DEVELOPING INLAND CONTAINER DEPOT (ICD) FOR THE INDO-CHINA INTERSECTION LOGISTICS CENTER: CASE STUDY OF PHITSANULOK PROVINCE

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ABSTRACT
The Asian Development Bank (ADB) had an initiative to determine a regional plan of developing North-South economics corridor and East-West economics corridor in Indo-China region. Such development addresses a multi-sectoral perspective, spatial development options, and practical infrastructure, human resource, policy, regulatory and institutional barriers to trade, investment, and the movement of goods and people. Considering an intersection of both corridors, Phitsanulok province is located right at the section and has become a logistics center of Indo-China intersection. Phitsanulok is one of the Northern provinces that has sufficient infrastructure and transportation network, covering road, rail, air, water, and pipe transportation modes. It is therefore appropriate for Phitsanulok to be ICD of Indo-China intersection in the future that may serve trade/commodity flow among Greater Mekong Sub-region countries. This study is aimed at 1) analyzing how feasible the ICD can be located at Phitsanulok province and 2) reviewing a plan covering the linkage among the four phases of the Phitsanulok logistics center (DC, multimodal transport, ICD, and logistics cluster sectors.

KEY WORDS
Inland Container Depot, Logistics Center, Phitsanulok, Indo-China

1. Introduction
Thailand has played a key role and is aimed at becoming the hub of transportation in the Greater Mekong Sub-region (GMS) by 2006. In order to accomplish this ultimate goal, logistics is being employed as a strategic plan to gain a competitive business advantage. The concept of logistics will put Thailand in the position of becoming a transportation hub and a distribution center in the GMS. Thailand could subsequently compete with global competitors through a reduction of logistics costs. The logistics costs for Thailand are presently around 16.8% of Gross Domestic Product (GDP), whereas the logistics costs for the US and Japan are approximately 6% of GDP. This policy allows public and private sectors to become more enthusiastic in conceiving a concept of logistics. Examples of public sectors being interested in logistics include: Ministry of Transport, Ministry of Commerce, and Ministry of Industry. In addition, the Office of the National Economic and Social Development Board conducted a study of logistics and supply chain management and established a steering committee in cooperation with private organizations such as the Thai National Shippers’ Council, the Thai Chamber of Commerce, and the Federation of Thai Industries. Nowadays, every organization pays close attention to the concept of logistics and supply chain management. Individual organizations have integrated the concept of logistics into their strategic planning and company objectives.
In considering the cluster of both Phitsanulok and nearby provinces in becoming logistics centers in Indo-China, the team project 1) gathered data from several public and private organizations, 2) interviewed organizations involved, 3) formulated focus groups with entrepreneuships in nearby areas, and 4) conducted surveys by using questionnaires. Afterward, the project team took the collected data for further analysis and drew a reasonable conclusion, as well as proposed a development plan that is illustrated in the following phases:

- Phase 1 (2005 and beyond), establishing the distribution center (DC)
- Phase 2 (2007 – 2017), developing multimodal transportation continued from establishing the DC
- Phase 3 (2012 – 2017), developing an inland container depot (ICD) continued from establishing the DC
- Phase 4 (2015 – 2022), developing logistics cluster sector (LCS)

Due to the fact that there have been several research conducted to investigate the first and second phase of Phitsanulok becoming the DC and multimodal transportation, ICD, and logistics cluster sectors, respectively. Therefore, this research will focus on investigating a developed ICD for the Indo-China Intersection Logistics Center.

