SUPPLY CHAIN ASSESSMENT AND ALIGNMENT FOR SPECIAL ECONOMIC DEVELOPMENT ZONE

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ABSTRACT

Purpose: The paper investigates the supply chain alignment for Northern Economic Corridor (NEC) as a rising special economic development zone in Thailand.
Design/methodology/approach: The paper assesses NEC using concepts of SEZ Competitiveness Model to analyze the demand and supply within the scope using Triple Helix model.
Findings: There are differences in targeting clusters in areas of interest. This is suggestive for devisingpromotion and support measures by government.
Originality/value: The finding will be used as input for developing NEC master plan.

Keywords: Special Economic Zone (SEZ), Northern Economic Corridor (NEC), BCG Economy

Introduction

Special Economic Zone (SEZ) has been used as a policy tool for stimulating economic development world-widely (Aggarwal, 2023; Walsh, 2022). Defined broadly, SEZs can be free-trade zones, industrial parks, economic development zone, science and technology park, etc. (Zeng, 2016).

Despite the variety of incentives, the objectives are to attract foreign investment within a specific geographic region ((Shah, 2008; Akinci and Crittle, 2008; Wang 2013). However, sustainable success is dependent on the political economy framework, rights of people, growth, sustainability, and supply-demand alignment (Moberg, 2015; Salangsing et al., 2019; Bartlett et al., 2019; Frick et al., 2019).

Special Economic Zone (SEZ) in Thailand

According to the official report from Thailand's Office of the National Economic and Social Development Council, Thailand's GDP was US$495.2 billion in 2022 with a real GDP growth of 2.6%. Thailand is the 9th largest economy in Asia. Bywhich the industrial and service sectors are the main sectors, accounting for 39.2% of GDP, Thailand is recognized as a newly industrialized country.

Before Thailand's latest 20-Year National Strategy and the 13th National Economic and Social Development Plan, SEZs in Thailand have been presented as industrial estate development. To date, there are 67 industrial estates in Thailand operated the by Industrial Estate Authority of Thailand and 42 jointly operated with developers (Krungsri Research, 2023). The incentives of the industrial estates are, for example, the right to receive non-tax privileges, the right to receive additional tax privileges, the right to receive exemptions of import duty, the right to receive exemptions of export duty, etc.

In 2015, Thailand launched a new SEZ theme as Border Economic Zones (BEZs), comprising 10 main border provinces of Thailand. The designated area was announced and incentives were offered such as additional corporate income tax exemption, reduction of corporate income tax, deduction of the costs of installation or construction of facilities, and permission to own land and employ foreign unskilled and skilled labor (Ramingwong et. Al., 2016).

In 2018, Thailand introduced the Eastern Special Development Zone Act, specifically promoting Eastern Economic Corridor (EEC), comprising 3 Eastern provinces, namely Rayong, Chonburi, and Chachoengsao, formerly known as the Eastern Seaboard in the 1980s. The EEC offers further incentives, e.g., the lowest personal income tax rate (17%) in Southeast Asia, a five-year work visa to investors, specialists, scientists, and matching grants for investment, R&D, innovation development, and human resources development.

EEC has been a concrete success investment-wise. In 2022, more than 45% of Thailand's FDI, accounting for US$8.5 billion, was within EEC (Board of Investment of Thailand, 2023).

Recently, in 2022, the National Committee for the Development of Special Economic Zones (see Figure 1) announced 4 new special economic corridors, namely NEC, NeEC, CWEC, and SEC (see Figure 2).

- Northern Economic Corridor (NEC), comprising Chiang Mai, Chiang Rai, Lamphun, and Lampang, targeting creative economy and digital businesses (Creative LANNA)
- Northeastern Economic Corridor (NeEC), comprising Khon Kaen, Udon Thani, Nakhon Ratchasima, and Nong Khai, targeting Bioindustries Food for the future
- Central–West Economic Corridor (CWEC), comprising Ayutthaya, Nakhon Phathom, Suphan Buri, and Kanchanaburi, targeting industries related to technology, innovation, and research
- Southern Economic Corridor (SEC), comprising Chumphon, Ranong, Surat Thani, and Nakhon Si Thammarat, targeting logistics and trade connectivity.

