are in the Tohoku prefectures of Akita, Aomori, and Iwate.

4.2.1.4 Education

With literacy rates of over 99%, Japan has an exceptional and world class educational system. Key postsecondary educational institutions are excellent and include the University of Tokyo, Kyoto University, and Osaka University. Yet, there are still over 1.26 million Japanese who remain illiterate given the nation’s immense population. The lowest literacy rates are primarily in the prefectures of Fukuoka in Kyushu and Kochi in Shikoku.

4.2.1.5 Environmental Health

Japan environmental performance index is good at 75% overall. Although it has a comparatively high environmental health score of over 93%, over 49,000 deaths annually are attributable to air pollution. Significant particulate matter, carbon and sulfur dioxide emissions contribute to an economic cost of loss of life of over USD 75 billion annually. Tokyo and the Kanto region are the most polluted areas of Japan. Its ecosystem vitality score is 63% and is the result of declining fish stocks and deforestation. Moreover, nitrogen pollution adversely affects agricultural productivity, while waste incinerations emit high dioxin content into the atmosphere that contribute to climatic changes. The reliance on nuclear power plants for electricity generation is a public issue after the Fukushima Daiichi nuclear accident of 2011. The earthquake and tsunami disaster caused significant nuclear leakages and contamination of the regional air, sea, and soil that have been difficult to contain and mark a turning point in Japan’s use of nuclear energy. Environmental challenges adversely and directly affect over 32 million of its citizens are directly.
### 4.2.1.6 Summary

Overall, Japan provides good humanitarian resources at 78% for its population of 126 million with outstanding health care and educational systems. Yet, over 11 million Japanese need either clean safe water, adequate food, or healthy environments to education over its relatively small geographical area. Scientific and technological ingenuity will continue to be important to Japan’s future in resolving these problems. Yet the impact of environmental degradation on over 25% of its citizens cast a pall over Japanese society and may take 22 years to resolve.

### 4.2.2 Socioeconomic Systems

Japan’s economy is the world’s fifth largest with a GDP of USD 5.5 trillion. Japan’s four major islands include Honshu, Fukuoka, Hokkaido, and Shikoku with eight key regions and 47 prefectures. Honshu Island with over 104 million includes the key regions of Chubu, Chugoku, Kanto, Kinki, and Tohoku. The eight key regions, cities, and prefectures (todofuken) in order of population include the following.

1. **Kanto** (Tokyo) of over 43 million including the prefectures of Chiba, Gunma, Ibaraki, Kanagawa, Saitama, and Tochigi. The Izo, Nampo and Ogasawara Islands in the East Pacific are sub-prefectures of Tokyo.
2. **Kinki** (Osaka) of over 22 million including Hyogo, Kyoto, Mie, Nara, Shiga, and Wakayama.
3. **Chubu** (Nagoya) with over 22 million including Aichi, Fukui, Gifu, Ishikawa, Nagano, Niigata, Shizuoka, Toyama, and Yamanashi.
4. **Kyushu-Okinawa** (Fukuoka) of over 13 million including Fukuoka, Kagoshima, Kumamoto, Miyazaki, Nagasaki, Oita, and Saga.
5. **Tohoku** (Sendai) with over nine million including Akita, Aomori, Fukushima, Iwate, Miyagi, and Yamagata.
6. **Chugoku** (Hiroshima) with over eight million including Okayama, Shimane, Totora, and Yamagishi.
7. **Hokkaido** (Sapporo) with over six million.
8. **Shikoku** (Matsuyama) Island with over four million including Ehime, Kagawa, and Kochi.

Japan is one of the planet’s most urbanized societies with close to 70% of its population living in three megalopolises of Chubu-Nagoya, Kanto-Tokyo, and Kinki-Osaka.
4.2.2.1  Fiscal Health

Japan has a good average income per capita of USD 43,400. With a low unemployment rate of over 3% and with under 16% of Japanese living below the poverty level, Japan has moderate level socioeconomic health relative to other nations. Under 20%, or 24 million, Japanese live in socioeconomic distress. The wealthiest prefectures of Japan include Aichi, Osaka, and Tokyo; and the poorest include Nara, Okinawa, and Saitama. Japan has an excellent taxation revenue base with over 84% of its potential. An additional USD 1.9 trillion out of its total GDP of USD 5.5 trillion could potentially assist those in the poorer prefectures.

4.2.2.2  Corruption and Crime

At 73%, Japan has low corruption rates and good governance transparency. The Government continues to eliminate all forms of corruption, including bribery, fraud, gang formations, human trafficking and money laundering through stringent anti-corruption legislation and enforcement. Yet, corruption costs the Japanese economy over USD 70 billion annually. Nevertheless, Japan has one of the world’s lowest crime and homicide rates at over 250 annually with a loss of over USD 450 million to the Japanese economy. The highest crime rates are in the prefectures of Aichi, Chiba, Fukuoka, Hyogo, Osaka, and Tokyo.

4.2.2.3  Monetary Health

The Bank of Japan (Nichigin) in Tokyo controls the monetary policy of the nation. At 54%, Japan has marginal export performance relative to its considerable potential of over USD 1.260 trillion. With key trading partners of China and the USA, its major exports include car accessories and parts, machinery, and electronics. In the future, trade with Australia, Brazil, Canada, India, Indonesia, a reunified Korea, the Philippines, the Russian Federation, Vietnam and will also be key to the Japanese economy. Japan will no doubt promote innovations in artificial intelligence, biotechnology, robotics, oceanic and space technologies will drive its new industries of tomorrow. Of great concern, however, is Japan’s critically high public debt-to-GDP that stands at over 220%. Tackling this level of debt remains Japan’s key economic challenge and priority if it is to maintain its socioeconomic health. The increase of tax revenues, the improvement of its export performance and the implementation of stringent austerity measures will be essential in the coming decades.
4.2.4 Summary

Japan has marginally good socioeconomic health at 60%. The mitigation and elimination of its public debt is Japan’s key economic priority. Japanese ingenuity in scientific and technological innovations will remain central to its predominance as a KSI nation in the twenty-first century.

4.2.3 Infrastructure Systems

4.2.3.1 Transportation Systems

At close to 100% of its potential, Japan has exceptional transportation networks with superb airports, railways, roadways, and seaports throughout its major islands. Among having some of the world’s busiest airports such as the Tokyo Haneda International and the Kansai International in Osaka, Japan also has one of the world’s fastest railways—the Shinkansen link between Osaka and Tokyo. Moreover, the Seikan Tunnel is among the world’s longest underwater railways linking Honshu and Hokkaido Islands across the Tsugaru Strait. Its key seaports include those of Chiba, Nagoya, Kobe, Osaka, and Tokyo, as well as the Hakodate on Hokkaido Island. Japan is active in the space industry with space centres at Tanegashima and Uchinoura in Kagoshima. Among its space initiatives, are the Kaguya lunar mission and Kibo module for the International Space Station (Moltz, 2011; Pekkanen & Kallender-Umezu, 2010).

4.2.3.2 Energy Systems

At a production rate of almost 1 trillion kW h (3.6 trillion MJ), Japan has adequate hydro-electrical energy resources at 76% of its potential 1.26 trillion kW h (over 4.5 trillion MJ). About 20% of Japan’s electricity is generated through nuclear energy from over 36 reactors, including the world’s largest Kashiwazaki-Kariwa plant in Niigata, the Oi in Fukui, and Onagawa in Miyagi facilities. All reactors have been designed to withstand major earthquakes, such as the one in Tohoku in 2011. However, a major system failure of the Fukushima Nuclear Power Plant resulting from major flooding from an ensuing earthquake and tsunami, the nation is rethinking its dependence on nuclear energy. Japan is committed to increasing its use of on renewable energy through significant investments in ocean, solar and wind resources. The development and importing of energy resources from the Far East regions of the Russian Federation also have the potential to meet Japan’s future needs.
4.2.3.3 Sociotechnical Development

Japan has excellent sociotechnical capacity with over 85% of its population or over 107 million netizens. Moreover, Japan is the world’s leader in big data systems, nanotechnologies, robotics, and super intelligence systems throughout all sectors of its economy and is clearly at the forefront of becoming the world’s first full technological society.