2. Review of Literature

2.1 Definition of ICDs

ICDs are a common user facility for handling/temporary storage of import/export laden and empty shipping containers. Transhipment of cargo can also take place from such terminals and the Customs clear goods at the ICD. No Customs clearance is required at gateway ports thus it increases trade flows and also decongests seaports. At the ICD, the container is unsealed and examined in the presence of the customs examination staff. During examination, a certain percentage of the packages are opened and this percentage is determined by the risk factors that are evaluated by the Custom department on the basis of risk assessment techniques. The importer is required to make the necessary arrangements for the speedy de-stuffing of the cargo in conformance with the examination orders given by the Appraising Groups (Sakhuja, 2005). The concept of the construction of an Inland Container Depot (ICD) was developed in order to support the importation and exportation of the country in conjunction with the new deep seaport at Laem Chabang on the Eastern Seaboard.

Figure 2: Inland Container Depot

An example of ICD the site for ICD was chosen to be an area near the Lat Krabang Industrial Estate, approximately 30 kms east of Bangkok. The construction of LICD was completed in 1995. It was divided to 6 independent modules leased out to private sector operators but the facility is managed by SRT. Owing to the rapid increase in containerised shipping movements through the port of Laem Chabang, the very considerable expansion of industrial and associated activities on the Eastern Seaboard has placed increasing demands on the use of the LICD. The point has been reached where the size and capacity of the present LICD will shortly be exceeded by traffic demand particularly when the Track Doubling Project in the eastern line was completed in 2003.

2.2 Literature Survey

Lee and Oum (2001) proposed the strategies for making Korea a Northeast Asian Logistics/Distribution Hub country. After summarizing the recent trends of multinational firms’ logistics and distribution practices and the conditions of successful logistics hubs, we identified the potential advantages of Korea over Japan and China, and examined the success cases of the Netherlands and Singapore. This allowed us to make a number of suggestions to help make Korea attractive to foreign multinationals as the place to locate their northeast Asian regional distribution centers.

Chin and Tongzon (2001) studied transportation Infrastructure Management for Attracting Global and Regional Distribution Centers in Singapore. The success of Singapore as a major transshipment hub must due to the presence of a worldclass transportation system with worldclass players such as SIA and PSA capitalizing on Singapore’s comparative advantage in location, which began with the development of the port followed by air and land. The land, sea and air sectors have taken an independent approach to development and investment in the past. Multi-modalism in the cargo industry demands instant acquisition, processing and analysis of data,
thereby logistics is that vital link to enhancing production, distribution and consumption.

State Railway of Thailand (SRT) (2003) stated that it engaged the Consultant in 2000 - 2001 to undertake the study to identify improvements to the rail layout in both the internal and external yards and the operation of the Lat-Krabaang rail terminal that will improve the rail capacity of LICD to meet foreseen needs and to develop detailed plans for SRT to implement their solution in each phase of the development. The study concludes that to increase train movements there must be infrastructure improvements for access and the yard components. However, for the ICD railhead component the increase in train movements can be achieved by operational improvements to reduce the loading / unloading time of trains. It is, therefore, not necessary to improve the existing railway infrastructure in LICD. The project cost is estimated at 138.76 million Baht. The capacity shall be increased to 1,000,000 TEU per annum. The Government has allocated budget for this Project. Presently, the improvement of access and yard together with the extension of siding track length and additional turnouts at Don Si Non, Siracha and Laem Chabang Station were completed. In addition, stabilizing yard is under the process of land acquisition. It is expected to start construction in September 2003 and be completed in 2004 [9].

Sakhuja (2005) mentioned that the Shipping Ministry’s proposal for a dedicated railway freight corridor between the ICD, Tughlakabad, Delhi and the Jawaharlal Nehru Port Trust (JNPT) Mumbai was aimed at providing an impetus to container movement between the two terminals. The proposal comes in the wake of rapidly increasing demand from the exporters in northern India. Besides, the ICD Tughlakabad-JNPT corridor is currently facing severe capacity constraints with wagon deployment touching 140 per cent and which may go as high as 180 per cent in next few years. However, ICD Tughlakabad is the weak link in the container transportation system in the country. All commodities were being imported through ICD, major items being machinery, electronic goods, plastic, chemicals, motor vehicles and parts and metal and metal scrap. On export side major items being exported through ICD were leather garments and leather products, readymade garments, machinery, agricultural products especially rice [8].

