2015 KSP Port & Logistics Consulting: A Project Supporting Indonesian Fari Trade System Improvement

June, 2015
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2015 Port and Logistics Consulting

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I. Introduction

1. Background and Purpose

1.1. Background of the Project

- Indonesia is an archipelago comprising around 18,000 islands. For this geological reason, efficient operation of maritime transportation and ports are important. However, insufficient container handling equipment, lack of port hinterland sites and increasing throughput consumed long time for loading and unloading container cargoes. Therefore, it is necessary to secure capable port operation and reduce logistics costs.

- The main culprit behind high port costs is the absence of competition. Although multiple companies deal with cargoes within ports, price competition among them is virtually non-existent.

- The Komisi Pengawas Persaingan Usaha (KPPU), the Business Competition Supervisory Commission (BCSC) in English, showed deep interest in the case of Busan Port (Korea). The KPPU asked us to review effects of the Terminal Operating Company (TOC) system as well as background for its introduction and to draw implications to Indonesia based on relevant cases.

1.2. Purpose of the Project

- 'The Deputy of Prevention' in charge of port and logistics under the KPPU asked us to introduce efforts of Busan Port for lower costs and higher efficiency.

- The purpose of KSP Port Logistics Consulting is to help Indonesia to stimulate competition in port and logistics field. For that purpose, we will introduce cases of Busan Port and induce implications for the nation.
2. Project Scope and Expected Benefits

2.1. Project Scope

◦ KPPU’s main interest are in the Terminal Operation Company (TOC) system, port complex and the Port Master Plan. We will look for suggestions to Indonesia based on each case.

2.2. Expected Benefits

◦ Success cases of Korean port and logistics industry will present reference and data for the Long-term Logistics Development Road Map which is being drafted by the Deputy of Prevention of KPPU.

3. Project Implementation Direction and Major Contents

3.1. Direction for the Project implementation


◦ Collection of data on Korean ports and logistics

◦ Case analysis

◦ Drawing of implications

3.2. Major Contents of the Project

◦ Focus on introduction of the TOC system and its benefits

◦ Cases of port complex site development of Busna Port

◦ Procedures for the Port Master Plan development and its contents

◦ Implications for Indonesia based on analyses on success cases of Korea
II. Main Subject-(Target Area Analysis: Indonesia)

1. Current State of Indonesian Ports and Logistics

- Indonesia has a total of 25 strategic ports among which are 5 major ports.

- Five major ports are Tanjung Priok Port and Tanjung Perak Port (Java Island), Belawan Port (Sumatra Island), Balikpapan Port (Kalimantan Island) and Makassar Port (Sulawesi Island).

Fig. 1. Major Ports in Indonesia

Source: (Korea Maritime Institute, 2011)

- The Ministry of Transportation (MOT) is in charge of port planning and management and five port authorities under its umbrella deal with construction and operation of ports.

---

1 The current status of Indonesian ports is based on field surveys (incl. interviews with KPPU and local logistics companies) and literature studies.
Table 1 | Indonesian Port and Port Management Bodies

<table>
<thead>
<tr>
<th>No.</th>
<th>Operating Authority</th>
<th>Details</th>
</tr>
</thead>
</table>
| 1   | PT. PELINDO I       | • Major ports: 5 ports such as Belawan, Dumai, Lhokeumawe, Pekanbaru, Tanjung, Pinang  
• Under its jurisdiction: 28 ports |
| 2   | PT. PELINDO II      | • Major ports: 12 ports such as Banten, Palembang, Panjang, Pontianak, Tanjong priok, Teluk Bayur, Jambi, Cirebon, Bengkulu, Pangkal balam, Tanjung Pandan, Sunda Kelapa  
• Under its jurisdiction: 17 ports |
| 3   | PT. PELINDO III     | • Major ports: 5 ports such as Banjarmasin, Benoa, Tenau, Tanjung Emas, Tanjung Perak  
• Under its jurisdiction: 18 ports |
| 4   | PT. PELINDO IV      | • Major ports: 8 ports such as Ambon, Balikpapan, Biak, Bitung, Jayapura, Makasar, Samarinda, Sorong  
• Under its jurisdiction: 24 ports |
| 5   | Pelabuhan Otorita   | • Major port: Batam Port |

Source: (Indonesian MOT and Korean Ministry of Land, Infrastructure and Transport, 2010)

° National throughput of Indonesia stood at 10.79 million TEU (2013), growing at the annual average rate of 14.0% from 2006.

Table 2 | Container throughput in Indonesia

<table>
<thead>
<tr>
<th>Year</th>
<th>2006 (1,000 TEU)</th>
<th>2007 (1,000 TEU)</th>
<th>2008 (1,000 TEU)</th>
<th>2009 (1,000 TEU)</th>
<th>2010 (1,000 TEU)</th>
<th>2011 (1,000 TEU)</th>
<th>2012 (1,000 TEU)</th>
<th>2013 (1,000 TEU)</th>
<th>Average annual increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>4,316</td>
<td>6,582</td>
<td>7,404</td>
<td>7,255</td>
<td>8,482</td>
<td>8,966</td>
<td>9,324</td>
<td>10,790</td>
<td>14.0%</td>
</tr>
</tbody>
</table>

Source: UNCTAD, 2014; The World Bank
1.1. Tanjung Priok Port

- Port location and characteristics
  - Tanjung Priok Port is the largest trade port in Indonesia with Jakarta (capital city) as its hinterland. It acts as the port of call for national seaborne feeder system.
  - The port is located north of Jakarta, the capital city on the northwest coast of Java Island and at the mouth of Ciliwung. It deals with imports and exports of Jawa Barat (West Java), most of which are transported to other Indonesian islands, Singapore and Malaysia.
  - Tanjung Priok Port is equipped with good transportation infrastructure such as roads and railways which covers nationwide. Sukarno-Hatta International Airport is only 25km off the port.
  - As of 2012, around 14,500 ships arrived or departed at and from the port. It handles 36.3 million tons of general cargoes and 4 million TEU throughput.

- Current port facilities
  - Tanjung Priok Port is 1.716 million m² in size and has 15 berths.
  - The total length of the port is 3,450m.
  - The depth of water is from 8.0 to 14.0m. The port holds 34 quay cranes.
### Table 3 | Current State of Container Terminal Facility in Tanjung Priok Port

<table>
<thead>
<tr>
<th>Berth (No)</th>
<th>Berth length(m)</th>
<th>Water level(m)</th>
<th>Size (1,000 m²)</th>
<th>C/C</th>
<th>Terminal operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jakarta International Container Terminal</td>
<td>10</td>
<td>2,338</td>
<td>9~14</td>
<td>1,280</td>
<td>22</td>
</tr>
<tr>
<td>KOJA Terminal</td>
<td>2</td>
<td>450</td>
<td>14</td>
<td>306</td>
<td>5</td>
</tr>
<tr>
<td>Multi Terminal T009</td>
<td>2</td>
<td>404</td>
<td>8</td>
<td>80</td>
<td>4</td>
</tr>
<tr>
<td>Terminal 300</td>
<td>1</td>
<td>258</td>
<td>12</td>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>3,450</td>
<td>8~14</td>
<td>1,716</td>
<td>34</td>
</tr>
</tbody>
</table>

Source: CI Yearbook, 2012

- Container cargo handling performance
  - As of 2013, the port handled 6.59 million TEU containers (world's 22nd) and has grown at the annual average rate of 9.8% from 2006 to 2013

### Table 4 | Container Handling at Tanjung Priok Port

<table>
<thead>
<tr>
<th>2006 (1,000 TEU)</th>
<th>2007 (1,000 TEU)</th>
<th>2008 (1,000 TEU)</th>
<th>2009 (1,000 TEU)</th>
<th>2010 (1,000 TEU)</th>
<th>2011 (1,000 TEU)</th>
<th>2012 (1,000 TEU)</th>
<th>2013 (1,000 TEU)</th>
<th>Annual Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,420</td>
<td>3,690</td>
<td>3,984</td>
<td>3,805</td>
<td>4,715</td>
<td>5,620</td>
<td>6,214</td>
<td>6,590</td>
<td>9.8%</td>
</tr>
</tbody>
</table>

Source: UNCTAD, 2014; The World Bank

- The Indonesia Port Corporations or PT Pelabuhan Indonesia (Pelindo) II has been developing Kalibaru port (north of Jakarta) to address saturation of Tanjung Priok Port. The construction started in March 2013 and will be finished by 2022. Kalibaru port is expected to handle 13 million TEU on its completion.
1.2. Tanjung Perak

- **Port location and characteristics**
  - Tanjung Perak Port is located on the northeast coast of Java and the gateway to Surabaya, a city called as 'the capital of east Indonesia.'
  - Surabaya is the second largest city of Indonesia. It acts as the business center of east Java island and has well-developed transportation networks linking major cities.
  - The growth rates of east Java area (esp. Surabaya) stand at 7.3%, exceeding the national average. The area is being preferred to west Java area which suffers a chronic bottleneck to its infrastructure.
  - The port transports agricultural exports produced in Java Island, such as sugar, rubber, timber, peanuts, and tobacco.
  - Major imports include petroleum products, textiles, electronics, machinery and cars.