4.2.3.4 Public Protection and Security

With traditional defence and police forces at an estimated 500,000, Japan has relatively weak public protection and security capacity at 43% of its potential. Its defence forces are pegged at 247,000 and police at 250,000. Nevertheless, with its relatively small geographical size, Japan can effectively response to national disasters and emergencies, including earthquakes, environmental accidents, floods, landslides, massive fires, nuclear accidents, pandemics, transportation mishaps, tsunamis, typhoons, and volcanic eruptions. No doubt Japan will lead the world in integrating and reinforcing its capabilities in cybersecurity, fire, paramilitary, and rescue forces in the coming decades through its technological advancements.

4.2.3.5 Summary

At over 76%, Japan has good infrastructures with first-class transportation systems and excellent sociotechnical capabilities with its innovative technologies. An expansion of its hydro-electrical and renewable energy capacity and its public protection and security resources would create even stronger infrastructures.

4.2.4 Governance Systems

4.2.4.1 Population Management

With a population density of over 895 persons/mi² (346 persons/km²), Japan is a heavy-weight nation with its 126 million citizens. Its high population density exerts great pressures on living spaces and resources with the need for land reclamation along its seacoasts and vertical growth of its cities. With over 29% of its population over the age of 65, Japan has one of the world’s most rapidly aging populations. Although its demographic growth rate is decreasing by 0.2% per year, its projected 2050 population will be 107 million. Hokkaido is one of the few areas in Japan that has the potential to accommodate new communities. Over the coming decades, over 1.5 million Japanese will likely emigrate to open space nations, such as Australia, Brazil, Canada, the Russian Federation, and the USA.
4.2.4.2 Sociocultural Cohesion

At over 95%, Japan is one of the world’s most cohesive and integrated nations. The Japanese language and both Shinto and Buddhist belief structures are strong social integrators. The feudal caste system that prevailed for centuries in Japan was dismantled in 1945 (Saburo & Minear, 2000). Yet discrimination against the Burakumin—the traditional social outcastes, or untouchables, of Japanese society—continued, until recently. It was through the efforts of Jiichirō Matsumoto, the father of the Buraku Liberation movement, that the social ostracism of this class abated throughout Japan. Today, they number at one million primarily in Kochi and Fukuoka and are relatively well-integrated into Japanese society. The nation also has sizable immigrant populations, including over 700,000 Chinese in Osaka, Tokyo, and Yokohama; over 500,000 Koreans in Osaka; over 275,000 Brazilians in Nagoya and Aichi and Shizuoka prefectures; and over 260,000 Filipinos in Tokyo. Japan’s indigenous populations include the Ryukyuans of over 1.8 million in Kagoshima and Okinawa; and the Ainu of 200,000 in Hokkaido. Together they make up over 1% of the Japanese population and are not directly represented in the National Diet.

4.2.4.3 Sociopolitical Systems

Japan is a constitutional monarchy with an Emperor as the Head of State. As a unitary state with 47 prefectures, Japan has a National Diet (Kokkai) consisting of a House of Representatives (Shugiin) of 465 seats and a directly elected House of Councillors (Sangiin) of 245 seats. The Sangiin represents each of the 47 prefectures, as well as a proportional number from the political parties. Assuming the ideal Shugiin size of 126 and 94 for the Sangiin, there appears to be a surplus of 490 seats in the National Diet. This is at an additional cost of USD 735 million annually to the Japanese economy. Three major political parties with over 10% of the electorate dominate. These include the Japan Democratic Party, the Japan Communist Party, and the governing Liberal Democratic Party that, in coalition with Komeito, has over 50% of electoral support. At 20%, Japan has poor female representation and gender parity in the National Diet. All 47 prefectures are small at under 58,000 mi² (150,220 km²) and nine have under one million suggesting weak regional governance efficiency. With an overall score of 55%, Japan’s sociopolitical effectiveness is marginal.

4.2.4.4 Summary

At an overall score of 57.5%, Japan’s overall governance effectiveness is marginal. Despite its sociocultural cohesion, Japan has significant population and governance challenges, given its high population density and limited sociopolitical effectiveness. Downsizing the National Diet, increasing female representation and
consolidating its prefecture systems into larger regions would create a stronger Japanese polity.

4.2.5 Systemic Priorities

As the Nobel Prize winner, Kenzaburo Oe (1967) wrote: “It takes great care and insight to watch for any abnormality in green grass, even while it grows abundantly and healthily.” Under extraordinary leadership, Japan has undergone many historical transformations and will no doubt continue to do so (Allinson, 2004; Feiler, 2004; Fukuzawa, 1966; Iwata, 1964; Jansen, 2000; Kingston, 2014; Pilling, 2014; Weston, 1999). These have created ambiguity, polarizations, and a sense of alienation in the pursuit of material goals within Japanese society (Oe, 1967; Soseki, 1914). According to Nobel Prize laureate in literature, Yasunari Kawabata (1951): “From the way of Go, the beauty of Japan has fled. Everything has become science and regulation”. Yet, Japan remains a society of great patience as it strives for balance and harmony. Japan will no doubt continue to play an important leadership role internationally given its exceptional education, health care, sociotechnical prowess, and transportation networks. Overall, its national systemic effectiveness stands at 68%, with comparatively good humanitarian and infrastructure strengths with high sociocultural coherence. Nevertheless, Japan will require attention over the next 30 years to reach its full potential that include the following.

Monetary policy. Japan’s critically high public debt needs immediate and urgent attention. Leverage its export performance through innovations in engineering and scientific technologies to East Pacific nations and world markets is indicated.

Population policy. Japan needs to address its high population density through the expansion of new sustainable communities in Hokkaido; the proactive reclamation of land from oceans and seas; and the continuous growth of vertical cities.

Water. Japan needs to construct more desalination plants and continue to conserve and recycle clean water for its people.

Food. Japan needs to expand its productive agricultural lands and ocean and seafood resources, particularly from the Sea of Japan and the North Pacific.

Fiscal policy. Japan needs to broaden its taxation revenue base and take measures to eliminate the socioeconomic distress of those living under the poverty level or unemployed.

Environmental policy. Japan needs to continue its efforts to stop and reverse environmental degradation through effective ecosystem planning and increasing its reliance on clean and renewable energy sources.

Public protection and security. Japan needs to expand its public protection and security resources to assure effective responses to future national disasters and emergencies.

Governance reform. Aside from streamlining the National Diet, there is a need for more female representatives and consolidating its prefectures into more efficient governance regions.

Energy. Japan needs to expand its hydroelectricity energy capacity and invest into its clean and safe ocean, solar and wind sources.

Health care. Japan needs to address the high suicide rates that is robbing its nation of greatest assets—its people.
4.2.6 Transformations

Since Kahn’s prediction of 1971 that the twenty-first century will belong to Japan, there have been many other similar prognostications on its promising future (Baldwin & Allison, 2015; Banno, Yamaguchi, & Stockwin, 2016; Coates, Holroyd, & Söderberg, 2019; Hara, 2018; Kahn, 1971; Lincoln, 1988; Mouer & Sugimoto, 2009; Saburo & Minear, 2000; Salsberg, Chandler, & Chhor, 2011; Thorsten, 2012). Japan is one of the world’s most technologically advanced nations and will remain so through this century, even as its population decreases. This archipelago nation underscores the importance of its coastlines along the North Pacific, the East China Sea, the Philippine Sea, the Sea of Japan (East Sea) and the Sea of Okhotsk.

Australia, Brazil, Canada, the Russian Federation, and the USA will attract more emigrants from Japan and will greatly impact on the sociocultural development of these nations and the emerging planetary society. Strong links and partnerships with China, a unified Korea, the Philippines, and the Russian Federation will be of increasing strategic importance to Japan’s future vitality.

4.2.6.1 The Koreas

In the short term, considerable tension and unrest on the Korean Peninsula will continue. Ultimately, it is for the Koreans of both the People’s Democratic Republic of Korea and the Republic of South Korea to decide their collective future as a reunified nation. Yet, Japan, China and the Russian Federation have a direct strategic interest in a just and peaceful reunification of Korea. This is particularly crucial for the growth and stability of the Japanese and Korean peoples. Inevitably, the USA will reassess and redefine its commitment to Japan as it grapples with its own massive public debt and overextension of its international commitments (Smith, 2019). Japan will inevitably strive for a rapprochement with China and a united Korea of the future. Given its current dependence on American defence forces and a nuclearized Korean peninsula, Japan will require great statesmanship to avoid destructive confrontations in this vital region. With regional peace and stability by the end of the twenty-first century, underwater and bridge links between Japan and Korea across the Korean Strait may herald a new chapter in history between the two nations.