The above literatures related to ICD and logistics center are used as a reference to indicate the potentiality of successful logistics hubs in which Thailand is finally aimed at becoming the logistics hubs in Indo-China. Therefore, the ICD located Lat-Krabaang rail terminal, ICD, Tughlakabad, Delhi, or logistics center located in Korea and Singapore may be exemplary for Phitsanulok becoming the ICD of Indo-China Intersection.

3. Concepts of ICDs

3.1 Functions

The primary functions of ICD may be summed up as under:
- Receipt and dispatch/delivery of cargo.
- Stuffing and stripping of containers.
- Transit operations by rail/road to and from serving ports.
- Customs clearance.
- Consolidation and desegregation of LCL cargo.
- Temporary storage of cargo and containers.
- Reworking of containers.
- Maintenance and repair of container units.

3.2 Operations

The operations of the ICDs revolve around the following centres of activity:

3.2.1 Rail Siding (in case of a rail based terminal)
The place where container trains are received, dispatched, and handled in a terminal. Similarly, the containers are loaded on and unloaded from rail wagons at the siding through overhead cranes and / or other lifting equipments.

3.2.2 Container Yard

Container yard occupies the largest area in the ICD. It is stacking area were the export containers are aggregated prior to dispatch to port, import containers are stored till Customs clearance and where empties await onward movement. Likewise, some stacking areas are earmarked for keeping special containers such as refrigerated, hazardous, overweight/over-length, etc.

3.2.3 Warehouse

A covered space/shed where export cargo is received and import cargo stored/delivered; containers are stuffed/stripped or reworked; Less than Container Load (LCL) exports are consolidated and import LCLs are unpacked; and cargo is physically examined by Customs. Export and import consignments are generally handled either at separate areas in a warehouse or in different nominated warehouses/sheds.

3.2.4 Gate Complex

The gate complex regulates the entry and exists of road vehicles carrying cargo and containers through the terminal. It is place where documentation, security and container inspection procedures are undertaken.
3.3 Benefits of ICDs

The benefits as envisaged from an ICD are as follows:

- Concentration points for long distance cargoes and its unitization.
- Service as a transit facility.
- Customs clearance facility available near the centers of production and consumption
- Reduced level of demurrage and pilferage.
- No Customs required at gateway ports.
- Issuance of through bill of lading by shipping lines, hereby resuming full liability of shipments.
- Reduced overall level of empty container movement.
- Competitive transport cost.
- Reduced inventory cost.
- Increased trade flows.

3.4 Traffic

The traffic flows between Inland centers of production and ports need to be analyzed with reference to:

- Commodities
- Directional-split (Imports/Exports).
- Proportions of less-than-container load (LCL) & full-container-load (FCL).
- Forecast of future growth.
- Modes of transport available.
- Possible reduction in tonne per kilometers or box per kilometers costs.

3.5 Facility

The facility has to be economically viable for the management and attractive to users, to the railways for full train load movements; to other transport operators; seaports; shipping lines; freight forwarders etc. must have certain minimum amount of traffic. The prospective entrepreneurs are, therefore, strongly advised to study very carefully the viability of the project from the TEU traffic availability point of view.

In the background of growing international trade, the infrastructure facility may have to precede the actual generation of demand. This is particularly important as such facilities have a long gestation period for being fully operationalized. Though it is not proposed to lay down any minimum TEU figures as part of the criteria for approval of ICDs, following is suggested indicative norms: ICD – 6,000 TEUs per year (two ways)

3.6 Land Requirements

The minimum area requirement for ICD would be Four Hectare. However, a proposal could also be considered having less area on consideration of technological upgradation and other peculiar features justifying such a deviation.