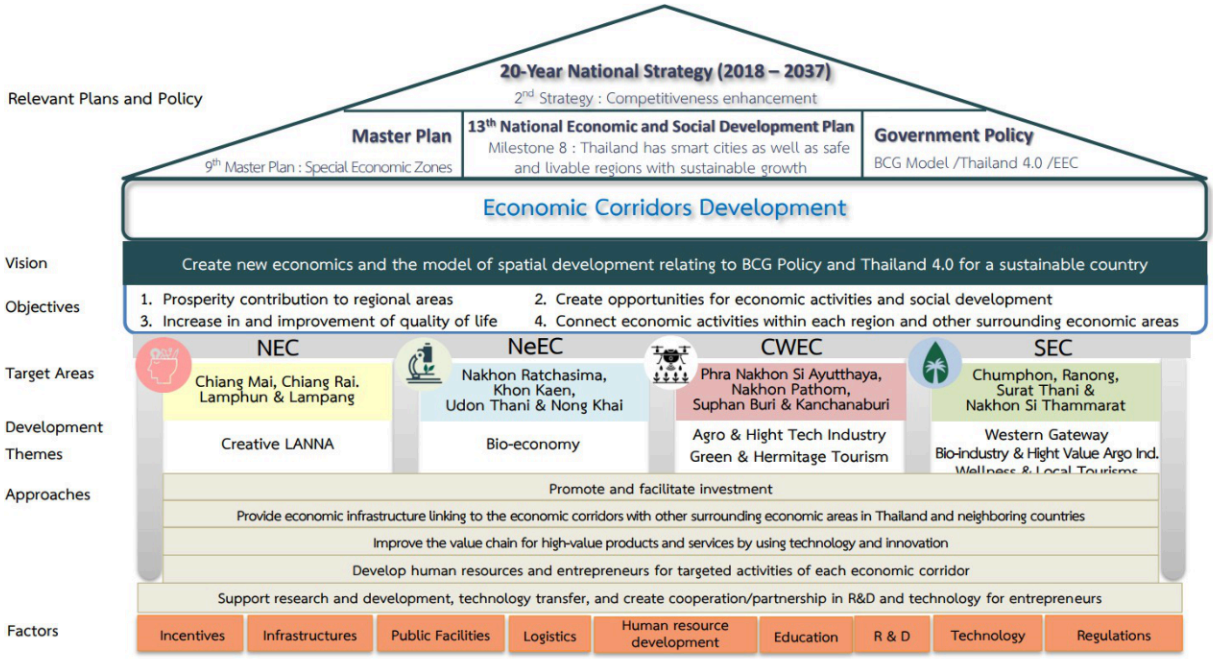

Figure 1: Thailand's Economic Corridors Development Program Framework (Source: nesdc.go.th)

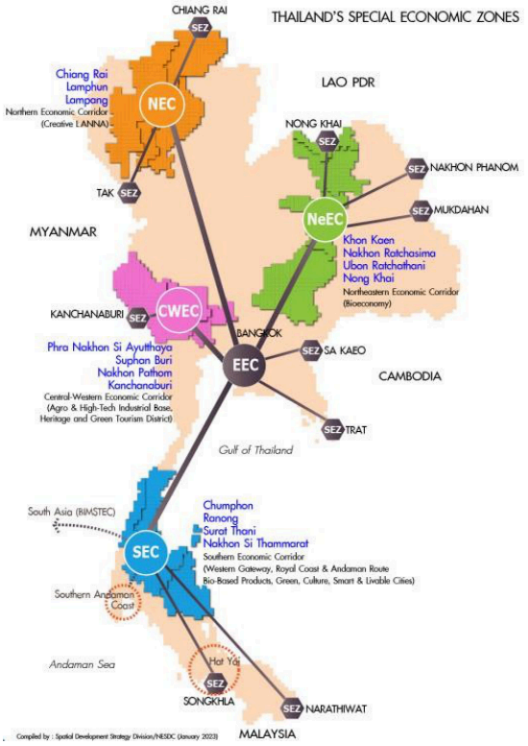

Figure 2: Thailand's economic corridors and border economic zones (Source: nesdc.go.th)

NEC in brief

The case study of the study is NEC. Where NEC is located in northern Thailand bordering Myanmar and Lao PDR as part of the Greater Mekong Subregion (GMS) (Banomyong, 2012), the geographic strength and international development potential of NEC are superior. The corridor aims at promoting sustainable development of the area with a creative economy, income equality, and quality of life while strengthening border security and increasing competitiveness and connectivity with neighboring countries. NEC scheme highlights Bio-Circular-Green Economy Model (BGC) with Sustainable Development Goals (SDG) for regional sustainable growth (Kongbuamai et al., 2022).