- **Current port facilities**
  - Tanjung Perak Port is 1.95million m² in size and holds 10 births.
  - The total length of the port is 1,950m.

**Table 5 | Current State of Container Terminals at Tanjung Perak Port**

<table>
<thead>
<tr>
<th></th>
<th>Berth (No.)</th>
<th>Berth length(m)</th>
<th>Water level(m)</th>
<th>Size (1000 m²)</th>
<th>C/C</th>
<th>Terminal Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container Terminal</td>
<td>9</td>
<td>1,450</td>
<td>10.5</td>
<td>738</td>
<td>11</td>
<td>PT Terminal Petikemas Surabays</td>
</tr>
<tr>
<td>Container Terminal I / II</td>
<td>1</td>
<td>500</td>
<td>10.5</td>
<td>362</td>
<td>5</td>
<td>PT Berlian Jasa Terminal Indonesia</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>1,950</strong></td>
<td><strong>10.5</strong></td>
<td><strong>1,100</strong></td>
<td><strong>16</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** CI Yearbook, 2012
Container cargo handling performance

- As of 2013, the port handled 3.02 million TEU containers (world's 46th) and has grown at 7.2% from 2006 to 2013 on annual average.

### Table 6 | Container Handling at Tanjung Perak

<table>
<thead>
<tr>
<th>Year</th>
<th>2006 (1,000 TEU)</th>
<th>2007 (1,000 TEU)</th>
<th>2008 (1,000 TEU)</th>
<th>2009 (1,000 TEU)</th>
<th>2010 (1,000 TEU)</th>
<th>2011 (1,000 TEU)</th>
<th>2012 (1,000 TEU)</th>
<th>2013 (1,000 TEU)</th>
<th>Annual Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,852</td>
<td>2,042</td>
<td>2,213</td>
<td>2,270</td>
<td>3,030</td>
<td>2,640</td>
<td>2,850</td>
<td>3,020</td>
<td>7.2%</td>
</tr>
</tbody>
</table>

Source: UNCTAD, 2014; The World Bank

### 1.3. Characteristics of Indonesia Port and Logistics

- For an archipelago nation like Indonesia, maritime transportation is pivotal. However, cargo handling has consumed a long time due to insufficient spaces for container loading, lack of cargo handling equipment, and rapidly rising throughput. This raised needs for port infrastructure improvement.

- Less developed port infrastructure has caused high logistics costs and price gap between regions. For example, domestic maritime transportation costs between Jakarta and Sumatra is four to five times higher than international costs between Jakarta and Singapore.

- There are four port authorities in Indonesia. Major ports are Belawan port (north Sumatra), Tanjung Priok Port (south Sumatra, west Java and west Kalimantan), Tanjung Perak Port (central Java and west Java) and Balikpapan Port (Sulawesi, east Kalimantan and east Indonesia).

- The Indonesia Port Corporations or PT Pelabuhan Indonesia (Pelindo) II has been developing Kalibaru port in north Jakarta in an effort to resolve congestion at Tanjung Priok Port. The construction started in March 2013 and will be completed by 2022. When the development is completed, the port is expected to handle 13 million TEU cargoes.

- According to the Global Competitiveness Report (2013) by the World Economic Forum, 9.1% of respondents quoted 'lack of infrastructure' as the third largest hurdle in doing business in Indonesia.
- Excluding railways (44th), competitiveness of Indonesian infrastructure was weak in large, with roads and ports ranking 78th and 89th, respectively.

- Logistics costs in Indonesia account for 24~27% of national GDP, relatively higher than Singapore (7~8%), Thailand (15~18%) and Vietnam (24~25%).

- Port stay in Indonesia is about 6 days (in case of Tanjung Priok Port). The figure is far above that of Singapore (1.1 days), Hong Kong (2 days), Malaysia (4 days, Port Klang) and Thailand (5 days).

- High cost at ports is partly attributable to insufficient infrastructure which allows port service providers to decide prices. Another reason can be found from the absence of competition. For instance, Hutchison Port Holdings is participating in operation of Tanhun Priok Port in return for their investment. Such investment in the form of stake sales discourages competition.

- Hutchison Port Holdings Limited (HPH), a multinational company headquartered in Hong Kong, has been partaking in terminal operation of Tanjung Priok Port.

- From the perspective of International Freight Forwarders, major problems in port and logistics are port congestion resulted from insufficient infrastructure, delays in CIQ inspection and high trucking costs. Meanwhile, port congestion is caused by insufficient container yard, shallow water depth (port of call for mainly mid-and small-sized container ships), lack of cargo handling equipment and traffic jamming roads nearby ports.

- Port landing charges in Indonesia are notified as a ministerial decree after consultation between Pelindo and Ministry of Transportation.

- Despite the multiple number of stevedoring companies, competition among them are non-existent in practice.

- As for maritime transportation, only local shipping companies can do domestic transportation. As a result, transportation costs on Jakarta-Borneo route are $500 (20ft) and $900 (40ft). In comparison, routes where foreign shipping companies partake have lower costs. Jakarta-Singapore route is about $50~$100 (20ft) and Jakarta-Busan route is $100 (20ft).

- Container handling fees at Tanjung Priok Port, a representative port of Indonesia, are
$145 (40ft) and $95 (20ft), which are higher than Busan Port of Korea. When Hutchison Port Holdings Limited (HPH) participated in the terminal operation, the Indonesian rupiah was depreciated during the Asian Financial Crisis. As the exchange rates became stabilized from early 2000, container handling fees rose up to $210 to preserve profits. Afterwards, the Indonesia Shipping Association opposed strongly, pushing down the fees to the current level.

- As for informitization, EDI system is in place. However, for products are to be released, documents should be printed out and stamped at the field after being sent into EDI, which watered down effectiveness of the system.

- Most import and export cargoes of Indonesia are sent to Singapore Port or Tanjung Telepas Port (Malaysia) for transshipment for the US and Europe. It seems that Indonesian ports hardly handle trans shipment cargoes.

- Due to road congestion, container truck transportation is available only once in a day for 30 km and the cost is $150. Railway transportation is not low as well at $250 which includes loading and unloading fees.

- As the Indonesian economy grows, cargoes for container transportation is expected to increase fast rather than bulk transportation.
III. Main Subject-(Target Area Analysis: Korea)

1. Current State of Korean Port and Logistics

1.1. State of Ports

1.1.1. Korean Ports

\* Korea has a total of 31 trade ports among which are 5 major ports.

- Five major ports include Busan, Incheon, Gwangyang, Pyongtaek and Ulsan Port and each port has its own Port Authority.

Fig. 2| Korean ports

Source: Korean ports (MLTM, 2012)
### 1.1.2. Busan Port

- 10 terminals have been under operation in Busan with five terminals for Busan North Port and another five for Busan New Port.