4.2.6.2 The East Pacific

Japan will continue as an important strategic world influencer, particularly in the North Pacific. The Pacific will continue to galvanize the Blue economy of the future through aquaculture, marine biotechnology, ocean renewable energy, oceanography, seabed resource extraction, and sustainable ecological development. Japan’s strong presence in this region as a Blue economic leader will be manifest. The
Mariana and Ryukyus Islands may become contentious regions for the East Pacific nations if they are not inundated by rising sea levels from climatic changes. With a projected 2050 population of over 155 million, the Philippines will become an important trading partner of Japan. Yet, China’s dominance and strategic growth will eclipse that of both nations that will likely become key satellites of the emerging Chinese colossus by the end of the twenty-first century.

4.2.6.3 The East Sea

Working with the Association of Southeast Asian Nations (ASEAN), Japan has invested in transportation infrastructures to facilitate trade, particularly with Thailand and Vietnam. The twenty-first century will see a major focal shift in Japan that will seek far closer cultural, economic, and political ties with China. Japan’s eventual participation in China’s Silk Belt Initiative will herald the beginning of a strategic accommodation and strong partnership with China. This will assist Japan in not only capitalizing on trade networks being forged globally through China, but also play a central and key role in China’s future technological development. The East and Northeast China provinces will be economically vital to Japan’s future. Over the next 60 years, as China increases its dominance of the East China Sea and the East Sea (Sea of Japan) and nations such as Myanmar, Thailand, and Vietnam, Japan will find its influence extended, as well.

4.2.6.4 Far East Siberia

Through future joint—partnerships with the Russian Federation, Japan will increasingly play a key role in the economic development of the Far East Siberian regions. Bridge or tunnel linkages across La Perouse Strait between Hokkaido and Sakhalin oblast and across the Strait of Tartary between Sakhalin Island oblast and Khabarovsk krai would also open the Magadan oblasts, Kamchatka and Primorsky krais, the Chukotka Autonomous Okrug and the Kuril Islands for new sustainable and viable new communities. Depending on political directions of the Russian Federation, the Sakhalin and Kuril Islands may eventually become an integral part of a larger Japan and bring decades of contention between Japan and the Russian Federation to an end.

4.2.6.5 Japan’s World Leadership

Japan as a Pacific Rising Sun giant is already an outstanding leader in many key areas including advanced transportation systems, health care, education, and technology. The engineering, scientific and technological ingenuity and prowess of the Japanese is second to none in the world and no doubt future innovations and solutions to global issues will emanate from Japan. Japan will serve as a positive catalyst for change and development around the world for the rest of the twenty-first century.
Yet its small resource base will ultimately prove to be its Achilles Heel and one that will require the Japanese to seek proactive peace, reconciliation and stability with China and the Russian Federation. Japan currently is highly dependent on the USA in the region. This, however, is not tenable in the long-term. This Pacific Rising Sun future is linked to its inevitable reconciliation with China and Korea. That transformational change will be part of the trembling of this part of the planet as a planetary society emerges.

4.3 Indonesia: The Emerging Garuda Archipelago

The Republic of Indonesia (Republik Indonesia), the world’s largest archipelagic nation and Islamic nation, is redefining its international responsibilities in the East Pacific sphere (Acharya, 2014; Davidson, 2018; Lindsey & McRae, 2018; Reid, 2012; Roberts, Habir, & Sebastian, 2015). The Garuda a mythological bird is Indonesia’s symbol of five key integrating principles, known as Pancasila the core of its sociopolitical philosophy (Sattar, 2018; Suryadinata, 2018). The tenets that include monotheism, humanity, unity in diversity, democracy, and social justice are central to the integration of this complex diverse and dynamic emerging KSI nation of over 1000 ethnic groups. They are fundamental as Indonesia as it evolves into an advanced civilizational state in the twenty-first century and contributes to an emerging planetary society.

4.3.1 Humanitarian Systems

4.3.1.1 Water

The Indonesian archipelago of over 15,000 islands has excellent water resources at over 7,650 m³/capita. Indonesia has one of the world’s longest coastlines at over 67,260 mi (108,246 km) along the Indian and Pacific Oceans and seas, such as the Andaman, Arafura, Banda, Celebes, Coral, Flora, Java, South China, Seram, Sulu and Timor Seas, as well as the Lombok, Malacca, and Sunda Straits. It also has one of the world’s most extensive waterway systems with major river basin systems, notably the Barito and Kapuas of East Kalimantan. However, the lack of access to clean and safe drinking water affects over 34 million Indonesians, with an additional 18 million at risk. Moreover, unsafe sanitation levels and poor wastewater treatment also remains problematic for over 104 million Indonesians. Indonesia needs significant investments for clean water distribution networks, wastewater treatment facilities, water conservation and recycling and effective desalination plants.
4.3.1.2 Food

Although over 13% of its land is agriculturally productive, Indonesia has insufficient arable land for its immense population of over 274 million. Over 85 million Indonesians face food insecurity and suffer from hunger and malnutrition, even though the nation imports 33% of its food supplies. The expansion of harvesting of ocean and seafood resources offers an opportunity to mitigate hunger and resolve food shortages for its rapidly growing population.

4.3.1.3 Health Care

Indonesia has moderately good health care outcomes at 69% of the Japan benchmark tempered by high infant mortality rates. However, it has its critically inadequate health care system capacity at 12% of its potential, leaving the nation particularly vulnerable to natural disasters, emergencies, and pandemics. Over 85 million Indonesians need improved access to adequate health care across its vast archipelago. Cerebrovascular disease and tuberculosis are the principal causes of mortality of Indonesians. Moreover, over one million of its people are HIV+ and AIDS claims over 12,720 lives annually. Indonesia also has one of the world’s highest rate of road-trauma deaths claiming over 32,300 lives each year. Relatively low rates of suicides still take an additional 9,500 annually. The total yearly cost of road trauma, suicides and homicides to the Indonesian economy is over USD 20 billion.

4.3.1.4 Education

At a literacy rate of over 96%, Indonesia has an excellent educational system with many leading world universities such as the Bandung Institute of Technology, Gadjah Mada University in Yogyakarta, and the Universitas Indonesia in Jakarta (Suryadarma & Jones, 2013). Yet, over 11 million Indonesians remain illiterate across its diverse ethnicities and vast archipelagic regions. The illiteracy rates are highest in East Nusa Tenggara, Papua, West Kalimantan, West Nusa Tenggara, West Papua, and West Sulawesi.

4.3.1.5 Environmental Health

With a poor environmental performance index of 47%, Indonesia is one of the world’s most polluted nations. Environmental health risk is high with elevated black carbon, carbon dioxide, methane, nitrogen dioxide, sulfur dioxide emissions; high lead and particulate matter levels; and household solid fuels that compromise air quality. Jakarta, one of the world’s most polluted cities, Bantam and its Citarum River in West Java, and Medan in North Sumatra are noted for their toxicity. Air pollution claims over 127,000 lives at an annual economic loss of life cost of over
USD 58 billion. Moreover, Indonesia has the world’s largest numbers of over 127 active volcanos within its Pacific Ring of Fire that contribute to the air toxicity posing direct catastrophic risks across its vast archipelago. Indonesia’s declining ecosystem vitality of 48% reflects serious deforestation, due to wildfires across Kalimantan and Sumatra. The nation also has inadequate biome and species protection. Emissions increasingly compromise rich agricultural soil. These environmental challenges directly and adversely impact the lives of over 140 million Indonesians.

4.3.1.6 Summary

At an overall score of over 76%, Indonesia has good humanitarian resources to meet the basic needs of its population. Yet close over 84 million still lack access to either adequate sanitation, clean environments, adequate food, education, health care or safe water. Addressing these concerns together with its urgent environmental issues that affect over 48% of Indonesians may well require over 24 years to overcome.