BCG Economy

Referring to publications from Scopus in 2013-2023, there are 79 papers related to BCG Economy. There are 4,268 references with 297 keywords. The document's average age is 3.7 per year. The topic's annual growth is 3.42%. Using Three Field Plot to preliminarily investigate the topics, it can be seen that Thailand is highly related to topics of Applied Science and Engineering Progress, Biodegradable Polymers, Blends and Composites, Agriculture and Natural Resources, etc (see Figure 3).

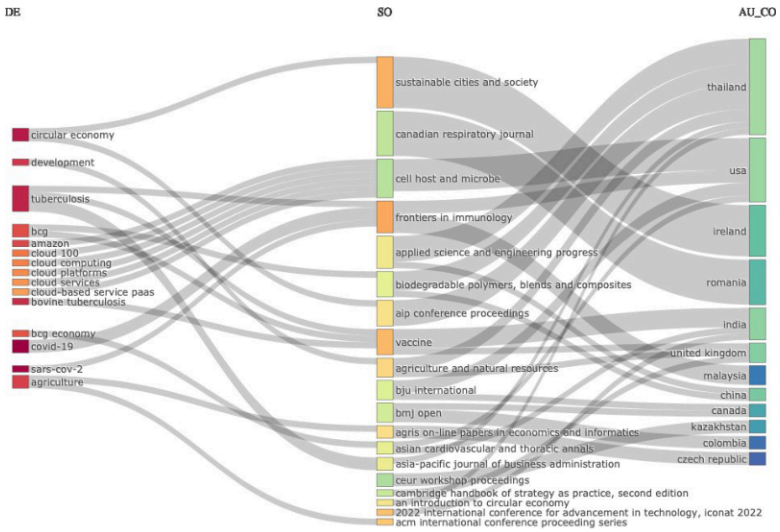

Figure 3: Bibliometric of BCG Economy (Source: Authors)

NEC Basic Information

The objectives of NEC are to create a creative ecosystem for creative cities, support creative products and services development, promote brands and marketing for the creative industry and develop creative R&D, and support the workforce in the creative industry. The approaches of SEZ are to promote and facilitate investment, provide economic infrastructure linking to the economic corridors with other surrounding economic areas in Thailand and neighboring countries, improve the value chain for high-value products and services by using technology and innovation, develop human resources and entrepreneurs for targeted activities of each economic corridor and support research and development, technology transfer, and create cooperation/partnership in R&D and technology for entrepreneurs.

Table 1 summarizes basic information on 4 provinces within NEC. Gross Provincial Product (GPP) at current prices, GPP Per capita, GDP share by sectors, and population are reported by Thailand's Office ofthe National Economic and Social Development Council in 2021. Strengths are taken from literature as well as interviews with related stakeholders.

		Chiang Mai (CMI)	Chiang Rai (CRI)	Lamphun (LPN)	Lampang (LPG)
GPP (Million THB)		239,981	103,000	88,614	73,161
GPP per Capita (THB)		133,306	90,203	226,464	104,744
GDP share by main sectors	**Agriculture**	18.9%	22.8%	14.1%	11.1%
	Industrial	12.4%	11.2%	55.8%	34.6%
	Services	68.5%	65.9%	30.0%	54.2%
Population (1,000 persons)		1,798	1,142	391	698
Area (sq.km.)		22,135	11,503	4,478	12,488
Economic Strengths		The second largest city in Thailand; well-developed logistics; human capital	Border with Myanmar and Lao PDR, connecting to China PRC	Industrial estate	Energy and green energy plan in 30 years

Chiang Mai is the biggest economy in NEC and is also mostly populated and largest in terms of area. In the non-agriculture sector, wholesale and retail, and manufacturing is the mostly contributed to ChiangMai'seconomy with upto 13.4% and 10.0% share of GDP, respectively.

Chiang Rai is the northernmost city of Thailand, neighboring Myanmar and Lao PDR. On top of that, thereare 253-km.-R3W highway in Myanmar and 228-km.-R3E highway in Lao PDR that extendedly connect Thailand to China (Ruth, 2008).

Lamphun is a small province but highly known as the northern industrial hub, thanks to the Northern Industrial Estate. With more than 80 large multi-national factories located within the estate, the supply chain, supporting industries, and businesses in the area have enjoyed constant economic growth. GPP per capita of Lamphun is the highest among NEC and other northern provinces of Thailand.

Lampang is the second largest city in the north. 15.7% of Lampang's GDP is from mining and quarrying activities as Mae Moh Power Plant, the largest coal-fired power plant in Southeast Asia, is there. However,according to Mae Moh's roadmap by the Electricity Generating Authority of Thailand (EGAT), the plant willbe closed, and green and clean energy will replace the power generation within the next 30 years.