#### Table 7 | Facilities of Busan Port

<table>
<thead>
<tr>
<th>Project duration</th>
<th>Jaseongdae (Phase 1 &amp; 2)</th>
<th>Shinseonde (Phase 3)</th>
<th>Gamman Terminal (Phase 4)</th>
<th>Shingaman Terminal</th>
<th>Woomin Terminal</th>
<th>PNIIT (Phase 11)</th>
<th>PNC (Phase 11 &amp; 2)</th>
<th>HJNC (Phase 21)</th>
<th>HPNT (Phase 22)</th>
<th>BNCT (Phase 23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project expenses</td>
<td>W108.4 billion</td>
<td>W222.6 billion</td>
<td>W472.4 billion</td>
<td>W178.1 billion</td>
<td>W53.5 trillion</td>
<td>W1.746 trillion</td>
<td>W388.1 billion</td>
<td>W411.8 billion</td>
<td>W510.8 billion</td>
<td></td>
</tr>
<tr>
<td>Opening</td>
<td>Hutchison Korea (Corp.)</td>
<td>CJ Korea Express Busan Container Terminal</td>
<td>SBTC BGCT</td>
<td>Dongbu Busan Container Terminal (Corp.)</td>
<td>Uam Terminal (Corp.)</td>
<td>Busan Newport Int'l Terminal</td>
<td>Busan New Port (Corp)</td>
<td>Hanjin New Port (Corp)</td>
<td>Hyungae Busan New Port Container Terminal (Corp)</td>
<td>Busan New Port Container Terminal (Corp)</td>
</tr>
<tr>
<td>No. of employees</td>
<td>399</td>
<td>529</td>
<td>691</td>
<td>341</td>
<td>210</td>
<td>329</td>
<td>580</td>
<td>600</td>
<td>587</td>
<td>420</td>
</tr>
<tr>
<td>Terminal length</td>
<td>1,447m</td>
<td>1,500m</td>
<td>1,400m</td>
<td>826m</td>
<td>500m</td>
<td>1,200m</td>
<td>2,000m</td>
<td>1,100m</td>
<td>1,150m</td>
<td>1,400m</td>
</tr>
<tr>
<td>Handling capacity</td>
<td>1,700,000 / 0 TEU</td>
<td>2,000,000 / 0 TEU</td>
<td>1,560,000 / 0 TEU</td>
<td>780,000 TEU</td>
<td>300,000 TEU</td>
<td>1,380,000 / 0 TEU</td>
<td>2,730,000 / 0 TEU</td>
<td>1,600,000 / 0 TEU</td>
<td>1,600,000 / 0 TEU</td>
<td>1,920,000 / 0 TEU</td>
</tr>
<tr>
<td>Berthing capacity</td>
<td>4 ships (50,000 ton)</td>
<td>5 ships (50,000 ton)</td>
<td>4 ships (50,000 ton)</td>
<td>2 ships (50,000 ton)</td>
<td>1 ship (50,000 ton)</td>
<td>3 ships (50,000 ton)</td>
<td>6 ships (50,000 ton)</td>
<td>2 ships (50,000 ton)</td>
<td>2 ships (20,000 ton)</td>
<td>4 ships (50,000 ton),</td>
</tr>
<tr>
<td>Site size</td>
<td>624,000 m^2</td>
<td>1,288,000 m^2</td>
<td>727,000 m^2</td>
<td>294,000 m^2</td>
<td>182,000 m^2</td>
<td>840,000 m^2</td>
<td>1,286,000 m^2</td>
<td>688,000 m^2</td>
<td>553,000 m^2</td>
<td>785,000 m^2</td>
</tr>
</tbody>
</table>

Source: Busan Port Authority, 2014
As of 2014, container throughput of Busan Port is 18.652 million TEU.

Table 8 | Container Throughput of Busan Port

<table>
<thead>
<tr>
<th>Cargo</th>
<th>2006 (1,000 TEU)</th>
<th>2007 (1,000 TEU)</th>
<th>2008 (1,000 TEU)</th>
<th>2009 (1,000 TEU)</th>
<th>2010 (1,000 TEU)</th>
<th>2011 (1,000 TEU)</th>
<th>2012 (1,000 TEU)</th>
<th>2013 (1,000 TEU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td>3,371</td>
<td>3,702</td>
<td>3,790</td>
<td>3,316</td>
<td>3,923</td>
<td>4,331</td>
<td>4,441</td>
<td>4,530</td>
</tr>
<tr>
<td>Export transshipment</td>
<td>2,640</td>
<td>2,943</td>
<td>3,032</td>
<td>2,779</td>
<td>3,345</td>
<td>3,990</td>
<td>4,275</td>
<td>4,515</td>
</tr>
<tr>
<td>Import</td>
<td>3,505</td>
<td>3,849</td>
<td>3,958</td>
<td>3,358</td>
<td>4,018</td>
<td>4,402</td>
<td>4,564</td>
<td>4,642</td>
</tr>
<tr>
<td>Import transshipment</td>
<td>2,589</td>
<td>2,882</td>
<td>2,850</td>
<td>2,653</td>
<td>3,126</td>
<td>3,715</td>
<td>3,962</td>
<td>4,247</td>
</tr>
<tr>
<td>Sub-total</td>
<td>12,107</td>
<td>13,378</td>
<td>13,629</td>
<td>12,108</td>
<td>14,414</td>
<td>16,440</td>
<td>17,244</td>
<td>17,936</td>
</tr>
<tr>
<td>World ranking</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Busan Port Authority, 2014

- Busan New Port development plan
  - Construction period: 1995-2020 (Goal: 45 berths, completed development: 23 berths)

Table 9 | Busan New Port Development Plan

<table>
<thead>
<tr>
<th>Classification</th>
<th>Phase</th>
<th>Unloading Capacity (1,000 TEU)</th>
<th>Berth</th>
<th>Length (m)</th>
<th>Operator</th>
<th>Developer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>15,840</td>
<td>45</td>
<td>14716</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Container</td>
<td>Subtotal</td>
<td>5,710</td>
<td>13</td>
<td>4,300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 11</td>
<td>2,760</td>
<td>3</td>
<td>1200</td>
<td></td>
<td>Busan New Port International Terminal</td>
<td>Private Finance Project</td>
</tr>
<tr>
<td>Phase 12</td>
<td>1,350</td>
<td>2</td>
<td>1200</td>
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</tr>
<tr>
<td>Phase 21</td>
<td>1,600</td>
<td>2</td>
<td>1100</td>
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<td>Hanjin Shipping New Port</td>
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</tr>
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<td>Connected Area</td>
<td>Subtotal</td>
<td>2,700</td>
<td>2</td>
<td>700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connecting Bridge</td>
<td>1</td>
<td>1</td>
<td>300</td>
<td></td>
<td>Busan New Port Multipurpose Terminal</td>
<td>Government</td>
</tr>
<tr>
<td>Multipurpose Terminal</td>
<td>1</td>
<td>1</td>
<td>400</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>South Container</td>
<td>Subtotal</td>
<td>5,160</td>
<td>13</td>
<td>4,163</td>
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<tr>
<td>Phase 22</td>
<td>1,600</td>
<td>2</td>
<td>1150</td>
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<td>Hyundai Busan New Port</td>
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</tr>
<tr>
<td>Phase 23</td>
<td>1,920</td>
<td>2</td>
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<td>BNCT</td>
<td>Private Finance Project</td>
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<tr>
<td>Phase 24</td>
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<td>3</td>
<td>1050</td>
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<td>To be determined</td>
<td>Private Finance Project</td>
</tr>
<tr>
<td>Multipurpose</td>
<td>250</td>
<td>4</td>
<td>385</td>
<td></td>
<td>To be determined</td>
<td>BPA</td>
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<tr>
<td>Terminal</td>
<td>Phase 3</td>
<td>Phase 4</td>
<td>Phase 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>---------</td>
<td>---------</td>
<td>---------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>2,300</td>
<td>2,670</td>
<td>800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Container</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>2,300</td>
<td>2,670</td>
<td>800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeder Terminal</td>
<td>290</td>
<td>700</td>
<td>700</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>1,250</td>
<td>1,030</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeder Terminal</td>
<td>209</td>
<td>384</td>
<td>To be determined</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Terminal</td>
<td>1</td>
<td>400</td>
<td>BPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-purpose</td>
<td>1</td>
<td>240</td>
<td>BPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grain Terminal</td>
<td>1</td>
<td>350</td>
<td>BPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>2,300</td>
<td>2,670</td>
<td>800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>2,300</td>
<td>2,670</td>
<td>800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Container</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>2,300</td>
<td>2,670</td>
<td>800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeder Terminal</td>
<td>290</td>
<td>700</td>
<td>700</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>1,250</td>
<td>1,030</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeder Terminal</td>
<td>209</td>
<td>384</td>
<td>To be determined</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Terminal</td>
<td>1</td>
<td>400</td>
<td>BPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-purpose</td>
<td>1</td>
<td>240</td>
<td>BPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grain Terminal</td>
<td>1</td>
<td>350</td>
<td>BPA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Busan Port Authority, 2014

- Busan Port introduced the TOC system in 1997. The government held the ownership while private sector operated the terminals. Since the establishment of Busan Port Authority in 2004, it took over port development and management from the government. Private companies are still in charge of terminal operation.

