Optimizing EEC Development via the Aerotropolis Strategy

Donmuang Airport

Suvarnabhumi Airport

Bangkok

Logistics Hub

Chachoengsao

New Chachoengsao City

Food Processing

Agricultural Technology

Chonburi

Next-Gen Automotive

Rayong

ECd

Tourism

Smart Electronics

Rayong

Food Processing

Agricultural Technology

New Pattaya City

Satthahin Port

U-Tapao Airport City

Aviation Industry

ECd

Map Ta Phut Port

Bioeconomy

New Rayong City

Eastern Rail Route

High Speed Train

Double Track Rails
Setting the Competitive Context

- Thailand and its Eastern Economic Corridor are at an industrial development crossroads as an increasingly fast-paced, globally networked economy is changing the rules of competition and business location.

- Strategic decisions and development initiatives being taken today will determine the 21st-century direction the EEC and the entire nation will go in terms of industrial mix, business competitiveness, foreign investment, job creation, and citizen prosperity.
Four Critical Challenges

1. Will Thailand and the EEC continue to successfully develop “new economy” high-tech (S-Curve) industries and high-value business services sectors complementing their traditional agriculture, manufacturing, and tourist sectors?

2. Will the EEC’s S-Curve industries and modern business services sectors be able to compete effectively throughout Asia and worldwide in the decades ahead?
Critical Challenges (cont’d)

3. Will job creation in the EEC over the next ten years achieve the goals in quantity, quality, and equitable opportunity set by government leaders?

4. Will logistics, industrial, and commercial development at and around U-Tapao International Airport be economically efficient, attractive, and environmentally sustainable presenting a positive first and last impression to air travelers and becoming an enduring magnet for new economy businesses and their talented workers?

How these four interwoven challenges are met will go a long way in determining the EEC’s future economic success and its leadership role in executing Thailand 4.0 policies.
The EEC Initiative in Very Brief Summary

- Flagship program for implementing the government's national strategic plan and Thailand 4.0 policy to create a more innovation-driven, higher-value-producing, high-income-status economy

- ฿1.5 trillion is being targeted from a combination of private and government-sector sources to four core areas: 1) improved multimodal transportation; 2) industrial modernization; 3) labor force upgrading; 4) and urban place enhancing throughout the EEC (Chachoengsao, Chonburi, and Rayong Provinces).

- EEC best situated to execute Thailand 4.0 policy due to existing assets and superior competitive advantages over other regions of the nation

- Once demonstrated successes are achieved in the EEC, they will subsequently be rolled out to other regions along with lessons learned.

- Focus will be on fully leveraging U-Tapao Airport, the three EEC ports, connecting multimodal infrastructure, and upgrading the region’s urban and tourist centers for S-Curve industrial and talent recruitment and boosting Thailand’s competitiveness in the new business environment.
The New Business Environment

1. Automation, including AI and robotics, is driving industrial modernization
2. Increased digitized parts in many contemporary products
3. Higher value-to-weight product ratios
4. Global sourcing and sales
5. Demand and supply conditions change rapidly and in unpredictable ways (market turbulence and uncertainty)
6. Customization and agility required (built to order, flexibility in production and market response)
7. Just-in-time manufacturing and time-definite delivery
8. The rapid growth of e-commerce, especially cross-border (global) e-commerce
9. Today’s customers can’t or won’t wait for e-commerce delivery
10. Speedy global and local connectivity is critical for business travelers and foreign tourists alike
11. Urban amenities and livability have become central to the location decisions of high-end businesses, talented labor, and affluent tourists.

**Bottom Line:** The fastest, most agile, best-connected, and most livable regions will capture modern global business (the aerotropolis strategy).
What is an Aerotropolis?

• An aerotropolis is an economic region whose business, industry, and tourism clusters are sustained by an airport and its integrated highway, rail, and port infrastructure.