4.3.2 Socioeconomic Systems

With a GDP of over USD 3.5 trillion, Indonesia has the seventh largest economy of the 12 KSI nations. With a population of over 265 million, Indonesia faces many key economic challenges (Ing, Hanson, & Indrawati, 2019; Pempel & Tsunekawa, 2014). The nation has seven key regions, cities, and provinces including the following.

1. Java (Jakarta) with over 154 million includes the provinces of Banten, Central Java, East Java, Jakarta, the Special Region of Yogyakarta, and West Java.
2. Sumatra (Medan) with over 51 million includes Aceh, Bangka, the Belitung Islands, Bengkulu, Jambi, Lampung, North Sumatra, Riau, Riau Islands, South Sumatra, and West Sumatra.
3. Sulawesi (Makassar) with over 19 million includes Central Sulawesi, Gorontalo, North Sulawesi, South Sulawesi, Southeast Sulawesi, and West Sulawesi.
4. Kalimantan (Banjarmasin) with over 16 million includes Central Kalimantan, East Kalimantan, North Kalimantan, South Kalimantan, and West Kalimantan.
5. Lesser Sunda Islands (Mataram) with over 16 million includes Bali, East Nusa Tenggara, Lombok, and West Nusa Tenggara.
6. Western New Guinea (Jayaputra) with over 4.5 million, includes Papua and West Papua.
7. Maluku Islands (Ambon) with over three million across 1000 islands, includes Maluku and North Maluku.

The key economic engines of Indonesia include Java region provinces, as well as North Sumatra. Indonesia has two megalopolises: Jakarta, the current capital with 28 million, and Surabaya of over ten million. Bandung likely join these ranks by
2080. Indonesia open its new capital of North Penajam Paser in East Kalimantan by 2024.

4.3.2.1 Fiscal Health

Indonesia has a low income per capita of over USD 13,000 and an unemployment rate of over 4%. Moreover, over 11% of Indonesians live under the poverty level with over 47 million live in acute socioeconomic distress. Indonesia’s richest provinces include East Kalimantan, Jakarta, Papua, and Riau; the poorest include Aceh, East Nusa Tenggara, Maluku, and West Nusa Tenggara. Poverty also contributes to communal tensions and violence, particularly in Bengkulu, Central Sulawesi, Gorontalo, Kalimantan, North Sulawesi, and West Papua (Huxley, 2005). Indonesia has a very weak taxation revenue base of 12% of its potential. Equitable distribution of broadened tax revenues of USD 1.5 billion would help to raise millions of its people out of socioeconomic distress.

4.3.2.2 Corruption and Crime

Indonesia has high corruption rates of 40% that distorts the flow of needed fiscal resources and costs the economy over USD 105 billion annually. Ideally, there should be zero tolerance of corruptive practices (Lee, 1998). Yet, bribery, cybercrime, extortion, fraud, gangs, human exploitation, money laundering, terrorism, and theft are significant challenges in Indonesia. Moreover, tawuran, or sanctioned mass street violence between school gangs, poses a rampant problem in urban regions across Indonesia. Crime rates are highest in Central Sulawesi, North Sulawesi, South Sulawesi, West Papua, and West Sumatra. Yet overall, Indonesia has relatively low homicide rates at over 1060 annually.

4.3.2.3 Monetary Health

The Bank of Indonesia in Djakarta controls the national monetary policy. Indonesia has marginal export performance at over 6% of its potential of over USD 2.7 billion. The major Indonesian exports currently include crude oil, ethylene polymers and petroleum oil, with its greatest markets being China, India, Japan, India, Malaysia, and the USA. As the world develops alternative renewable energy resources and lessens its dependence on oil, Indonesia will face greater export challenges upon which its socioeconomic future depends (Ing et al., 2019). In addition to China and India, increased trade with Australia, Bangladesh, Pakistan, the Philippines, Thailand, and Vietnam will be important to Indonesia’s future. The nation has a public debt-to GDP ratio of 30% that slows the nation’s economic development rate.
4.3.2.4 Summary

At a score of 39%, Indonesia’s overall socioeconomic health is weak and may require close to 40 years to develop to its full potential. Strong socioeconomic health will depend on the development of its new export industries and performance; zero tolerance of corruption and criminal activity; the fostering of greater positive trade relationships with KSI and other regional nations; the increase of employment opportunities for its youth and people; and the redistribution of increased taxation revenues.

4.3.3 Infrastructure Systems

4.3.3.1 Transportation Systems

Given its extensive coastlines throughout its immense archipelago, Indonesia has excellent seaports that include Tanjung Perak, and Tanjung Priok in Java; Makassar in Sulawesi; and Kuala Tanjung, Tanjung Sauh, and Teluk Bayar in Sumatra. Its largest major international airport is the Djarkarta Soekarno-Hatta. However, at an overall score of 40%, Indonesia’s transportation networks, such as airports, railways, and roadways, are underdeveloped for its territory, particularly in the regions of Kalimantan, Sulawesi, Sumatra, and Western New Guinea. Railway networks are particularly underdeveloped at 7% of their potential across Indonesia. Indonesia has the beginning of a space industry with a planned spaceport at Morotai in North Maluku.

4.3.3.2 Energy Systems

At 9%, Indonesia’s hydro-electrical energy power production are weak at over 235 billion kW h (846 billion MJ) out of potential needs of over 2.7 trillion kW h (9.7 trillion MJ). This leads to blackouts, brownouts and rationed power resources that impede the socioeconomic and technological development of the nation. Indonesia has three nuclear reactors at Bandung, Banten and Yogyakarta in the Java region that generate hydroelectrical energy with three more planned at Muria in Central Java, Gorontalo in Sulawesi, and Banka Belitung in Sumatra. The need for energy will increase with population growth and require the harnessing of new renewable sources through ocean, solar and wind technologies.
4.3.3.3 Sociotechnical Development

With over 106 million netizens, Indonesia has a sociotechnical capacity at over 40% of its potential. The most technologically developed provinces include Bali, Jakarta, Riau, and West Kalimantan; the least developed include Central Kalimantan, Lampung, North Maluku, North Sumatra, South Sulawesi, West Nusa Tenggara, and West Sulawesi. The nation will likely need another 40 years to develop into a full knowledge society.

4.3.3.4 Public Protection and Security

Indonesia have close to an estimated one million citizens engaged in public protection and security, that include over 400,000 in defence and 585,000 in police forces. At 37% of its potential of over 2,650,000, Indonesia has limited ability to respond effectively to national disasters and emergencies across its vast archipelago. These include cyclones, earthquakes, environmental accidents, inundations, landslides, massive fires, pandemics, social unrest and violence, transportation mishaps, tsunamis, and volcanic eruptions.

4.3.3.5 Summary

Indonesia has underdeveloped infrastructures marked by weak transportation networks, limited hydro-electrical energy, weak sociotechnical capabilities and relatively weak public protection and security services. Its overall infrastructure strength ranks at 32% and may take over 45 years to be fully addressed. Stronger infrastructures will require significant investments in airports, railways and roadways and renewable energy resources, as Indonesia strives to develop its full technological potential.

4.3.4 Governance Systems

4.3.4.1 Population Management

Indonesia currently has over 265 million with a high population density of over 400 persons/mi² (154 persons/km²). A vibrant youthful 45%, or 120 million Indonesians, are under the age of 30. As a heavy–weight nation with a projected 2050 population of over 327 million, it will be the world’s fifth most populous country after China, India, the USA, and Nigeria and will continue to be the world’s largest Islamic nation. At a growth of almost two million annually, demands and pressures on living spaces and resources, particularly in the highly populated regions of Java, Sulawesi, and Sumatra will continue. The regions of Kalimantan and West
New Guinea have significant growth potential for new sustainable and viable communities. Moreover, each decade might see over 3.6 million Indonesians emigrating to open space nations, such as Australia, Brazil, Canada, Kazakhstan, the Russian Federation, and the USA.