- As of 2014, Busan Port handled 75.4% of the total container throughput in Korea (18,652,000 TEU) and 94.3% of transshipment cargoes (9,997,000 TEU). It adopted operation method of the private sector for more effective port management. While carrying out active marketing to attract more throughput, the Port has grown organically with Busan city based on effective port development.

- Busan Port operated 368 global service routes as of 2013.
<table>
<thead>
<tr>
<th>Region</th>
<th>Busan Port Liner Service</th>
<th>Service Route</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
<td>2010</td>
</tr>
<tr>
<td>Japan</td>
<td>58</td>
<td>63</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>52</td>
<td>72</td>
</tr>
<tr>
<td>China</td>
<td>46</td>
<td>51</td>
</tr>
<tr>
<td>North America</td>
<td>42</td>
<td>37</td>
</tr>
<tr>
<td>South America</td>
<td>23</td>
<td>29</td>
</tr>
<tr>
<td>Europe</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Russia</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Middle East</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Oceania</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>290</strong></td>
<td><strong>323</strong></td>
</tr>
</tbody>
</table>

Source: Busan Port Authority, 2014

1.2. Introduction of the Terminal Operating Company (TOC) System

1.2.1. Outlines and Current Status of the TOC system

① Outline

- Under the TOC system, operation of stated-owned port is transferred to private companies. Private companies leased from government berths of each terminal, aprons, yards, and cargo handling facilities en block and operated them. 2

- The TOC system is founded on the Harbor Act (Article 30) : A person who intends to use a harbor facility (excluding beacons; the same shall apply hereafter in this Article) shall obtain permission from the Minister of Land, Transport and Maritime Affairs, make a lease contract with a person to whom the Minister of Land, Transport and Maritime Affairs delegates or commissions operation of the harbor facility (hereinafter referred to as "harbor facility operator"), or obtain consent from a person who made a lease contract for the facility (hereinafter referred to as "lessee") for the use of the harbor facility:

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Provided, That a person who intends to use a harbor facility specified by the Minister of Land, Transport and Maritime Affairs shall report his/her intended use to the Minister of Land, Transport and Maritime Affairs.⁵

Moreover, the Ministry of Oceans and Fisheries notified the Regulations on Port Facility Usage and Use Fees in 2001. The Article 4 (Lease Contract on Port Facility) made it clear that Minister of Oceans and Fisheries or port management organizations determined rules on the scope of port facility under lease, terms of lease contract, lease contract period, use fees and use fee payment.⁴

**Fig. 21** TOC System Operating Structure

<table>
<thead>
<tr>
<th>Cargo delivery/Take-over</th>
<th>Signing of Maritime Transportation Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping company</td>
<td></td>
</tr>
<tr>
<td>Cargo handling, ferriage, other service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transportation business (forwarder)</td>
</tr>
<tr>
<td></td>
<td>Terminal Operating Company</td>
</tr>
<tr>
<td></td>
<td>Government</td>
</tr>
<tr>
<td></td>
<td>Local community</td>
</tr>
<tr>
<td></td>
<td>Cargo owner</td>
</tr>
</tbody>
</table>

Source: See Gil-Woong 1997

- For better understanding of the TOC system, it is necessary to review the following three operation system; Landlord port, Tool Port and Operating Port.⁵
- Landlord Port System: The state (port management body) plans and builds the port and leases the facility to private port operating companies. Lease fees are set to secure costs

---

⁵ The Harbor Act, Article 30 (Use of Harbor Facilities, Service Fees, etc.)

⁴ Regulations on Port Facility Usage and Use Fees in 2001, The Article 4 (Lease Contract on Port Facility)

⁵ Choi, Jaesu, Stories for Shipping History: Introduction of TOC and behind story, Maritime Korea (2002, 10) 126p
and collected from port operating companies. The system was firstly implemented in the US during the early 1920s and spread to ports around the world as they opted for containerization.

◦ Tool Port System: The state (port management body) plans, builds, secures and operates ports and port facilities. The state leases port facility and equipment to stevedoring companies for a certain period of time and collects usage fees from them.

◦ Operating Port: Singapore Port is the case in point. The state (port management body) is in charge of the whole process from port planning to its operation.

◦ In its operation type, the TOC system is similar to Land Port system and the principle stage of port privatization.

② Terminal Operating Company

◦ The TOC system has been implemented in Korea since January 1997. Its target can be divided into general terminals and container terminals.

◦ Terminal Operating Company for general ports

- The target was 19 trade ports with leasable facility. 51 terminals at 9 ports adopted the TOC for the first time.

- Leasable facility included berths, piers, yards (for cargo storage and management), warehouse, and cargo handling equipment and transportation facility.

- In most cases, general stevedoring companies were chosen as the TOC although large cargo owners with given cargo handling facility were eligible for the choice. Certain standards including cargo handling performance were the basis for the determination and those qualified were put under ‘voluntary consultation.’

- Lease period was set at three years. Renewal of the contract was determined after an evaluation on performance, including efforts for cargo handling mechanization. Lease fees were based on basic usage fees and determined within the range which didn't increase the costs.

Terminal usage charges followed agreed rates between TOC (ship owner) and port users (cargo owner) and those decided rates were reported to local port authorities.

To ensure fairness and to avoid monopoly, dumping activities, price-fixing, multiple contracts with other TOCs, efforts to get around cargoes from certain ships and shipping companies were banned.

Public needs dictated each company’s access to the leased facility usage and ship arrival and departure were controlled or modified to ensure effective terminal operation. Such measures helped to guarantee 'publicness' of private terminal operators.

As of 2014, 42 TOCs were under operation at 45 terminals of 10 ports.

Local port administration had managed the TOC system since 1997 until parts of the work were handed down to local port authorities after their establishment. Since then, TOCs were under supervision of either local port administration or local port authorities in the so-called dualized system.

TOCs for container terminals

When the TOC system was introduced in 1997, container terminals were still managed by the Busan Container Terminal Operation Corporation (BCTOC) under the Korea Container Terminal Authority (KCTA), an government-affiliated organization.

However, needs for privatization increased for faster processing of container cargoes, better port service and overall competitiveness. Afterwards, privatization of BCTOC gained the momentum as restructuring of government-affiliated organization carried out.\footnote{Press release, MOF, “Operation right of Jasungdae terminal (Busan) sold to the private”}

Private investment flowed for development of container terminals at Busan Port. Since they were built by private capital, the terminals could be leased for 50 years.

The Terminal Operating Company (TOC) system is a scheme which combines features of both public and private ports.
- The TOC system brings in advantages. It helps balanced port development nationwide under state control and partly motivates the private to pursue profits, which brings about effectiveness in port operation. Moreover, the system put ports under competition.

- One of disadvantages is that realization of effectiveness is limited because the state (which owns and manages ports) still exerts control over private operators. In addition, 'proposals on the spot' are commonplace in the port industry, which can cause excessive competition among TOCs for cargoes.  

1.2.2. Introduction Background of the Terminal Operating Company (TOC) System

① Requests from the International Bank for Reconstruction & Development (IBRD)

◦ As cargo containerization proceeded around the world, demand for container terminals increased. In order to build container terminals, the Korean government took out a loan from the International Bank for Reconstruction & Development (IBRD). The loan for Busan Port (1st stage) came with terms and one of them was to introduce the TOC system. Accordingly, the early type of TOC system was implemented.

◦ The terminals developed with loan from IBRD were grain terminal, coal terminal, scrap metal /mineral terminal as well as Jasungdae container terminal at Busan Port (1st container terminal in Korea). Private companies handled cargoes according to characteristics of each terminal after Jasungdae terminal was built in 1978. The government named these terminals as 'development terminals' and prepared regulations on 'development terminal usage fees' differently from other terminals.