• It consists of two components:
  1. the airport’s aeronautical, logistics, and commercial facilities, anchoring a multimodal, multifunctional airport city as its core
  2. outlying corridors and clusters of aviation-oriented businesses and industries that feed off each other and their accessibility to the airport and other key transport and urban nodes.
Aerotropolis Schematic with Airport City Core
(compressed version based on seventeen cases)
The Aerotropolis Actually Entails Three Forms

1. **Spatial Form**
   - Physically observable development
   - Airport city core and surrounding aerotropolis
   - Boundary sometimes set administratively

2. **Functional Form**
   - Non-spatial (often non-observable)
   - Boundary set by connectivity time to airport (regional construct)

3. **Connections/Linkages**
   - Air routes
   - Highways
   - Rail networks
   - Links to ports
The EEC spatial aerotropolis may be divided into four concentric zones:

1) Airport city, consisting of the airport’s commercial, industrial, logistics, and aviation infrastructure. This covers 6,500 rai surrounding the U-Tapao airport.

2) Inner aerotropolis stretching up to 10 km from the airport city (which is included).

3) Middle aerotropolis extending to 30 km from the airport.

4) Outer aerotropolis that makes up the remainder of the three EEC provinces.
Aerotropolis Boundaries
Defined by Transport Access Time
EEC Functional Aerotropolis
(shown in white with multimodal connections and linkages)

Source: EECO
The US Congress has defined an aerotropolis as ...

“a multimodal freight and passenger transportation complex which supports efficient, cost-effective, sustainable development in a defined region of economic significance centered around a major airport.”

But the aerotropolis is also a strategy

That is, a successful aerotropolis represents a coordinated set of infrastructure, commercial real estate, and government policy interventions that

1. upgrade airport-region urban and employment assets,
2. reduce ground-based transport times and costs, and
3. expand air route connectivity

to attract investment and leverage aviation-enabled trade in goods and services for municipal, provincial, and national competitiveness, job creation, and economic growth.
Why the Aerotropolis Strategy for the EEC? (Optimizing Time to Move up the Industrial/Commercial Value Chain)

• Time is not only cost; it is also currency for high-value goods and services trade.

• The shortest connecting time between two distant sites is a non-stop flight.

• High-value products and high-value businesspeople go by air: e.g., aerospace components, biomeds, semiconductors, smartphones, orchids, tiger prawns, business executives, corporate lawyers, investment bankers, marketers, and international media.

• 35% of the value of world goods trade already moves by air (much greater percentages for high-tech and business services exports as well as international tourism).

• Indeed, almost all high-tech supply chains are connected by air cargo (the Physical Internet).

Source: John D. Kasarda and Greg Lindsay, Aerotropolis: The Way We’ll Live Next (2011), IATA 2016
Air Logistics Supply Chain: Apple iPhone

- Finished iPhones
- Individual parts

© 2013 John Kasarda
Foxconn iPhone Assembly Campus in Zhengzhou Airport Economic Zone

Foxconn Smartphone Assembly Campus Adjacent to Zhengzhou International Airport
(250,000 workers assembled over 100 million iPhones in 2017)
EEC Aerotropolis Primary Value Propositions

• **For EEC firms:** Provides businesses located near or with good transport access to Suvarnabhumi and U-Tapao Airports with **speedy connectivity** to their suppliers, customers, clients, and enterprise partners, nationally and worldwide (e.g., Foxconn in Zhengzhou).

• **For EEC municipalities and provinces:** Leverages the two eastern seaboard airports, three ports, and improved multimodal surface transport connectivity to **draw tourists and attract investment** in high-end manufacturing and modern business services.

**Connectivity = Competitiveness**
Overall EEC Aerotropolis Strategic Objectives

- Make the EEC the fastest, most agile, and best-connected location to do business in Southeast Asia.

- Utilize speedy connectivity to attract high-value, time-critical aviation-oriented businesses and industries that will accelerate the growth and modernize the economic base of Thailand’s Eastern Economic Corridor (EEC), leading the economic transformation of the nation.

- Reinforce the above through labor-force upgrading and well-designed aviation-linked urban, commercial, industrial, and tourist clusters that are economically efficient, attractive, and sustainable.