4.3.4.2 Sociocultural Cohesion

The Golden Star is the Indonesian symbol of its Pancasila principle that reaffirms the belief in one Supreme God, regardless of one’s religion. Indonesia is relatively well socio-culturally integrated with over 80% of the population being Islamic adherents. Over 12%, or 32 million, are Christians predominantly in East Nusa Tenggara, the Maluku Islands, North Sulawesi, Papua, West Kalimantan, and West Papua. Aside from the cogent role of the Islamic faith, Bahasa Indonesia serves as the official lingua franca of over 200 million Indonesians and is also a major unifying force. The symbolic Banyan Tree underscores Indonesia’s principle of unity in diversity. Indeed, Indonesia is complex and diverse with over 1,000 ethnicities, including over 70 million indigenous peoples. Of the many major ethnicities and languages include the Javanese at 106 million; the Sundanese at over 41 million in West Java; the Malays at over ten million in the Bangka Belitung Islands, Jambi, North and South Sumatra, Riau, and Western Kalimantan; the Batak at over 9.5 million in North Sumatra, Riau, and West Java; the Madurese at over eight million in East Java; the Betawi in Djakarta and the Buginese in South Sulawesi at over 7.7 million; the Minangkabau at over seven million in Bengkulu, Jambi, Riau, and West Sumatra; and the Banjar of almost six million in South Kalimantan; the Acehnese in North Sumatra and Bantenese in Banten and West Java at over five million each; the Dayaks of over four million in Central and West Kalimantan; the Balinese of Bali and the Sasak in Lombok Island and West Nusa Tenggara of just under four million each; the Makassarese in South Sulawesi and the Cirebonese in Central and West Java of over 2,500,000 each; the Gorontalo in North Sulawesi and the Torajan of over one million in South Sulawesi each.

4.3.4.3 Governance Systems

Indonesia with its 34 provinces is a presidential representative democratic republic founded in 1945. The Pancasila principles for social justice and the striving of a civilized humanity are important tenets that are at the core of Indonesia’s evolution as a sociopolitical state. Unanimity through deliberations forms the Pancasila principle of democracy and is represented by the Banteng, the Javanese wild bull. The People’s Consultative Assembly has a People’s Representative Council of 695 seats and a Regional Representative Council of 136 directly elected members—four from each province. There are four major political parties that command over 10% of the electorate including: the governing Indonesian Democratic Party of Struggle, the Great Indonesian Movement Party; the Golkar Party and the National Awakening
A second round of national voting assures that one Party, or a coalition of parties, receives over 50% of the electoral vote. The People’s Representative Council appears to have an excess of 430 seats at an extra cost of over USD 645 million annually. With 35% of a gender parity score, Indonesia has poor female representation in the People’s Consultative Assembly. Thirty-one provinces are under 58,000 mi² (150,220 km²) and two have less under one million. The overall sociopolitical effectiveness is marginally good at 64%.

4.3.4.4 Summary

Although an ethnically diverse Indonesia has a high level of sociocultural integration centered on religious affiliation, its significant overpopulation challenges gives it an overall sociopolitical score of over 65%. A consolidation of provinces, a downsizing of its number of PRC seats and greater gender parity would strengthen the Indonesian national state.

4.3.5 Systemic Priorities

At an overall national systemic score of over 53%, Indonesia faces humanitarian, socioeconomic, infrastructure and governance challenges that may take over 45 years to overcome. Its key national strengths include its abundance of natural water resources, its strong sociocultural cohesion in the face of great diversity, and its educational system. Indonesia’s urgent strategic priorities include the following. **Population policy.** High population densities in Java, Sulawesi, and Sumatra point to the need for new sustainable and viable communities in Kalimantan and West New Guinea. **Environment policy.** There is an urgent need for effective measures to halt and reverse air pollution and environmental degradation. **Water.** Significant investments in clean and safe water distribution networks, sanitation systems and wastewater treatment facilities are urgently required. **Health care.** Health care resources and capacity must be expanded throughout the nation. Effective prevention strategies for infant mortality, infectious diseases, and road trauma are important, as is the elimination of tuberculosis. **Food.** The expansion of productive agricultural lands and of ocean and sea food resources is pressing. **Fiscal policy.** The increase and redistribution of tax revenues are important to finance efforts to address health care priorities and reduce socioeconomic distress of millions. The zero tolerance of corruption and criminal activities is also key. **Energy.** The expansion of hydroelectrical resources and potentiating new renewable energy capacity from oceanic, solar and wind sources will only increase in importance. **Monetary policy.** Broadening of export markets to Australia, Bangladesh, China, India, Pakistan, the Philippines, and Vietnam is vital. **Transportation.** Significant investi-
ments in airport and railway networks, including bridges and tunnels to connect islands throughout the archipelago, will strengthen the ability to move people, resources and supplies efficiently. **Governance.** Increasing women participation in the People’s Consultative Assembly; the downsizing of the People’s Representative Council; the consolidation of provinces into larger and more efficient regions will greatly strengthen the governance of Indonesia.

### 4.3.6 Transformations

As the former Indonesian President, Susilo Bambang Yudhoyono (2006) stressed: “It is fundamental to all conflicts that their long-term solution involves dialogue, trust and cooperation.” Indonesia is a nation of many systemic tensions between democracy and authoritarian technocracy (Amir, 2012; Hefner, 2011); between Islamic radicalism and secularism (Adeney, 2018; Kumar, 2015; Kunkler & Stepan, 2013; Solahudin, 2013; Taher, 2003); and between ethnic regional conflicts and national unity (Bertrand, 2003; Fernandes, 2007; Harsono, 2019; Hill, 2014; Huxley, 2005; Pisani, 2014). Yet, it remains a KSI nation of enormous potential in the East Pacific ecosphere with potent impacts on the development and growth of other Islamic nations, such as Bangladesh, Iran, Malaysia, Pakistan, and the Mashriq nations. Moreover, it will play a pivotal role in the intersectional struggles between the emerging world giants of China and India.

#### 4.3.6.1 The Blue Economy

Indonesia with its archipelago of over 15,000 islands across over 2000 mi (3320 km) one of the world’s longest coastlines along the Indian and Pacific Oceans and seas, such as the Andaman, Arafura, Banda, Celebes, Coral, Flora, Java, South China, Seram, Sulu and Timor Seas. Indonesia has enormous opportunities potential for a Blue economy based on aquaculture, marine biotechnology, marine ecosystem protection, oceanography, oceanic technology, and seabed resource extraction. The development of its economy might invigorate fair and robust trade relationships with Australia, Bangladesh, China, India, Japan, Malaysia, Myanmar, Pakistan, the Philippines, Thailand, and Vietnam. The prosperity of the Kalimantan region will also increasingly depend on strong economic and political ties with Brunei Darussalam, Sabah, and Sarawak in Malaysia that share its borders. Ties between Indonesia and the Philippines will also grow as land bridge networks are built across their respective archipelagos between East Kalimantan to the island of Mindanao and beyond.
4.3.6.2 A Nusantara Union?

Nusantara is the term for the Malay world, or archipelago of which Indonesia is a part. By the end of the twenty-first century, there will likely be an economic and political union of Indonesia, Malaysia, and Brunei Darussalam, or a Nusantara Union, for a projected population of over 400 million. Malaysia has relatively poor agricultural resources, but ample clean and safe water supplies. Moreover, it has an excellent educational system and sociotechnical capacity, healthy export performance, low unemployment rates and progressive socioeconomic development with effective health care systems. Malaysia serves as a catalyst and excellent model nation that Indonesia in all its complexity will no doubt emulate. Malaysia’s continuous evolution as a leading regional nation will particularly spur development in the regions of Kalimantan and Sumatra.

4.3.6.3 The Singapore Flashpoint

During the twenty-first century, China will increasingly dominate the economies of the Philippines, Thailand, and Vietnam (along with Cambodia and Laos) with their combined projected 2050 population of over 350 million, respectively. The economy of Sumatra will depend on strong trade links with all these nations bordering the South China Sea. As an emerging KSI nation, Indonesia will seek accommodation and coexistence with China in the region. The sociocultural stability of Malaysia with its over 30 million citizens depend on the interaction of two major ethnic groups, including the Malays with over 50% of the nation and the Chinese with over 30%. A central regional flashpoint is Singapore with its majority of Chinese and its significant Malay minority of 13%. Singapore with its future 2050 population of over eight million may find a situation like that of Israel surrounded by populations that may appear to pose an existential threat. China will no doubt be a guarantor that a Chinese minority anywhere in the region will be justly treated. Moreover, the Straits of Molucca will become increasingly important, as the Indonesians develop the economy its Sumatra provinces of Bangka-Belitung and Riau to countervail the cogent role of Singapore in the region.