◦ Busan Container Terminal Operating Company (BCTOC) was established by a government-affiliated organization called 'the Container Terminal Management Corporation' and BCTOC was in charge of operating Jasungdae terminal. However, independent operation was difficult as BCTOC was under the influence of government.

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The government issued one year contract for exclusive use for grain terminal, coal terminal and scraped metal/mineral terminal. Those terminals were leased and operated under the name of 'consigned operation of cargo handling facility'. This made it difficult that stevedoring companies prepared long-term management plan. Moreover, characteristics of each cargo limited user base, which thwarted competition with other terminals.\(^{10}\)

\subsection*{2 Rising needs for private capital and effectiveness}

After Jasungdae container terminal (1st in Korea) opened in 1978, container cargo throughput increased by double digit. However, congestion of ships and cargoes became worse as few port facilities were available due to insufficient investment and port operation was unproductive. Ports were considered as public goods in the past and port operation by the state was bureaucratic and rigid. Such port operation failed to actively respond to changing environment.\(^ {11}\)

Stevedoring companies could not implement mechanization since there were no unloading/loading places designated for them. Frequent relocation of equipment and stevedores increased cargo handling costs. In response, the government planned to sharpen productiveness of port service based on effective port operation in the short-term, while promoting investment in facilities. This, in turn, raised needs for private capital and their port development and operation.\(^ {12}\)

In general, state-owned ports were evaluated to have high service costs and ineffectiveness. They tended to rely on financial support by the government. For that reason, the TOC system was introduced with the following purposes;\(^ {13}\)

\begin{itemize}
  \item Higher effectiveness of port service: Each terminal is assigned for different stevedoring companies, which promotes mechanization and specialized terminal operation. Upmost utilization of cargo handling equipment and yards enhances port operation. Long-term contract between TOCs and shipping companies makes
\end{itemize}

\begin{flushright}
\begin{footnotesize}
\begin{enumerate}
  \item Si, Girung, Introduction of TOC, Its Significance and Future Tasks, Maritime Korea 280 (1997), pp 66
  \item Si, Girung, Introduction of TOC, Its Significance and Future Tasks, Maritime Korea 280 (1997), pp. 67
\end{enumerate}
\end{footnotesize}
\end{flushright}
preparatory work possible before cargo loading and unloading and shortens waiting time within the port. As TOCs can invest in their terminals for facility expansion, congestion of ships and cargoes can be addressed.

- Competition system for port operation enhances economic benefits: Competition among nations, ports and terminals leads to better service for users such as ship owners and cargo owners. This, in turn, achieves reasonable port rates.

- Establishment of comprehensive logistics system: The role of ports has evolved as the place for simple cargo handling/storage to the base to provide optimized logistics service. Multimodal transportation brought in various logistics activities including processing and distribution inside ports. Such comprehensive logistics system pushed down logistics costs. Since TOCs provide a range of logistics service, they lay the groundwork to develop into comprehensive logistics companies.

- Financial resources for port development and maintenance: The government secures fixed financial resources or lease fees from TOCs and the resources can be reinvested into port development. The government has smaller management scope for port operation, being free from administrative and financial burden.

③ Impact of Port Privatization Policies

- Since Korea adopted the early type of TOC system in 1979, it has experienced difficulties in accommodating interests of different businesses as well as voices of port laborers about port labor supply system. From 1997, the Korean government implemented deregulation policies with eagerness. As a result, wave of privatization flowed into port operation.\(^\text{14}\)

- For privatization in earnest, stevedoring companies were merged. A new system called 'regular employment system' was introduced under which port laborers became regular workers of stevedoring companies instead of the labor supply system of the past.\(^\text{15}\)

- The labor supply system in the past relied on the daily contract system. It was introduced

\(^{14}\) Si, Girung, Introduction of TOC, Its Significance and Future Tasks, Maritime Korea 280 (1997), pp 67-68

\(^{15}\) Choi, Jaesu, Stories for Shipping History: Introduction of TOC and Behind Story (2)-BCTOC and Company-Labor Issue, Maritime Korea (2002, 11) p.90
to address irregularities of cargo throughput and demand for port laborers. Under the system, the labor and the company shared risks and stable supply of port laborers were ensured. Port labor unions acquired 'Labor Supply Business Permit' from the Ministry of Labor and send off laborers in working unit (GANG) to terminal operators which requested port laborers.

- Wages were paid 'daily' and per ton of cargoes regardless of working hour or the number of laborers for the cargoes. There were no official employers on the paper, so port laborers didn't receive employment insurance. Overall, welfare level of port laborers was far behind other industries.

- Moreover, the port labor union wielded exclusive power of labor supply, hampering autonomous employment of port laborers by stevedoring companies and their rational management. As the port labor union held the upper hand over company, normal company-labor relation was hard to come by.

- Accordingly, modernization and mechanization of cargo handling were delayed and the closed system of port labor union had corruption possibilities. The leadership of the union held exclusive right to employment and recruitment irregularities continued to rise as a result. Against this backdrop, regular employment of port laborers was promoted as the TOC system was being implemented.

- At terminals of the TOC system, terminal operators hired members of the port labor union as regular workers. However, at terminals without the TOC system, such as public terminals, a manpower management company employed them. This manpower management company was created by joint investment of stevedoring companies and port labor suppliers.

- As regular employment of port laborers reduced the necessary laborers for cargo handling, logistics costs were reduced and companies were able to enjoy autonomy. Resulting mechanization improved productivity and credibility to foreign nations and this led to an increasing number of ships calling at port as well as investment.
1.2.3. Benefits of introducing the Terminal Operating Company (TOC) System

① Port Productivity before and after the introduction of the TOC

- Detailed data are necessary to compare port productivity before and after the TOC system was introduced. These data should specify input and output of production elements of port service, such as mechanization, automation, changes in labor input, throughput change and cargo handling performance of each port. Unless such data is secured, it is hard to separate benefits of the TOC system from others.

- It should be noted that the following comparison on port productivity include other benefits from mechanization, automation, and throughput rise as well as benefits from introduction of the TOC system.

- For example, let’s compare loading productivity after and before the TOC system. The averages of 94.9 tons were handled per hour of ship berthing in 1996. However, after the TOC system was implemented in 1997 the productivity jumped by 13.6% to reach 107.8 tons only in a year. While loading productivity rates at terminals with the TOC system increased by 4.4% on the annual average, those at public terminals rose only 1.7%. In a nutshell, effectiveness at terminals with the TOC system improved faster than other terminals.

- The reason behind such faster productivity improvement is the fact that the TOC system secured stable operation at terminals. Stable terminal operation boosted investment in

17 Port productivity index can be divided into partial indicators and aggregate indicators. The former refers to productivity of certain parts of port and consist of i) physical indicators, such as waiting time, ship berthing rates, ii) productivity of factors, such as labor, crane hour, berth hour, and ship hour, and iii) economic and financial indicators, such as operating revenues and cargo volume. Such partial indicators help to understand performance of specific factors of ports but are inadequate to estimate productivity of overall factors. Therefore, comprehensive indicators are being used to quantitatively calculate stochastic frontier function and distance function. Calculation of comprehensive indicators requires detailed data on input production factors which are hard to attain. Due to such limitation of data, this report uses cargo handling volume per ship hour (among partial indicators) as evaluation index for port productivity.
loading facility compared to public terminals. On top of that, terminals with the TOC system were propelled by profit motive, which stimulated effectiveness of operation more than others.

◦ Ship waiting time at Gusan Port was dramatically reduced as well from 30.0h (1996) to 7.3h (1997) after the TOC system was in place. Public terminals had to improve their service to compete with the TOC terminals. As a result, they were able to achieve higher productivity, too.

② Productivity comparison according to type of the TOC system

◦ The TOC terminals can be divided into those specialized in single cargo type and general terminals for various cargoes. Each Terminal Operating Companies (TOC) is separated into an unitary operating company and a company with multiple businesses. As aforementioned, the latter consists of human resource business, equipment business and berth operators and is sub-divided based on stakes of each business. It is similar to operation of consortium in the past.

◦ The following table showed the results of productivity analysis. As for cargo handling per ship berthing hour, specialized terminals posted much higher productivity. Even within specialized terminals, unitary operator handled 392 tons per hour while multiple operator dealt with only 258 tons. At general terminals, unitary operator managed 120 tons per ship berthing hour but multiple operator processed just 90 tons.