- Fully leverage the Fifth Wave of transportation-driven development.
The 21st-Century economy is being shaped by the Fifth Wave

First Wave: Seaports

Second Wave: River & Canal-Based Development

Third Wave: Railroads

Fourth Wave: Highways

Fifth Wave: Airports

Transportation infrastructure has always shaped business location, market access, and urban economic development.
Basic Drivers of the FIFTH WAVE

• **Large jet aircraft** (along with IT advances)
• **Globalization** (producers & consumers)
• **E-commerce** (merger of the net age & the jet age)
• **Speed** (time-based competition)
• **Agility** (customization & flexible response)
• **Connectivity** (worldwide enterprise networks)
• **Perishability** (pharma, fish, flowers, fashions)
• **Tourism** (especially international)

See John D. Kasarda and Greg Lindsay *Aerotropolis: The Way We’ll Live Next* (2011)
Tourist Arrivals by World Region

The declining real costs of air transport make it affordable to more people.
Rising income levels, the changing geography of prosperity, and global economic integration are fueling air transport growth.
Recent Growth of Air Cargo

Growth in 2017

- World GDP: 2.3%
- Global trade: 4.3%
- RPKs: 7.6%
- FTKs: 9.0%

The Next Two Decades of Aviation Growth

- Between 2017 and 2037, worldwide commercial passenger traffic will likely increase from 8 billion to approximately 19.2 billion (nearly 52.5 million pax/day).

- In the same period (2017 to 2037), world air cargo traffic is expected to triple.

- From 2017 to 2037, 42,730 new commercial aircraft will come into service with a market value of US$6.3 trillion (฿ 207.3 trillion). 40% (16,930 new commercial aircraft in Asia)

- The economic impact of aviation on Thailand will be immense.

Source: IATA & Airports Council International (2018); Boeing Current Market Outlook 2017-2036
## Economic Impact of Air Transport in Thailand
### 2014 & 2035 Forecast

<table>
<thead>
<tr>
<th>Effects</th>
<th>2014 Jobs (Thousands)(^{a})</th>
<th>2035 Jobs Forecast (Thousands)</th>
<th>2014 GDP (BHT Millions)(^{a, b})</th>
<th>2035 GDP Forecast (BHT Millions)(^{a, b})</th>
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<tbody>
<tr>
<td>Direct</td>
<td>111</td>
<td>203</td>
<td>(\text{฿} , 110,425)</td>
<td>(\text{฿} , 201,363)</td>
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<tr>
<td>Indirect</td>
<td>87</td>
<td>159</td>
<td>(\text{฿} , 51,965)</td>
<td>(\text{฿} , 97,434)</td>
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<tr>
<td>Induced</td>
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<td>206</td>
<td>(\text{฿} , 29,230)</td>
<td>(\text{฿} , 55,213)</td>
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<tr>
<td>Direct + Indirect + Induced</td>
<td>310</td>
<td>568</td>
<td>(\text{฿} , 191,620)</td>
<td>(\text{฿} , 354,010)</td>
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<tr>
<td>Productivity &amp; Trade</td>
<td>354</td>
<td>-</td>
<td>(\text{฿} , 181,877)</td>
<td>-</td>
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<td>Tourism</td>
<td>1,382</td>
<td>-</td>
<td>(\text{฿} , 568,364)</td>
<td>-</td>
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<tr>
<td>Total Catalytic</td>
<td>1,736</td>
<td>3,184</td>
<td>(\text{฿} , 750,241)</td>
<td>(\text{฿} , 1,373,818)</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>2,046</strong></td>
<td><strong>3,752</strong></td>
<td><strong>(\text{฿} , 941,861)</strong></td>
<td><strong>(\text{฿} , 1,727,828)</strong></td>
</tr>
</tbody>
</table>

\(^{a}\) - Numbers do not sum exactly due to rounding. \(^{b}\) - Numbers are based on nominal conversion rate from USD in 2014.