4.3.6.4 Secessionist Forces

There are several regions of noted communal, ethnic, and sectarian unrest and violence across Indonesia. These include in Aceh, Bali, Central Kalimantan, Central Sulawesi, East Kalimantan, Jakarta, Maluku, North Maluku, Papua, West Papua, and West Kalimantan. Notably, there are three active independence movements, including the Free Aceh Movement, formed in 2008; the Free Papua Movement, formed in 1971; and the Maluku Sovereignty Front, formed in 2000. The Indonesian military intervened in suppressing the Aceh movement from 1976 to 2005 with the loss of over 15,000 people. The efforts for the independence of West New Guinea
continues and has cost the lives of over 400,000 people since 1969. The independence movement in South Maluku with its predominant Christian communities also continues and has parallels with the independence of East Timor that cost over 300,000 lives between 1975 and 2002. As Indonesians, particularly those in Java, Sulawesi, and Sumatra regions, migrate to the open spaces of Kalimantan and West New Guinea, there will likely be more ethnic confrontations with indigenous populations over land and resources. The Sampit conflict of 2001 between the Dayak and Madurese migrants in Central Kalimantan culminated with the deaths and displacement of hundreds of thousands, underscoring the potential for future internal conflicts and violence.

4.3.6.5 West New Guinea Conflicts?

The island of New Guinea has the capacity to accommodate over 50 million people over its current 12 million. Migrants from Java and Sulawesi to Papua and West Papua have been met with hostility and resistance by indigenous groups and the neighbouring Papua New Guinea. It is likely that Australia, China, and the Philippines will become involved in these growing future regional conflicts. As China emerges as a strong influencer throughout the East Pacific, the future of New Guinea will no doubt be hotly contested.

4.3.6.6 Emerging Garuda Leadership

Indonesia plays a key role in the Association of Southeast Asian Nations (ASEAN) promotes economic, political, and sociocultural cooperation between ten nations that includes Brunei, Cambodia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. With its headquarters in Jakarta, Indonesia’s active participation underscores its consensual, cooperative, and peaceful approach to resolving inter-regional conflicts and problems (Collins, 2012; Yudhoyono, 2006). It is a crucible on which regional cooperation, resilience and stability are forged (Lindsey & McRae, 2018; Reid, 2012). Indonesia’s sociopolitical philosophy of Pancasila will be increasingly tested as its economy develops and as its population increases. Its disciplined adherence to its five integrating principles of democracy, humanity, monotheism, social justice, and unity in diversity will ensure peace and stability in this crucial region of the world. As Indonesia evolves into a knowledge society, these five principles will be the basis of a future civilizational state and will contribute to the contours of future planetary societies.
4.4 Australia: Uluru Beneath the Southern Cross

As in the famous poem of “Advance Australia Fair” of Peter Dodd McCormick (1878): “Australians all let us rejoice/Beneath our radiant Southern Cross.” Australia is an evolving colossal nation that is redefining its ecological and economic future across its vast territory (Cocks, 1999; Fitzsimons, Pulsford, & Wescott, 2013; Gray & Lawrence, 2001; Hendy, 2018; Krever & Mellor, 2010; Mackay, 2018; Mason & Wood, 2013; O’Neil & Watts, 2015; Seamer, 2019; Smith & Cribb, 2009; Weller & Bolleter, 2013; Torok & Holper, 2017). As the world’s largest desert nation, Australia’s development of new sustainable and viable communities will be one of its key challenges of the twenty-first century (Prosser, 2011; Smith & Cribb, 2009). This increasingly diverse nation is repudiating its historical adherence to the concept of terra nullius, as it strives towards reconciliation with and social justice for its indigenous peoples (Appleby, Aroney, & John, 2012; Behrendt, 2003; Bourke, 1998; Broome, 2010; Gammage, 2013; Loos & Mabo, 1996). Uluru (Ayers Rock) also known as the Red Centre in the Northern Territory, is an important cultural symbol that is sacred to the indigenous peoples, such as the Pitjantjatjara and Yankunytjatjara of South Australia. Australia is striving to redefine itself as a dynamic Austronesian nation of the East Pacific (Hamilton, 2018; Hendy, 2018). In many ways, Australia’s future will be found in the nexus of Uluru and the Southern Cross constellation visible only in the Southern hemisphere.

4.4.1 Humanitarian Systems

4.4.1.1 Water

At over 20,100 m³/capita, Australia has excellent water resources relative to its population of 23.7 million. Yet over 20% of its territory include vast deserts, such as the Gibson Desert, Great Sandy Desert, Great Victoria Desert, and Tanami Desert across South Australia, Western Australia, and the Northern Territories. Australia has one the world’s longest coastlines of 41,340 mi (66,530 km) along the Indian, Pacific and Southern Oceans, as well as the massive seacoasts along the Arafura Sea, Bass Strait, Coral Sea, Great Australian Bight, Gulf of Carpentaria, Tasman Sea, Timor Sea, and the Torres Strait. Australia’s major river basin includes the Darling-Murray that spans across New South Wales, Victoria, and Queensland. The availability of clean water resources is not a major issue for Australia’s population centered in the temperate zone regions of New South Wales, Victoria, and Queensland. Yet Australian cities, such as Adelaide and Perth, are increasingly subject to drought and water shortages that indigenous peoples in the outback experience. An estimated over one million Australians, or 6% of the population, do not have access to adequate clean and safe water or adequate sanitation. This is particularly the case in the arid and desert regions of Queensland, South Australia, and Western Australia.
In addition, over 3.3 million Australians may be at risk of water shortages in the future if the precipitation levels continue to fall across the nation. As Australians span beyond the southern temperate zones to regions facing desertification and drought, desalination plants and water conservation and recycling and water distribution networks will become increasingly important.

### 4.4.1.2 Food

Although 6% of Australia’s land is in productive agricultural use, particularly along its Murray-Darling river basin, it has the potential to expand its arable lands by an additional over 325,000 mi² (842,000 km²) (Blagrove, Hundloe, & Ditton, 2016). Water supplies are a challenge as bushfires and drought exact a toll on the important sheep and wheat farms of Queensland and Western Australia. Food insecurity and hunger remain a problem for over 3.3 million Australians, especially in its isolated regions and among its indigenous peoples. Overcoming the distributional obstacles across this vast land remain important. Moreover, harvesting sea food resources off its vast coastlines will also alleviate food insecurity and hunger in the coming decades.

### 4.4.1.3 Health Care

Australia has excellent health care outcomes at over 93% of the Japan benchmark. However, its health care system capacity is at 38% of its potential. Over two million Australians in the outback and rural regions still need improved access to basic care. This is particularly the case with the indigenous Aboriginal peoples of the Northern Territory and West Australia, and the Torres Strait Islanders of Queensland. Cardiovascular diseases and cancer are significant causes of mortality across Australia. Over 23,700 Australians are HIV+ and close to 285 lives are lost to AIDS annually. Moreover, Australia has comparatively low mortality rates for road-trauma at over 1,300, suicides at 2,780 and homicides at over 190. Still, the loss of over 4,300 lives cost the Australian economy over USD 7.7 billion annually.

### 4.4.1.4 Education

At a literacy rate of 99%, Australia has excellent educational systems by world standards. Among Australia’s many outstanding postsecondary institutions are the Australian National University in Canberra, Monash University in Melbourne, the University of Melbourne, and the University of Sydney. Yet there are over 300,000 Australians remain illiterate and face social obstacles to full participation in Australian society. For example, Tasmania has the lowest literacy rates relative to those of other Australian states.
4.4.1.5 Environmental Health

Australia has a good environmental performance score of 74% and is striving for sustainable communities through judicious environmental planning (Byrne, Sipe, & Dodson, 2014; Cocklin, 2005). However, Australia’s ecosystem vitality is marginal and declining from its current 58%. Significant deforestation resulting from massive bushfires across large swaths of New South Wales and West Australia are problematic. These fires contribute to air pollution problems from high carbon dioxide, industrial and vehicle emissions. Poor air quality cost over 5,000 lives annually at an economic cost of over USD 9 billion. Australia’s most polluted regions include Brisbane, Gladstone in Queensland, and Port Hedland in Western Australia. Moreover, two notably toxic hot spots are the high sulfur dioxide emissions in Newcastle and the Lake Macquarie region in New South Wales, and the burning coal and mercury emissions in the Latrobe Valley in Victoria. Moreover, over 30% of the nation’s agricultural land is severely degraded with high levels of salinity that are the result of overirrigation. The loss of biodiversity across Australia is of catastrophic proportions and the introduction of exotic animals and plants from abroad compounds the problem (Gergis, 2018). Environmental challenges and climatic changes directly and adversely affect over 7.8 million Australians.