NEC Targeted Clusters

Based on the potential of the area, the National Economic and Social Development Council has introduced4 targeted clusters, i.e.,

1. Creative Industry (CI), e.g., R&D centers, Product Design centers, Products for Lifestyle, MovieTown
2. Digital Industry (DI), e.g., Digital Park, Data Center, Cloud Service
3. Wellness and Tourism Industries (WTI), e.g., Amusement parks, Cultural centers, Museums, Thaiwellness services
4. Agricultural and Food Industries (AFI), e.g., GAP farming products, Organic farming products,Future Food, Products from natural extracts, including Agricultural and food industrial estate

Assessment and Alignment Methodology

The paper presents an investigation of the supply and demand analysis to see if they are aligned. The SEZcompetitiveness model, triple helix model, and supply-demand analysis are combined and used as the guideline of the investigation (Wahyuni et al., 2013; Leydesdorff, 2000; Cornwall and Cornwall, 2002)

SEZ Competitiveness Model

SEZ Competitiveness Model (Wahyuni et al., 2013) gives significant to 5 factors including (1) input factors,i.e., natural resources, human resources, and physical infrastructure, (2) quantity and cost, i.e., scientific, and technological infrastructure, administration infrastructure, (3) role of the government, (4) SEZ performance, i.e., contribution to GDP, and (5) related & supporting industries, i.e., presence of capable, locally based suppliers.

Triple Helix

The Triple Helix model is a framework describing the collaboration between universities, industries, and government in the development of an innovation-driven economy (Santonen et al., 2015; Galvao et al., 2013).

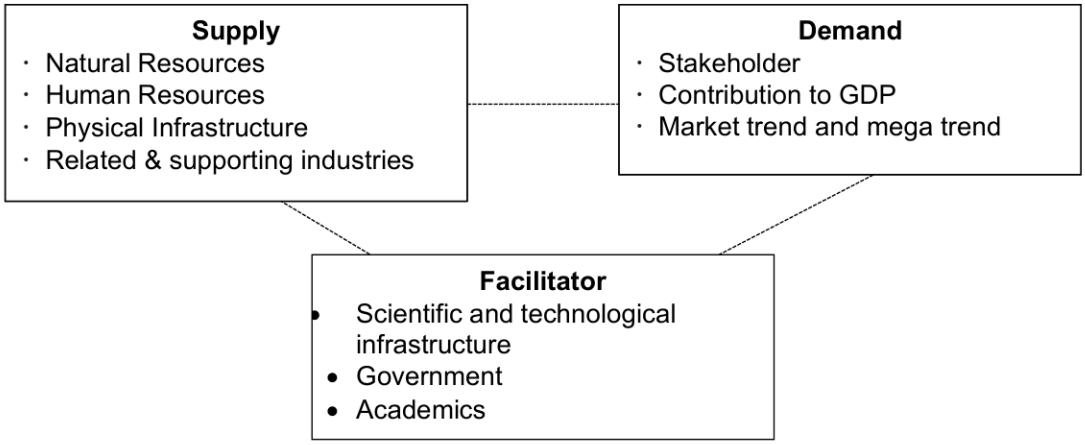

Figure 4: Supply and Demand Alignment Framework

Supply Chain Assessment and Alignment - Supply-Demand Analysis

To gain critical information of interest (see Figure 4), a series of focus groups and interviews with key stakeholders have been held during 2023. The information also comes from the intensive review of published provincial strategy plans, news, and white papers from related parties such as the Federation of Thai Industry chapters, provincial Chambers of Commerce, universities, etc.

The focuses are on the demand and supply alignment as well as the supportment by related parties. The assessments are as in Table 2 and Figure 5.

		Chiang Mai (CMI)	Chiang Rai (CRI)	Lamphun (LPN)	Lampang (LPG)
Creative Industry (CI)	**Demand**	· Lanna and Heritage culture · High-touch handicraft		· textile and garment	· traditional and advanced ceramic
	Supply	· distinctive craftsmanship · skilled labor availability	· artistic city · handicraft	· distinctive craftsmanship	· raw materials · strong ceramic industry
Digital Industry (DI)	**Demand**	· needs from service sectors	· needs from the logistics and tourism sectors	· needs from the industry and agriculture sectors	· needs from the industry and agriculture sectors
	Supply	· Digital Nomads · Co-working space			
Agricultural and Food Industries (AFI)	**Demand**	· Needs for food safety	· Border connectivity - exporting	· Food processing	
	Supply	· Northern food valley			
		· R&D facilities	· Border connectivity – imported supply · Tea, coffee, herb	· Agriculture and food industry	· Geographical logistics hubs for northern Thailand