Source: Adapted from InterVISTAS Consulting Inc. (2015, December). *Asia Pacific commercial air transport: Current and future economic benefits.*
Aviation’s World Wide Web: The Global Physical Internet
(over 80,000 routes in 2018 and rapidly growing)

Source:
Anna.Aero (2016; 2017; 2018)

Image Source: OpenFlights.org
Airport Roles in the Physical Internet

- Routers of aviation’s Physical Internet
- Concrete interfaces of the national and global meeting the local in flows of people, products, and advanced business services
- High-value business, commercial, and industrial magnets
- Regional economic catalysts
Airports Have Become High-Value Business Magnets and Regional Economic Catalysts by…

- Quickly connecting a region’s businesses to their suppliers, customers, and enterprise partners nationally and worldwide.

- Attracting tourist, leisure, MICE, and business travelers.

- Serving commercial needs of millions of air passengers and airport-area visitors annually.

- Creating major new urban economic entities: Airport Cities and the Greater Aerotropolis.
New Airport-Centered Urban Economic Forms

Airport Cities and The Aerotropolis
Rise of the Airport City

• Airports today – much more than aviation infrastructures

• They are multimodal, multifunctional enterprises generating considerable commercial development within and well beyond their boundaries.

• All commercial functions of a modern metropolitan center are locating on and immediately around major airport sites – transforming them from “city airports” to “airport cities”.

The Airport City

• Airside
  – Shopping mall concepts merged into passenger terminals
    • Retail (including streetscapes & upscale boutiques)
    • Restaurants (increasingly higher-end and themed)
    • Leisure (spas, fitness, recreation, cinemas, etc….)
    • Culture (museums, regional art, musicians, prayer rooms)
  – Logistics & air cargo

• Landside
  – Hotels & entertainment
  – Office & retail complexes
  – Convention & exhibition centers
  – Health & wellness services
  – Free trade zones
  – Cool-chain & time-sensitive goods processing
The Rise of the Aerotropolis

Clusters and spines of aviation-linked business and associated residential complexes are forming around airports and along airport transportation corridors up to 30 km from some airports with significant development impact measured up to 90 km.

- Logistics and distribution centers
- High-value, time-critical manufacturing firms
- Office buildings and business parks
- Hotel, convention, and exhibition complexes
- Tourist and entertainment venues
- Retail centers and wholesale merchandise marts
- ICT (digital) and R&D parks
- Bioscience and medical clusters
- Higher education campuses
- Mixed-use commercial/residential developments
- Airport economic corridors and new aerotropolis cities (e.g., Washington Dulles aerotropolis corridor, Amsterdam Zuidas; Dallas-Fort Worth’s Las Colinas, Texas; Incheon’s New Songdo City)
Washington Dulles Aerotropolis Corridor
(Strings & Clusters of ICT & Consulting Firms)

450,000 jobs generated
Dulles Access Highway Corridor
(Washington Dulles International Airport in background at top)

Photo courtesy of Metropolitan Washington Airports Authority
© 2007 Metropolitan Washington Airports Authority
Photo by Eric Taylor
Amsterdam Zuidas
(New city 13 km east of Schiphol Airport)

2.7 million m²
650,000 m² office space
100,000 m² retail
95,000 m² housing

Headquarters of ABN AMRO and ING

ABN AMRO

ING

7 minutes to Amsterdam Schiphol’s airport terminal

Incheon Aerotropolis Edge City
(New Songdo ‘Smart’ City: 12 km east of Incheon International Airport)

Office: 4 million m²
Residential: 3.5 million m²
Retail: 3.5 million m²
Hotels: 51.5 m²
Civic Space: 0.5 million m²
Pop.: 65k in 2016

Source: Gale International
Las Colinas, Texas
(New city 12 km east of Dallas-Forth Worth Airport)

2.1 million m² offices
121,000+ m² retail
800,000 m² light industrial space

10 minutes to DFW’s Terminals
5 Fortune 500 headquarters
8 Fortune 1000 headquarters

Leveraging the Aerotropolis Strategy

AN EEC AEROTROPOLIS STRATEGY CAN ACCELERATE S-CURVE INDUSTRY RECRUITMENT & EEC DEVELOPMENT SUCCESS
Hard and Soft Infrastructure of an EEC Aerotropolis Strategy

[Diagram showing the components of the aerotropolis strategy, including multimodal transportation, advanced telecommunications, and support systems for commerce, sourcing, production, distribution, and knowledge management.]