4.4.1.6 Summary

Overall at over 81%, Australia has good humanitarian resources with adequate water resources, food resources, health care, and education relative to its small population. As a promising and young nation, the challenges are primarily distributional across its vast geographical territory with isolated communities and regions where over 3.4 million Australians do not have full access to these resources nor to clean environments. More focused national attention is needed on its indigenous peoples and populations in remote outback regions, where improved health care and education are needed. Moreover, its ecosystem vitality requires urgent national attention if its long-term environmental integrity is to be preserved, given changing climatic conditions across its vast land.

4.4.2 Socioeconomic Systems

Australia has the 11th strongest economy of the KSI nations with a GDP of over USD 1.3 trillion. The six key Australian regions, cities, and states include:

1. New South Wales (Sydney) with eight million.
2. Victoria (Melbourne) and Tasmania with 7.1 million.
3. Queensland (Brisbane) with over five million.
4. Western Australia (Perth) with 2.6 million.
5. South Australia (Adelaide) with 1.8 million.
6. Northern Territories (Darwin) with 300,000.

The main economic drivers are New South Wales, Queensland, and Victoria. Sydney may become Australia’s only megalopolis by 2080.

### 4.4.2.1 Fiscal Health

Australians have a high average per capita income of over USD 51,600. The highest per capita incomes are in New South Wales and Western Australia; the lowest being in South Australia and Tasmania. Australia has an unemployment rate of over 5% and with a poverty level close to 14% and a total of close to six million Australians living in socioeconomic distress. Through legislative reforms, Australia has evolved a very good taxation revenue base at 75% of its potential of over USD 650 billion (Krever & Mellor, 2010; Tiffen, 2017). Australia benefits from cogent accounting practices, legislative controls, and taxation structures that contribute to positive social development. Yet the equitable collection and fair distribution of tax revenues across states and socioeconomic classes under changing economic conditions will become an ongoing challenge as Australia’s population increases.

### 4.4.2.2 Corruption and Crime

At a score of 77%, Australia has low rates of corruption and excellent governance transparency. Substantial efforts have been made to curb bribery, criminality, embezzlement, illicit substance trade, human trafficking, money laundering, and terrorism. Yet, such activities still cost the Australian economy over USD 15 billion annually. Australia has one of the world’s lowest crime and homicide rates at slightly over 200 annually, the highest being in New South Wales and the Northern Territory.

### 4.4.2.3 Monetary Health

The Reserve Bank of Australia in Sydney controls the national monetary policy. Australia’s export performance is over USD 225 billion- close to 95% of its potential. With its major trading partners of China and Japan, the major Australian exports include minerals, such as aluminum oxide, bauxite, fuels and ores, slag, and titanium, as well as agricultural products, such as wheat and wool. Australia’s strong export performance will continue as innovative research and development in agronomic innovations, artificial intelligence, biotechnologies, desert habitation technologies, renewable energy management, ocean and water management technologies and robotics bears fruit. A common market and economic union with New Zealand would also be mutually beneficial, particularly for New South Wales, Tasmania, and Victoria. Stronger trade links with Bangladesh, India, Indonesia, and the emerging...
East African Federation will be increasingly important to the economic growth of West Australia. Increased trade with China, Japan, the Philippines, and Vietnam will particularly benefit Queensland and the Northern Territory. Australia’s its public debt-to-GDP ratio is over 40% and is of sufficient concern as to point to potential austerity measures in the future.

4.4.2.4 Summary

Australia has a good socioeconomic health score of 78%. Nevertheless, its future will depend on the elimination of public debt, the development and expansion of new export industries and markets, and the alleviation of socioeconomic distress of 4.5 million Australians, particularly for its indigenous peoples and those in its outback regions.

4.4.3 Infrastructure Systems

4.4.3.1 Transportation Systems

At 10.5%, Australia has critically underdeveloped transportation networks relative to its enormous territory. Its railway systems are only 7% and its airport capacity at almost 20%. Its major seaports are well-developed and include those in Brisbane; Fremantle and Port Hedland in West Australia; Melbourne; and Sydney. The future will see significant investments for new airports, railways, and roadways, as its population grows across Queensland, South and West Australia. Aside from its satellite base in Woomera in South Australia, the nation is developing spaceports with centers in Arnhem in the Northern Territory, in the Bowen region of Queensland and Whalers Way in South Australia.

4.4.3.2 Energy Systems

Relative to its small population, Australia has excellent hydro-electrical energy resources for its current needs. More specifically, it produces 245 billion kWh (875 billion MJ) out of a need of 240 billion kWh (846 billion MJ). The Snowy Mountains Hydro-Electric Scheme in New South Wales and Victoria is Australia’s largest with 16 major dams and nine power stations and provides over half of the nation’s total energy. Australia has one nuclear reactor at Lucas Heights in New South Wales. Moreover, Australia has enormous renewable energy potential through promising ocean, solar and wind technologies to meet its future needs.
4.4.3.3 Sociotechnical Development

At 85% of its capacity, Australia is among the world’s most technologically advanced with over 20.6 million netizens. Yet, there is still a digital divide between Australians, with lower Internet penetration rates among the indigenous peoples of Northern Territory and South Australia and among those living below the poverty level the nation. The Government is working hard to bridge this divide. Along with Canada and Japan, Australia will likely become a full knowledge society with pervasive artificial intelligence, nanotechnologies, robotics deployed throughout all its sectors by 2035.

4.4.3.4 Public Protection and Security

At 47% of its potential, Australia has weak public protection and security resource capacity, relative to its geographical size and population. Its defence forces engage over 57,000 people and police services at over 54,000 for a total of 111,000. Australia cannot effectively protect its coastlines nor its territorial integrity, particularly in its Western and Northern regions. Moreover, the nation is highly vulnerable to a wide range of national disasters and emergencies that include cybercrimes, cyclones, droughts, earthquakes, environmental mishaps, flash floods, heat waves, massive bushfires, mudslides, pandemics, sudden infestations, and terrorism. Mutual aid agreements with New Zealand and other Commonwealth nations and the USA are essential for Australia’s level of emergency preparedness. Ultimately, Australia must also expand its border control and security surveillance systems, cybersecurity, environmental protection, land and marine forces, paramedical and paramilitary capabilities.

4.4.3.5 Summary

Despite strengths in hydroelectrical capacity and socio-technical development, Australia has weak infrastructures at 44% relative to its population. National transportation networks remain underdeveloped and will require significant investments for new airports, railways, roadways, and seaports across its vast continental mass. Moreover, its public protection and security capabilities remain notably weak for its territorial size contributing to the nation’s high vulnerability. Its overall infrastructure will no doubt be strengthened concomitant with its population development and growth across its vast land in the coming decades.
4.4.4 Governance Systems

4.4.4.1 Population Management

Australia holds exceptional population growth potential this century with a population density of 8 persons/mi² (3 persons/km²). Even with a projected 2050 population of 34 million, Australia will remain an open space nation with an expansion capacity for immigrants of over 2.5 million each decade. Its frontier regions include Queensland, South Australia, Western Australia, and the Northern Territory. Over the coming decades, Australia’s immigrants will largely come from Bangladesh, China, the EU, India, Indonesia, Japan, the Philippines, the United Kingdom, the USA, and Vietnam.