### Table 11 | Productivity Evaluation on TOC Terminals (as of 2002)

<table>
<thead>
<tr>
<th>TOC</th>
<th>Yard (m³)</th>
<th>Pier (m³)</th>
<th>Cargo handling/ship hour (ton/h)</th>
<th>Cargo volume (1,000 ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specialized terminal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incheon terminal 4-1</td>
<td>114,636</td>
<td>625</td>
<td>413</td>
<td>41,810</td>
</tr>
<tr>
<td>Incheon terminal 4-2</td>
<td>128,761</td>
<td>535</td>
<td>378</td>
<td>27,700</td>
</tr>
<tr>
<td>Busan terminal 7-1</td>
<td>20,449</td>
<td>533</td>
<td>122</td>
<td>9,437</td>
</tr>
<tr>
<td>Ulsan con terminal</td>
<td>56,552</td>
<td>390</td>
<td>498</td>
<td>8,580</td>
</tr>
<tr>
<td>Busan terminal 7-2</td>
<td>33,093</td>
<td>136</td>
<td>425</td>
<td>2,716</td>
</tr>
<tr>
<td>Pyongtaek East terminal</td>
<td>198,127</td>
<td>720</td>
<td>518</td>
<td>180,000</td>
</tr>
<tr>
<td>Avg.</td>
<td>96,936</td>
<td>488</td>
<td>392</td>
<td>4,504</td>
</tr>
<tr>
<td><strong>Multipl. operator</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Busan terminal 4</td>
<td>70,124</td>
<td>1,109</td>
<td>331</td>
<td>70,124</td>
</tr>
<tr>
<td>Busan central terminal</td>
<td>30,026</td>
<td>646</td>
<td>284</td>
<td>10,293</td>
</tr>
<tr>
<td>Busan terminal 3</td>
<td>62,343</td>
<td>1,145</td>
<td>159</td>
<td>23,628</td>
</tr>
<tr>
<td>Avg.</td>
<td>54,164</td>
<td>967</td>
<td>258</td>
<td>34,682</td>
</tr>
<tr>
<td>Terminal Name</td>
<td>General terminal (25)</td>
<td>Unitary operator</td>
<td>Multiplier operator</td>
<td>General terminal (total) Avg.</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------</td>
<td>------------------</td>
<td>--------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Specialized (total) Avg.</td>
<td>82,679</td>
<td>648</td>
<td>348</td>
<td>41,558</td>
</tr>
<tr>
<td>Incheon 8-1-terminal</td>
<td>42,432</td>
<td>400</td>
<td>165</td>
<td>8,000</td>
</tr>
<tr>
<td>Gamcheon central terminal</td>
<td>57,232</td>
<td>646</td>
<td>27</td>
<td>11,100</td>
</tr>
<tr>
<td>Gusan Hansol CSN</td>
<td>48,715</td>
<td>420</td>
<td>129</td>
<td>11,400</td>
</tr>
<tr>
<td>Gusan Sebang</td>
<td>173,475</td>
<td>420</td>
<td>114</td>
<td>31,900</td>
</tr>
<tr>
<td>Incheon 5-2 terminal</td>
<td>151,127</td>
<td>880</td>
<td>205</td>
<td>151,127</td>
</tr>
<tr>
<td>Ulsan Daewon</td>
<td>17,966</td>
<td>220</td>
<td>91</td>
<td>17,966</td>
</tr>
<tr>
<td>Ulsan Shinheungsa</td>
<td>6,460</td>
<td>469</td>
<td>103</td>
<td>6,883</td>
</tr>
<tr>
<td>Incheon terminal 6</td>
<td>91,246</td>
<td>750</td>
<td>70</td>
<td>14,380</td>
</tr>
<tr>
<td>POSCO</td>
<td>84,706</td>
<td>4,210</td>
<td>263</td>
<td>93,338</td>
</tr>
<tr>
<td>Yeosu35 (CJ Korea express)</td>
<td>1,339</td>
<td>120</td>
<td>19</td>
<td>1,200</td>
</tr>
<tr>
<td>Incheon terminal 5-1</td>
<td>31,100</td>
<td>270</td>
<td>167</td>
<td>5,400</td>
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<tr>
<td>Yeosu33 (Sebang)</td>
<td>1,560</td>
<td>120</td>
<td>18</td>
<td>1,560</td>
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<tr>
<td>Gusan SK shipping</td>
<td>33,316</td>
<td>410</td>
<td>80</td>
<td>7,600</td>
</tr>
<tr>
<td>Yeosu11 (Dong bang)</td>
<td>840</td>
<td>120</td>
<td>3</td>
<td>1,200</td>
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<tr>
<td>Gusan CJ Korea express</td>
<td>163,444</td>
<td>420</td>
<td>91</td>
<td>20,260</td>
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<tr>
<td>Avg.</td>
<td>57,960</td>
<td>910</td>
<td>120</td>
<td>25,105</td>
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<tr>
<td>Pohang terminal 8</td>
<td>64,740</td>
<td>1,298</td>
<td>72</td>
<td>30,000</td>
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<tr>
<td>Incheon terminal 3</td>
<td>105,558</td>
<td>1,250</td>
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<td>26,585</td>
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<td>Masan terminal 4</td>
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<td>40,701</td>
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<td>Pohang terminal 7</td>
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<td>Incheon terminal 8-2</td>
<td>88,578</td>
<td>1,020</td>
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<td>19,200</td>
</tr>
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<td>Ulsan port</td>
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<td>777</td>
<td>77</td>
<td>26,394</td>
</tr>
<tr>
<td>Ulsan terminal 67</td>
<td>44,120</td>
<td>810</td>
<td>65</td>
<td>22,400</td>
</tr>
<tr>
<td>Masan terminal 5</td>
<td>31,703</td>
<td>420</td>
<td>66</td>
<td>4,200</td>
</tr>
<tr>
<td>Avg.</td>
<td>82,379</td>
<td>1,077</td>
<td>90</td>
<td>26,166</td>
</tr>
<tr>
<td>Source: Jung Bong-min, 2004</td>
<td></td>
<td></td>
<td></td>
<td>25,487</td>
</tr>
</tbody>
</table>
1.2.4. Structure of Cargo Handling Tariffs (Korea)

① Outline

- Cargo handling tariffs are estimated by reflecting costs of cargo handling works at each port. The Ministry of Oceans and Fisheries (MOF) prepared such standards to be applied to various cargo types and different kinds of involved works at each port objectively and consistently. MOF announced the finally approved rates once every year.

- The current cargo handling tariffs were approved and announced by the Minister of Oceans and Fisheries. They are based on the Harbor Transport Business Act (Article 10: Freight Charges and Fees) and its enforcement ordinance (Article 27)

  - Any person who has registered a harbor loading and unloading business shall determine freight charges and fees as prescribed by Ordinance of the Ministry of Oceans and Fisheries and obtain approval thereof from the Minister of Oceans and Fisheries. The same shall also apply when he/she changes them (Article 10 - 1)

  - Notwithstanding paragraph (1), any person who has registered a harbor loading and unloading business shall determine freight charges and fees for freight loaded and unloaded in harbor facilities designated by Ordinance of the Ministry of Oceans and Fisheries or for freight falling under items designated by Ordinance of the Ministry of Oceans and Fisheries, and report them to the Minister of Oceans and Fisheries, as prescribed by Ordinance of the Ministry of Oceans and Fisheries. The same shall also apply when he/she changes them. (Article 10-2)

- Cargo handling tariffs put on the characteristics of public utility charges as they affect national logistics costs. Therefore, their systematization and operation came from governmental needs for price stabilization. Moreover, increase degrees in cargo handling tariffs tended to dictate degrees of wage increase for port laborers. As a result, the approved and announced rates became the standards in wage determination between company (terminal operator) and labor.18

18 A study on Improvement of stage 4 Entrance Regulations (Finance, transportation, health care and medical sector), Korea Industry Organization Association, (2011.2), p36
② Process of systematization

◦ Before the Harbor Transport Business Act was implemented in 1963, cargo handling tariffs were voluntarily managed between cargo owners and stevedoring companies or modified by the authorities. The Act initiated the rate system and the local Maritime and Fisheries Authority (the then title) approved the cargo handing rates\(^\text{19}\) and put the rate system in operation.