3.7 Design and Lay-Out of ICDs

The design and layout should be the most modern state-of-art equipped with mechanical/electrical facilities of international standards. Key to a good lay-out is the smooth flow of containers, cargo and vehicles through the ICD. The design and lay out should take into account initial volume of business, estimated volume in 10 years’ horizon and the type of facilities exporters would require. The initial lay out should be capable of adaptation to changing circumstances. The design broadly should encompass features like (rail) siding, container yard, gate house and security features, boundary wall (fencing), roads, pavements, office building and public amenities. The track length and number of tracks should be adequate to handle rakes and for stabling trains where relevant.

The perimeter fencing and lighting must meet the standards required by Customs authorities. The gate being the focal point of site security should be properly planned. The administration building is the focal point of production and processing of all documentation relating to handling of cargo and containers and its size will be determined by the needs of potential occupants. Fixed provisions should be made for sanitation facilities and possibly a food service facility. A good communication system and computerization and web based EDI connectivity is essential. Following Infrastructure should be available at the ICDs:

- Provision of standard pavement for heavy duty equipment for use in the operational and stacking area of the terminal. In cases where only chassis operation is to be performed, the pavement standard could be limited to that of a highway.
- Office building for ICD, Customs office and a separate block for user agencies equipped with basic facilities.
- Warehousing facility, separately for exports and imports and long term storage of bonded cargo.
- Gate Complex with separate entry and exit.
- Adequate parking space for vehicles awaiting entry to the terminal.
- Boundary wall according to standards specified by Customs.
- Internal roads for service and circulating areas.
- Electronic weighbridge.
- Computerized processing of documents with capability of being linked to EDI.
3.8 Equipping the ICDs

The ICD would select most modern handling equipment for loading, unloading of containers from rail flats, chassis, their stacking, movement, cargo handling, stuffing/destuffing, etc. Following minimum equipment should be made available at ICDs (Reach stacker may not be mandatory:

Dedicated equipment such as lift truck (front end loader, side loader or reach-stacker), straddle carrier, rail mounted yard gantry crane, rubber tyred yard gantry crane, etc. of reputed make and in good working condition (not more than 5 to 8 years old) and equipped with a telescopic spreader for handling the 20 ft and 40 ft boxes. The equipment must have a minimum residual life of 8 years duly certified by the manufacturer or a recognized inspection agency. An additional unit of equipment should be provided when the throughput exceeds 8000 TEUs per annum or its multiples for lift truck based operations.

Terminals resorting to purely chassis-based operations do not require dedicated box handling equipment. Small capacity (2 to 5 tones) forklifts must be provided for cargo handling operations in all terminals.

3.9 Rail Head ICDs

The parties will be required to provide at their own cost all infrastructure facilities including land, track, handling equipment for containers, maintenance of assets including track, rolling stock, etc. as per extant railway rules applicable to private sidings. The cost of the railway staff would be borne by the party as per the prevailing Government policy.

4. Development of the Inland Container Depot in Phitsanulok

According to Lat-Krabang ICD, a study conducted by Brinkerhoff (1998) as cited in [9] addressed the issues of intermodal capacity on rail in Thailand in general, and the limitations on the rail facilities at LICD in particular. It was resulted from capacity constraints both in the terminal and on the rail access that became apparent.

The Phitsanulok Inland Container Depot (PICD) which will be Thailand’s third purpose-built ICD will originally designed for an effective annual capacity of approximately 500,000 TEU, based on the traffic patterns and growth rates. It is hypothesized that SRT will be able to manage to capture up to 50% of the container, and up to 50% of the container haulage between Laem Chabang and PICD in a competitive market. This research study provides recommendations described as follows:

1) There is a clear need for additional ICD facilities in Thailand, with strong demand in the Northern region, adjacent to the existing PICD site.
2) The site at Khonkaen should be expanded in preference to constructing a new ICD at Phitsanulok because of higher rate of return both financially and economically, including lower construction cost.
3) As financial rate of return is unlikely to be attractive to the private sector, therefore, the Government is likely to provide most of the funding for the project through SRT.
4) The cost estimates based on the use of RC for the track railhead and CY operating areas is approximately 5,000 million Baht (including land acquisition cost). SRT report of study would be required for a review by MOTC prior to further submit to the Cabinet for implementation approval.