			· R&D facilities		
Wellness and Tourism Industries (WTI)	**Demand**	· Top tourist destination Long stay destinations	· Wellness Industry · Border connectivity		Connectivity to secondary tourism cities
	Supply	Medical hub	· Sports and · recreation activities		· Medical hub in the specializedarea

Table 2: Demand and Supply within NEC

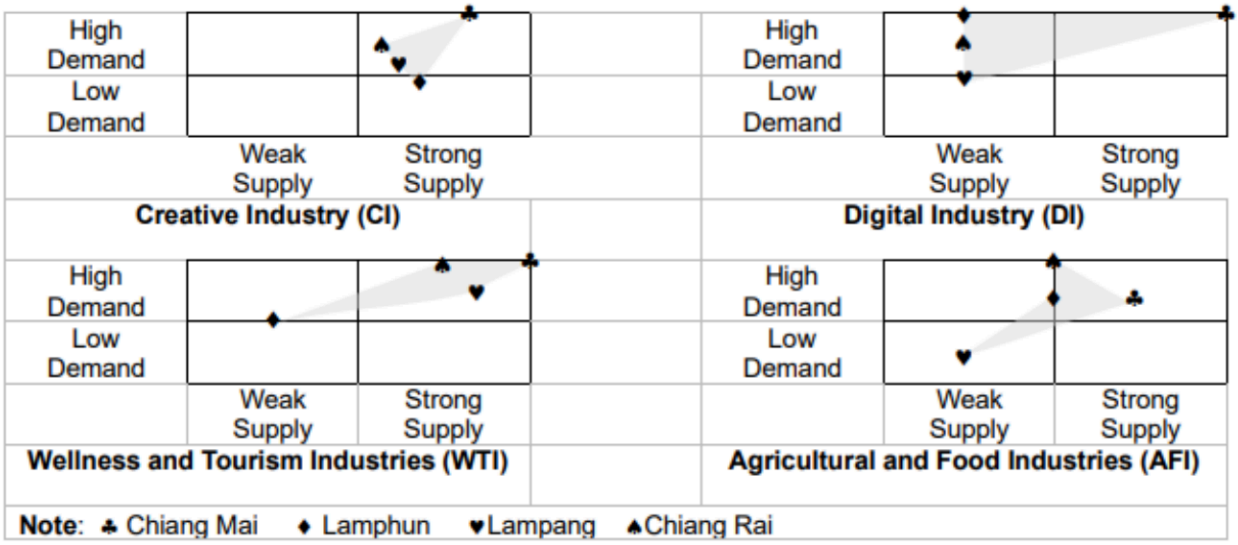

Figure 5: Demand and Supply Alignment within NEC

The Creative Industry (CI) is the only nominated sector of NEC due to the unfair advantage of the rich Lanna and heritage capital, delivered by a variety of Lanna high-touch products and cultural soft power. The by-born LANNA identity is supportive of NEC tourism industry as a whole.

The strength of the Digital Industry (DI) is quite questionable where technical, business, and creative roles in NEC are rather sparse. However, the demand for supporting other industries is undoubtfully high.

For Wellness and Tourism Industries (WTI), it is conclusive that NEC is a well-known tourist destination. The medical hub has been strongly promoted and invested as well as a wide range of wellness facilities to support the movement of the target visitors. NEC can provide both quality and competitive services at satisfactory prices.

Agricultural and Food Industries (AFI) are the backbone of Thailand. However, the traditional players have marginal bargaining power in the global supply chain. Thus, the setup of Northern Thailand Food Valley as a quadruple helix project within the region is used to promote the industry using R&D and collaboration to explore new sectors such as functional food, elderly food, novel food, extraction technologies (Ramingwong and Tippayawong, 2014).

Supply Chain Alignment - Closing Gap

NEC has a big target of doubling NEC's GPP within 5 years. This is a colossal challenge.

The findings here are only considered a preliminarily input for an ongoing NEC master plan development where the strengths of each industry and each province will later be combined vertically and horizontally

Aligning the AS-IS situation with the TO-BE scenarios, closing gap projects will then be explored. The master plan shall drive the development direction in the aligning scheme. In addition, the flagship projects will be investigated and proposed as the NEC stimulus. Detail includes responsible, stakeholders, timeline, activities, and impact. The project will be aligned with other corridor investments, such as infrastructure, human capital development, and regulations.

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