◦ As privatization and port environment changes carried on, new type of cargo handling tariffs, which were consistent and rational, became required. As a result, the cargo handling rate system was restructured in 1998.

◦ Background of cargo handling rate restructuring (1998)

- Amid changing industry environment, cargo handling method shifted to mechanization and automation from manual management of the past. Accordingly, the rate system was overhauled based on the following reasons.

- Complex cargo categorization: Excessively sub-divided according to container types and packaging types

- Rate system and irrational application of the rates: Costs failed to reflect difference between mechanization and manual work as well as difference between car transportation and manual transportation.

- Irrational extra charges: Extra charges are various and complex according to types of works and cargoes.

- Unclear applicable standards: Cargo handling costs were poorly reflected due to manual work and mechanization in the past.

◦ Contents of cargo-handling rates restructuring (1998)

- Work stages and input costs were analyzed based on cargoes of each terminal and rate structure was simplified for convenience of port users.

\(^{19}\) When the cargo handling tariffs were enacted, local port authority has the final decision right. Today, the MOF (main authority body) has this right and announces the finally approved rates.
Cargo handling service was separated for each work stage to mirror adequate costs as well as to curb cost increase factors. Such rate system restructuring was geared to sharpen national competitiveness.

All ports adopted the governmental approval system for cargo handling tariffs as in the past. However, container terminals could implement the rate report system.

3 Structure of cargo handling tariff system

- The approval system at general terminals

- After consultation between stake holders such as company, government and labor, the government decided and announced the official cargo handling tariffs. (Approval system)

- The approved rates are the final and notified by the Ministry of Oceans and Fisheries in March, once a year.

- Cargo handling tariffs should compensate satisfactory costs of stevedoring companies and should include enough profits for them. The handling costs incorporate labor costs and general management expenses. The costs are based on the written wage agreement between cargo handing companies and the port labor union.20

- The rates are determined based on the Harbor Transport Business Act (Article 10: Freight Charges and Fees) and the Price Stabilization Act (Article 4: Determination of Public Utilities Charges and Fees), considering price increase rates, governmental price policies and wage increase rates.

- The approval procedure for cargo handling tariffs is as follows;

- After the tariffs are decided after consultation with stevedoring companies and the port labor union, requests are made to the local port authority for calculation standards and other necessary documents.

- The local port authority receives and reviews the documents and transferred them to the Ministry of Oceans and Fisheries (MOF).

20 Park, Taewon, Rationalization of cargo handling rate system for general packaging products, KMI (2000, 6), p.12
Based on the transferred plan from the local port authority, the MOF holds prior discussion sessions along with cargo owners’ organizations and shipping companies. After gathering the opinions of users and mediated them, the MOF decides the final cargo handling tariffs.

The tariffs set by the MOF are finally approved after the last consultation with the Ministry of Finance and Economy.

Fig. 4 Computation of Cargo Handling Tariffs at Ports

- Local Port & Transportation Association
- Ministry of Oceans and Fisheries
- Ministry of Finance and Economy

Apply → Local Port Authority → Mediate → Approve-

Source: Korea International Trade Association (KITA)

- Cargo handling rate structure consists of 'basic tariffs,' 'extra charges,' and 'other charges.' Items of the each cargo handling type (general cargo handling, special cargo handling and coastal cargo handling) are specified under 'basic tariffs.' And then, 'extra charges' are separately marked and 'other charges' are collected for special service.

- General cargo handling tariffs: Rates for traditional bulk cargoes whose handling cannot be mechanized.

- Special cargo handling tariffs: Rates for mechanized cargo handling works. These cargoes are divided into cargoes at grain terminal, cars at car ferry, cargoes of car-only ships, cargoes for special machinery, cargoes at coal terminal, cargo handling at RO-RO ship only terminal, and cargoes at limestone terminal.

- Coastal cargo handling tariffs: Rates for cargo handling as part of coastal transportation, instead of trade

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21 Cargo handling tariffs (MOF, 2015.3)
Table 12 | Structure of Cargo Handling Tariffs

<table>
<thead>
<tr>
<th>General cargo handling</th>
<th>Basic tariffs</th>
<th>Extra charges</th>
<th>Other charges</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Divided into cargo handling inside ship, cargo handling with supplementary ships, and cargo handling in land</td>
<td>Extra charges for 4 items and 13 work types</td>
<td>Divided into extra work other than basic cargo handling, flat rate charges (appropriation for retirement benefits, port modernization fund) and agreed charges</td>
<td>Work scope, work distance, timing of rate implementation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special cargo handling</th>
<th>Basic tariffs</th>
<th>Extra charges</th>
<th>Other charges</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Divided into 7 cargoes including: cargoes at grain terminal, cars at car ferry, cargoes of car-only ships, cargoes for special machinery, cargoes at coal terminal, cargo handling at RO-RO ship only terminal, and cargoes at limestone terminal</td>
<td>Extra charges for 11 types</td>
<td>Divided into 5 according to cargo type and port</td>
<td>Work scope, work distance, timing of rate implementation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coastal cargo handling</th>
<th>Basic tariffs</th>
<th>Extra charges</th>
<th>Other charges</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Divided according to packaging type (incl. containers for coastal transportation)</td>
<td>Extra charges for 4 items and 8 work types</td>
<td>Divided into extra work other than basic cargo handling, flat rate charges (appropriation for retirement benefits, port modernization fund) and agreed charges</td>
<td>Work scope, work distance, timing of rate implementation</td>
</tr>
</tbody>
</table>

Source: Cargo handling tariffs, MOF (2015.03)

- Features of the approved cargo handling tariffs are as follows;

- The rates are applied to stevedoring companies, shipping companies and other contract parties. Each party is responsible to observe the tariffs.

- Stevedoring companies should show the confirmed rates to the counterpart before a contract is sealed.

- Stevedoring companies cannot suggest separate rates, citing less cargo volume or difficulties in cargo handling. They cannot reject to sign a contract.
- Stevedoring companies cannot force separate rates based on their ability to secure large cargo volume or their supremacy position.

- Contracts based on unapproved rates cannot be signed as a way to set off unjustified competition.

- The Ministry of Oceans and Fisheries (MOF) should annually monitor implementation of the approved tariffs as well as the reported tariffs and examine the actual condition.

- During monitoring and examination, all contract parties should present application cases of the tariffs (approved/reported).

- The MOF can punish stevedoring companies when they apply charges or rates different from those approved or reported according to the *Harbor Transport Business Act (Article 26)*.

- When improvement is necessary for the approved rates, anyone can specify the reasons in written documents and send them to the MOF before February every year.22

22 The report system for cargo handling tariffs at container terminal

- The report system for cargo handling tariffs is an exceptional case of the approved tariff system (*Harbor Transport Business Act, Article 10-2*). Under the system, container cargoes at container terminals should be reported to the Minister of Oceans and Fisheries and observe the cargo handling tariffs.

- Terminals to which the reported rates are applied are limited to container terminals.

- The goal of the report rate system is to enhance competitiveness of terminal operators. Under the system, terminal operators apply their own rates, differentiating themselves from others.

- Business bodies at container terminals decide cargo handling tariffs for

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Article 26 (suspension and revocation of registration) Where a harbor transport-related business owner falls under any of the following subparagraphs, the Minister of Oceans and Fisheries may revoke the registration or suspend the whole or part of the business with a fixed period not exceeding six months.
themselves. Basically, the rates include costs for work within the main ship, marshalling costs, and extra charges for work at night or on holidays, bonded cargo handling fees, additional charges for hatch cover and re-handling fees within the terminal.

- TOCs or stevedoring companies request documents on cargo handling tariffs and their detailed estimation from local port authority. The papers should clearly show rates before and after, date of change and application methods for changed rates.

- The local port authority hands over submitted documents to the MOF (main administrative body) and the MOF collects them and evaluates adequacy of the reported rates.

- The finally approved cargo handling tariffs are notified to TOCs or stevedoring companies.

- The approved tariff system for container terminals kindled excessive competition among TOCs, pushing down cargo handling tariffs continuously. The low cargo handling tariffs worsened financial condition of TOCs. Accordingly, berths were returned and some had to close their business. However, large foreign TOCs took a lion's share of cargo handling works and posted higher sales profits. As such situation raised concerns for leak of national wealth, the approved cargo handling tariff system was re-introduced temporarily.