5. Environment Analysis

A business environment analysis determining the ICD of Phitsanulok province may be analyzing by External Environment and Five Forces Competitive analysis. SWOT analysis will be also determined described as follows:

5.1 External Environment Analysis

5.1.1 Economy
Phitsanulok Municipality is located at the center of lower Northern Region of Thailand along the Nan River, which is approximately 400 Km from Bangkok and 300 Km from Chiang Mai. Phitsanulok has been developed as a transport hub of the lower northern region by rail, highway and air transport. Phitsanulok has about 90,300 of population in 18.27 Km2 of administrative area. The
surrounding Tambons (districts) have about 92,600 of the total population [11].

Municipality has been increased with the annual growth rate of 0.8 % during the past 5 years, while the surrounding Tambons records a rapid population growth with the annual growth rate of 2.8 % during the same period. Phitsanulok is fully urbanized and recent urbanization extends to the surrounding Tambons. Phitsanulok’s economy is mainly based on services, trade, tourism, education and administration as a center of the Lower Northern Region. A few industries, large military base and university are located in the surrounding Tambons. Major agricultural products in the surrounding Tambons are rice and corn [11].

5.1.2 Politics
Phitsanulok is one of the provinces in Thailand that has a CEO Governor managing the province with democracy. Phitsanulok has own provincial administration organization, regulation, and law, etc.

5.1.3 Transportation
Phitsanulok is a good starting point for a visit to the World Heritage site at nearby Sukhothai. The city can be reached by both rail and air, and is on the intersection of several major highways: Highway No.11 (Sing Buri - Lampang - Chiang Mai), Highway No. 12 (Tak - Lom Sak - Khon Kaen) and Highway No. 117 (Nakhon Sawan - Phitsanulok). Phitsanulok is home to Naresuan University, and Rajabhat Pibulsongkram University, as well as to a major Royal Thai Army base [11].

5.1.4 Social
The basis of the Phitsanulok customs and traditions lies in the family, whose structure is of bilateral descent. Like the Chinese and some other Asian peoples, the young are taught to pay respect to and follow the admonitions of parents, elders, teachers and Buddhist monks who, in the old days, formed a highly educated class.

The wat or Buddhist temple and monastery combined became the centre of the village such as Wat Prasri. It was the place where people attended rites and ceremonies, and observed feasts and festivals all the year round. Nowadays, due to the rapid advancement of technology, the traditional Thai way of living, especially in the big cities, has inevitably changed. However, it is still preserved to a large extent in the faraway rural areas where modern civilization has failed to penetrate [11].

5.1.5 International
Phitsanulok is located at the intersection between the GMS (Greater Mekong Sub-Region) North-South and East-West Economic Corridors. Both corridors are one of GMS programs, and had been endorsed for implementation by the GMS ministers which are described as follows:

The GMS North-South Economic Corridor (NSEC) is one of the 11 GMS flagship programs and was endorsed for implementation by the GMS ministers at the 11th GMS Ministerial Conference in Phnom Penh, Cambodia in November 2002. The Chiang Rai-Kunming via Lao PDR Road Improvement Project is one of the key subprojects under the NSEC. Currently, ferryboat service across the Mekong River is the only means of cross-border transport between Houayxay (Lao PDR) and Chiang Khong (Thailand) along this road. According to the feasibility study for the NSEC, there would be a considerable bottleneck along the corridor if a bridge across the Mekong at the said border crossing point is not constructed. Moreover, such a bridge will: facilitate trade between Yunnan Province of PRC, Lao PDR and Thailand, reduce transport costs in the Corridor, and increase the efficiency of moving goods and passengers [1].