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Seamless intermodal interfaces will provide EEC industries with speed and agility advantages.
U-Tapao Air Logistics Hub with Intermodal Connections Will Greatly Enhance EEC and National Trade
Illustrative Air Logistics Network for Future U-Tapao Air Express Hub to Boost EEC and Nationwide High-Value, Time-Critical Trade
EEC Integrated Aerotropolis Strategy
Bringing Together Airport Planning, Urban Planning, and Business Site Planning

- Infrastructure & facility planning
- Airport logistics/commercial strategies
- Air traffic generation & new routes

- Ground transportation planning
- Land-use planning
- Community design (smart cities)

- Market demand, competitor & risk analyses
- Regional positioning & cluster optimization
- Bankability (investment-worthiness)
The Golden Ring of Integrated Aerotropolis Planning

- Airport Planning
- Urban Planning
- Business Site Planning
- Logistics Planning
- Personal Mobility Planning
- Aerotropolis Planning

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Related EEC Soft Infrastructure Needs

• Continue to improve the regulatory environment for speed of goods movement and fast-tracking commercial/industrial real estate projects.

• Make new EEC urban developments appealing residential-, workplace-, and visitor-friendly environments that are livable, walkable, enjoyable, and socially vibrant.
  – An aerotropolis is not just an aggregation of airport-area industrial and commercial buildings; it is an urban place.

• Attract institutional amenities such as branches, institutes, and labs of leading international universities for global stature, skills development, talent acquisition, and R&D support (an EEC Aerotropolis Institute).

• Have a program in place for addressing community and NGO/activist concerns (e.g., EEC Watch) before any protests or organized resistance take place.

• Establish forums to better educate the media and public on how the EEC and its Aerotropolis strategy will best achieve Thailand 4.0 objectives and how its demonstrated successes and lessons learned will be subsequently rolled out to other regions of the nation.
Airport City, in Brief Summary

• An airport city is the multimodal logistics and commercial core of an aerotropolis, heavily leveraged by the passenger and cargo terminals of an airport.

• A physical manifestation of the “airport economy”, including:
  – Commercial development for air travelers (terminal retail and leisure services inside and outside the security zone)
  – Commercial development for those providing or supporting air transport (airlines, air caterers, freight forwarders, logistic service providers, MROs, …)
  – Commercial development for intensive users of air transport services (hotels, corporate offices, MICE, medical tourist facilities, …)

• Airport cities are increasingly planned
  – Architecturally designed and themed
  – Managed to maximize benefit to users, investors, and region
  – Supported by an appropriate business model to be profitable
The Aerotropolis, in Brief Summary

- **Functional**: A business-optimizing integration of airport, airlines, and region enhanced through labor-force upgrading, seamless multimodal surface connectivity, and port development.

- **Spatial**: An airport city core surrounded by corridors and clusters of aviation-oriented commercial, industrial, and urban developments that are economically efficient, attractive, and sustainable.

- **Connectivity**: The aerotropolis connects its businesses and people speedily to markets near and far.
  - Improved surface transportation connects firms more efficiently to key EEC clusters and broader regional markets.
  - Expanded air routes provide quick and efficient connectivity to national and international markets.

- **The Outcome**: The fastest, best-connected, most livable places will win in the decades ahead.

This is the Aerotropolis strategy.
Creating a World-Class EEC Aerotropolis

The 21st-Century Airport, Airport City, and Aerotropolis
Leveraging Speed and Connectivity for EEC Competitive Advantage
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Aerotropolis Video: See YouTube, Kasarda’s Aerotropolis

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