4.4.4.2 Sociocultural Cohesion

The sociocultural stability of Australia stands at over 80% with English as the official language and unifying force. Christian adherents of over 60% of the population play a moderate cohesive role in integrating the nation. Over 9% or close to two million Australians are adherents to either Buddhism, Hinduism, Islam, or Judaism. The challenge will be to maintain its sociocultural cohesion as it opens new sustainable and viable communities from diverse nations. There are an estimated over 700,000 indigenous Austronesian peoples, or 3% of the population. This includes the Aboriginals of 650,000 across Australia and the Torres Strait Islanders of about 60,000 north of Queensland. The Aboriginals include the Koori and Wiradjuri peoples of over 220,000 in New South Wales; the Corroboree, Uluru Muruwari, and the Pama-Nyungan of over 195,000 in Queensland; and others with over 100,000 in West Australia and with over 70,000 in the Northern Territories and South Australia. There are several indigenous languages with Kriol being the largest with over 30,000 speakers. Reconciliation with and social justice for its indigenous peoples will be pivotal to the future of Australia as an Austronesian regional power.

4.4.4.3 Sociopolitical Systems

Australia is a federal constitutional monarchy with a Parliament composed of a House of Representatives with 150 seats and a Senate of 76 members representing six states and the Northern Territory. For Australia’s small population, the House has an excess of 30 seats at an estimated additional cost of USD 45 million annually. At an overall 60%, Australia has progressive female representation in Parliament. There are three major parties that are each supported by over 10% of the electorate, including the Australian Labor Party, the governing Liberal National Coalition, and the Green Party. The electoral processes include a runoff voting system to assure that a governing party will have over 50% of voter preferences. Tasmania is the only
state with less than one million and smaller than 58,000 mi² (150,220 km²). At 84%, Australia has an excellent sociopolitical effectiveness score, despite its small population.

### 4.4.4.4 Summary

Australia scores a marginal 57% in overall governance effectiveness. Its greatest challenges are the expansion of its populations into new sustainable and viable communities across its vast lands. The sociocultural cohesion of Australians will remain important, as will the inclusion of and social justice to its diverse indigenous peoples.

### 4.4.5 Systemic Priorities

As Bill Gammage (2013) stated: “We have a continent to learn. If we are to survive, let alone feel at home, we must begin to understand our country. If we succeed, one day we might become Australian.” Australia is a first-class nation with an unparalleled growth potential for the twenty-first century and beyond. Its overall national system score is a good 65%. As Australia confronts its national challenges, it will be at the forefront of world KSI nations in future decades. Australia faces ten key national priorities. **Population policy.** The expansion of its population and the planning of new sustainable and viable communities in Queensland, South Australia, Western Australia, and the Northern Territory are essential for Australia’s long-term future. **Environmental policy.** While assuring that biodiversity vitality is nurtured and protected, Australia needs to invest in renewable energy sources that will assure a greener and sustainable economy and vibrant ecosystems. **Fiscal policy.** The elimination of poverty, the expansion of employment opportunities for its youth and equitable and fair tax revenue redistribution are important. **Monetary policy.** The expansion of export markets through innovative new industries and the elimination of Australia’s public debt are vital to the nation’s future. **Water.** As the population increases and expands into the arid and desert regions of Queensland, South Australia and Western Australia, water security will pose significant challenges. Water conservation and recycling, the development of desalination plants and water distribution networks across Australia will become the order of the day. **Food.** The elimination of food insecurity and hunger through the expansion of agricultural lands and ocean and seafood resources is essential for future Australians. **Health care.** The extension of adequate health care to underserved regions remains an important challenge across its vast lands. Prevention strategies in cardiovascular diseases, cancer, infectious diseases, road trauma, and suicide are essential. **Indigenous peoples.** The humanitarian needs of Australia’s indigenous Aboriginals and Torres Strait Islanders to access to clean and safe water, sound physical and social environments and health care are a national priority if social justice is to be
served. **Transportation.** Australia needs to invest in cogent transportation systems to strengthen distribution and supply systems in the vast outback regions of Queensland, South Australia, Western Australia, and the Northern Territory. **Public protection and security.** Australia needs to expand the nation’s current public protection and security capacities, possibly through the creation of an Australian National Guard that might effectively respond to potential national emergencies.

### 4.4.6 Transformations

Australia is the East Pacific’s Sleeping Giant. Comparatively underdeveloped with a projected 2050 population of over 34 million, it is a young and developing nation that holds enormous potential for this century and beyond. Bangladesh, China, the EU, India, Indonesia, Japan, the Philippines, the UK, and Vietnam, it will be a major source of new Australian immigrants. For the next 30 years, Australia will maintain strong links with both the UK and the USA. As China and India become world superpowers, Australia’s socioeconomic future will become more closely interlinked to these two global giants by the end of the twenty-first century.

#### 4.4.6.1 Towards the Republic of Australia

Australia has not yet come of age, nor has it quite found its place among the world’s KSI nations. With growing internal republicanism and given its sociocultural and geographical distance from the United Kingdom (UK), the nation will likely become a Republic by 2050. It will likely retain its parliamentary system, with a President as Head of State, rather than the British monarchy. Moreover, in keeping with other members, Australia will likely remain an integral part of the Commonwealth given its strong historical ties with the UK.

#### 4.4.6.2 Anzac Union?

By 2050, it is likely that Australia will form an economic and political union with New Zealand (Aotearoa) with a common currency (Grimes, 2000). Until then, both nations will harmonize a broad range of national policies, as have the EU member states. The New Zealand territories of the Cook Islands, Niue, Tokelau, and Tuvalu will likely become part of this union, as might well the territories of French Polynesia, New Caledonia, and Wallis and Futuna. Other nations such as Fiji, the Solomon Islands, and Tonga may also become part of this Union. In doing so, Australia will become a Polynesian nation and a major KSI nation throughout the South Pacific.
4.4.6.3 The Coming Austronesian Conflicts

Australians will no doubt come to terms and reconcile with its indigenous populations in the twenty-first century. In doing so, Australia may also redefine itself as both an Austronesian and Melanesian nation. This will open the doors to cultural, economic, and political integration with the Bismarck Islands, Papua New Guinea, New Caledonia, and Vanuatu that may become future Australian states. Alternatively, Papua New Guinea may become the core of an emerging new United Federation of Melanesian nations that will likely become a satellite state of China. As another potential scenario, Indonesia with its enormous population will likely exert significant pressures on Papua New Guinea to become integral state of its republic. The entire island of New Guinea could potentially accommodate and attract an extra 20 million more residents. Therein lies the potential regional conflict. The populations of Papua (Jayapura), Papua New Guinea (Port Moresby) and West Papua (Manokwari), are predominately Melanesian and Christian, as are Moluku (Ambon) and North Maluku (Sofifi) in Indonesia. By the middle of the twenty-first century, this region may become as volatile, as the Balkan regional states in Europe were in the past century. Australia may well be increasingly engaged in the coming regional conflicts. Diplomacy, peaceful mediation, and social justice will become paramount in this part of the world where population pressures and the need for extra living space and resources may become unrelenting.

4.4.6.4 A Pacific Treaty Organization?

The emerging dominance of China and Indonesia will challenge the independence of many Pacific island nations and territories, such as the Federated States of Micronesia, Guam (USA), North Mariana Islands (USA), and Palau and may pose a threat to Australia. A Pacific Treaty Organization between Australia, Japan, Papua New Guinea, the Philippines, New Zealand, and the USA might form, modeled on the North Atlantic Treaty Organization. This new organization may include many vulnerable Pacific nations, such as the French Polynesia, Kiribati, Marshall Islands, Nauru, New Caledonia, Samoa, the Solomon Islands, Tonga, Tuvalu, and Vanuatu. However, as both China and Indonesia grow and strengthen as KSI nations after the middle of the twenty-first century, this trans-Pacific alliance may indeed be transitory, as Australia aligns itself more closely with these cogent KSI nations of the East Pacific ecosphere.

4.5 East-Pacific KSI Ecosphere Summary

The American futurist, Herman Kahn, asserted that Japan would emerge as a world KSI nation (Kahn, 1971). Indeed, both Australia and Japan with their strong economies will become full technological societies by 2035 and will be the key KSI
nations of the East Pacific ecosphere between 2020 and 2060. They will also serve as strong planetary models, as China and Indonesia continue to develop as technological societies with their enormous populations. By 2060 Indonesia will become a preeminent Islamic force and leader in the Islamic world. After 2065, clearly China will come to dominate the East Pacific ecosphere and become a full global superpower, yet all four KSI nations of Australia, China, Indonesia and Japan will be critical determinants of the contours, direction, landscape and shape of tomorrow’s planetary society.

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