The East-West Economic Corridor (EWEC) was endorsed by the 10th GMS Ministerial Conference in Yangon, Myanmar in November 2001. It encompasses a road link about 1,450 km long. When the undeveloped or missing sections are in place, it will be the only direct, continuous land route between the Indian Ocean (Andaman Sea) and the South China Sea. Completion of the Corridor will provide the basis for accelerating east-west economic cooperation and development. The corridor will link the following points: (i) Mawlamyine-Myawaddy in Myanmar; (ii) Mae Sot-Phitsanulok-Khon Kaen-Kalasin-Mukdahan in Thailand; (iii) Savannakhet-Dansavanh in Lao PDR; and (iv) Lao Bao-Hue-Dong Ha-Da Nang in Viet Nam. The Corridor intersects several north-south arterial routes: (i) Yangon-Dawei, (ii) Chiang Mai-Bangkok, (iii) Nong Khai-Bangkok, (iv) Route 13, in Lao PDR, and (v) Highway 1A, in Viet Nam. The EWEC will therefore play a critical role in providing access to ports for northeast Thailand and Central Lao PDR, as well as open greater opportunities to several medium-sized cities in the four GMS countries [1].

5.2 Five Forces Competitive Analysis
An analysis of industrial competitive condition will be done by using the Five Forces Competitive model. This model is a framework that describes how an industry grows, behaves and responds to five primary "external" and "internal" forces. The Porter 5 forces model is a framework for understanding the underlying structure of an industry or business segment, built around the five primary and dominating competitive forces that affect the
short, intermediate and long-term effects of an industry's size, strength, vitality, and profitability. The value of the 5 Forces model and subsequent analyses is to help understand and predict the behavior of the industry, and most importantly, the actions of rival companies.

5.2.1 Threat of new entrants
Phitsanulok is located at the intersection of Indo-China and can be accessed with different modes of transportation (i.e., road, rail, and air) from all regions. It has been proposed to accommodate with the master plan developed by the NESDB. Therefore, new entrants like Phitsanulok to start the ICD to compete with other provinces can be done by developing Phase 1 with a few numbers of operators such as NYK, Evergreen, Maersk, etc. This will not have obstacles in heavy investment for initial stage of development.

5.2.2 Bargaining power of suppliers
From the Phitsanulok’s economic condition standpoint, investment is made by small and medium enterprises and agricultural sector. Most of the products sold are likely to be agricultural product or one tambol one product (OTOP). Those entrepreneurs may not have own warehouses and distribution channel, therefore a cost product becomes lofty. Therefore, Phitsanulok may need to promote how its ICD could support the SMEs’ operations in cost reduction.

5.2.3 Bargaining power of buyers
A cost induced in wholesale and retail is currently high due to the lengthy distance between a factory and a retail outlet. If the ICD where can serve transportation service using road or rail transportation taken place, then those wholesale and retail will gain benefits from using the service. Therefore, there will be no bargaining power from ICD customers.

5.2.4 Threat of substitute products
Phitsanulok or other provinces in the northern part of Thailand has not yet developed ICD to serve customers in this region, thereby a development of PICD will provide opportunity for manufactures to transport products by using a container.

5.2.5 Rivalry among competing firms
ICDs have been planned to develop in different parts of Thailand such as Khon-Kaen, Nakorn-Swan, Phahonyothin, etc. Individual province governed by CEO governors has engaged the consultant to conduct the feasibility study to assist in determining for ICD development. Therefore, if such ICDs took place in the near future, they would be a major rivalry to PICD.

6. SWOT Analysis

6.1 Strengths
The PICD project may be developed and located nearby Bueng-Pra district that includes Bueng-Pra rail station and Phitsanulok Domestic Airport. By located in this area, this project could be integrated into Phase 2 - multimodal transportation which will be located in Bueng-Pra district as well. More importantly, PICD will be the Indo-China ICD linking Danang seaport, Vietnam, Laem-Chabang seaport, Thailand, and Moa-Lamaeng, Myanmar. This ICD may use both rail and road transportation by using existing railway among the GMS and roadway along the North-South and East-West Economics Corridors which could transport products among the GMS with lower cost, less time, and one-stop service including custom procedure. Developing PICD would increase the potentiality of logistical system in Thai industrial and service sectors. This would provide a credit for foreign investors to invest money in Thailand in the future that may support a policy of Thailand becoming a logistics hub in South-East Asia.

6.2 Weaknesses
Due to this project may lack of support from industrial and governmental sectors causing from high investment. Therefore, there should be a feasibility study conducted to evaluate an actual demand and market segmentation including the potentiality and capability of entrepreneurs fulfilling customer requirements. Moreover, a clarification of policy planning in developing transportation network or multimodal transport linking different modes of transportation such as rail, road, sea, air, and pipeline. If this issue had not been planned properly, it could have responded to an end customer efficiently. It is therefore for the Phitsanulok’s governor to systematically plan for the objective to be fulfilled according to its strategic policy. Additionally, the railway built from Phitsanulok province to a central part of Thailand is still a meter gauge (1 meter), and some part of the railway extending from Makkasan, Bangkok to Cha- Cheong-Sao is found to have a double-tracking system. From this point to Laem-Chabang seaport have not been fully developed for double-tracking. These matters would become weaknesses unless Thai government plans to develop a standard gauge (1.435 meter) and extend the railway to double-tracking.

6.3 Opportunities
The PICD project is one of the most interesting projects to have handling/temporary storage of import/export laden and empty shipping containers on land linking to three
different seaports among the GMS. This may increase business competitive advantage by using railway or roadway that could save cost and time. According to the Industrial Estate Authority of Thailand, there have been a number of factories increasing in the past few years with a support from Thai government. This may increase export and import of raw materials from overseas, resulting in an increasing volume of transportation.

The National Economic and Social Development Board (NESDB), Thailand found that logistics cost was 16.8% in 2005 due to its transportation system mostly appears to be road transport (88%). Only 2% was a percentage of rail transport being utilized. According to the Logistics Master Plan developed by the NESDB, a Hub and Spokes system has been introduced to promote ICD/CY, CY road-link, location planning, and port-related business project development. Furthermore, the NESDB plans strategically to develop Phitsanulok province to become the logistics center of Indo-China intersection in the future that may serve trade/commodity flow among Greater Mekong Sub-region countries. Therefore, Phitsanulok is chosen to be one of the potential provinces in Thailand to sustain Thai economy due to its geographical location.

6.4 Treats

The Lat-Krabang rail terminal that will be expanded from the existing facility has been officially approved by Thai cabinet. A development of detailed plans for SRT to implement the ICD is underway. Additionally, a governor of Khon-Kaen province engaged the consultant to conduct the feasibility study to assist in determining for ICD development. Thirdly, Nakorn-Sawan is also aimed at becoming ICD to transport rice that is thought to be a main product of its province sold to overseas or used for domestic consumption. Thereby, the above future ICDs would be a major competitor to PICD.

7. Conclusion and Recommendation

In summary, Phitsanulok province is thought to be more appropriate in becoming ICD in Indo-China. It also has an excellence infrastructure as well as is located at the intersection between the North-South and East-West Economic Corridors (Indo-China Intersection). According to the Logistics Master Plan developed by the Office of National Economic and Social Development Plan, Phitsanulok has been selected to be a Logistics Center of Indo-China Intersection. Therefore, this study reviewed the literature and identified how the ICD can be developed in parallel to External Environment, Five Forces Competitive analysis, and SWOT analysis. It was concluded that developing PICD would increase the potentiality of logistical system in Thai industrial and service sectors. This would provide a credit for foreign investors to invest money in Thailand in the future that may support a policy of Thailand becoming a logistics hub in South-East Asia.

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