- The following shows how cargo handling tariffs are reported.\textsuperscript{23}

\textsuperscript{23} Park, Taewon, Institutional Improvement of Korea’s Container Cargo handling tariffs, KMI (2002.5) p.59
Fig. 5 Changing Cargo Handling Tariffs at Busan Port

As the number of port facilities, including Busan New Port, continued to increase, supply exceeded demand. As a result, the report system, whose goal was to induce competition for higher competitiveness, began losing its intended effects. The governmental intervention became necessary in public business sector like port industry and the approval system was known effective in establishing market order. Thus, cargo handling tariffs at container only terminals became to require approval from the Minister of Oceans and Fisheries again. The approval system is to be re-introduced from July 2015 and to be temporarily effective by June 30, 2018.24

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24 Article 2 (Exceptions in approving freight charges and fees) Notwithstanding Article 10-2, charges and fees of the items designated by Ordinance of the Ministry of Oceans and Fisheries should be decided according to 10-1 until June 30, 2018 and should be approved by the Minister of Oceans and Fisheries.
1.2.5. Introduction of the Terminal Operation Company (TOC) System and Overseas Port Operators in Korea

- With the introduction of deregulation policies and port privatization since 1997 which started attracting private capital in port construction, overseas port operators started expanding its businesses realm into container terminals.

- At an early stage, it usually took the form of equity participation in 1998. However, the acquisition of the rights to operate the existing terminals and the rent of new ones has become common since 2000. Overseas port operators ventured into not only Busan Port but also into Incheon and Gwangyang Port in 2002. In case of Gwangyang Port, the occupancy ratio of overseas operators is more than 50% in terms of facility size and cargo handling capacity.25

- The purposes of opening up the port market and attracting overseas operators can be analyzed as follows.26

  - Increasing the supply of port services through the introduction of overseas capital (attracting overseas capital to compensate the lack of port development resources)

  - Tapping into the advanced management resources (attracting overseas port operators with superior operation know-how and outstanding marketing ability to address the issues of domestic companies' lack of port operation know-how and marketing ability and make an improvement)

  - Container ports need to install, control and maintain high performance equipment, have an appropriate terminal operation system established and attract large-sized shipping companies in order for effective operation.

  - Creation of employment and added values

25 Referred to Korea Maritime Institute, "Policy Measures for Overseas Port Operators' Increasing Entrance to Korean Market" (2002), p1

26 Referred to and restructured Korea Maritime Institute, "Policy Measures for Overseas Port Operators' Increasing Entrance to Korean Market" (2002), p15-23
① Effects of Overseas Port Operators’ Advancement into the Domestic Market

- As of now, the seven companies who participate in the operations of Korean container terminals in any form include HPH (Hong Kong), CSXWT (US), PSA (Singapore), Evergreen/Uniglory (Taiwan), OOCL (Hong Kong) and ZIM (Israel). OOCL and ZIM invest a share and the rest directly participate in the port operation.\textsuperscript{27}

- Overseas port operators' entrance into the domestic market presents both positive and negative effects.\textsuperscript{28}

- Positive effects

  - Introducing capital, cutting-edge equipment and the latest terminal operation systems
  - Job creation / attracting shipping companies and freight volume
  - Decrease cargo handling tariff through the introduction of advanced operation know-how
  - Improve service quality and productivity
  - Promote market competition
  - Promote domestic ports worldwide: HPH, PSA Corp., CSX World Terminal and Evergreen that are operating in Korea are global brands. Their presence in Korea presents a good opportunity to let the world know Korean ports are not closed but rather opening to a certain level, contributing to the port globalization.

\textsuperscript{27} Referred to Korea Maritime Institute, referred to “Policy Measures for Increasing Overseas Port Operators in Korean Market” (2002) p24

\textsuperscript{28} Referred to and restructured Korea Maritime Institute, “Policy Measures for Increasing Overseas Port Operators in Korean Market” (2002) p26-34
Negative effects

- Outflow of excess profits overseas
- Raise pay
- Build a market dominance based on an economy of scale and abuse the strength
- The monopoly issue: the possibilities are that if ports are privatized, private operators will focus on getting profits and do against public interest by establishing a monopolistic system and exercising market dominance. It could cause the following issues; increasing port fees, decreasing service quality, discrimination against small and medium-sized shipping companies and shippers.
- The issue of acquiring publicity: Even if the service is a must to maintain the port function, operators possibly tend not to provide the service as it does not help getting profits. The services in example include ship traffic control, reduction of environmental pollution, ship and cargo safety management. They are necessary to maintain the port function and to secure publicity.

1.2.6. Implications of the Introduction of the TOC System

- The TOC system was introduced in 1997 to increase operational efficiency and is still in operation. However, improper post-management on the TOC could cause some problems in the process of choosing and operating the system. When the system was introduced in 1997, several stevedoring companies created a consortium to establish a TOC, which guarantees their own rights and interests to the maximum level and therefore minimized resistance to this institutional improvement.
- Unlike the original purpose, the operation of organization, manpower and equipment had not been integrated, but been separated by berth for a long period of time even after the establishment of the TOC system. The TOC has failed to reach an internal integration;

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29 Referred to and restructured Korea Maritime Institute, “Policy Measures for Increasing Overseas Port Operators in Korean Market” (2002) p59-70
rather its operation has been segmented. Therefore, the issue of waste was caused such as overlapping of manpower and equipment along with the issue of inefficiency, let alone the un-realization of an economy of scale.

- Recognizing the issues, the government authorities and the industry did their best to integrate the operation. As a result, the system has been transformed into a single corporation system since May, 1999. However, it was a mere physical integration, short of achieving a substantial integration among participating companies. The TOC has the form of a single corporation looking from outside. However, when it is created with more than two companies, each participant operates its share of the terminal, independently. Therefore, the private investment for efficient operation and expansion of facility capacity was limited unlike the original expectations.

- While it is important to achieve an economy of scale in terms of port operation, segmentation of operations by participant within the TOC not only causes inefficiency and overlapped manpower and equipment but also decreases efficiency of berth and shed use. That is, severe segmentation of the TOC operation increases operation inefficiency, which harms the original purpose of the system, which was to increase operational efficiency.

- When the system was introduced in 1997, several stevedoring companies created a consortium to establish a TOC, which guarantees their own rights and interests to the maximum level and therefore minimized resistance to this institutional improvement.

- In case of excess supply, multiple TOCs within the ports will compete each other, which will lower the service fee. In turn, TOCs who mainly rely on cargo handling tariff come to have a poor profit structure, which will have them to give up the lease contract. Decreased service quality will, in the end, make the entire port industry lose competitiveness.

- Compared with other ports, Busan Port has relatively many TOCs. Container terminals are in a fierce competition as they have the same cargo dealing methods and deals with the same type of cargoes. Therefore, price is their top priority.

  - In this fierce competition, they set a lower price and such an excess competition puts TOCs in a difficult position.
The lease period should be decided based on an analysis on the facilities and equipment the relevant container terminal operators will invest in and the durable years of the equipment should be guaranteed. That is, less than 3 years of a short-term lease is inappropriate to make an investment in the facilities or equipment of the relevant terminal considering the durable years and you can't expect any improvement in port efficiency in this case. For port terminal lessee to invest in superstructures including cargo dealing equipment, warehouse and storage facilities, it is appropriate to set the lease period of at least 10 years. And the majority of major ports worldwide set the lease period of the minimum 15 years.

1.2.7. Recommendations for the Introduction of the TOC System

① Development of the Guidelines on TOC Application and Management

- By establishing standards on TOC bidding and contract, where the responsibility of the operation lies can be clarified and transparency can be secured when renewing the contract.

- In order to promote unified operation of the previously berth-based and consortium-based operators, the evaluation process should review whether the operation is unified before renewing the contract.31

② Conduct TOC Performance Evaluation

- Evaluation process and methodologies on the port operation performances should be defined to increase productivity and competitiveness of ports through efficient port operation. In this way, TOCs can be encouraged to voluntarily pursue innovation and competition.

- The companies with the outstanding evaluation can be granted with incentive such as reduction of rent, but those with poor evaluation are necessarily given with the penalty such as lease contract cancellation or being rejected from re-bidding.

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31 Excerpt from the Ministry of Oceans and Fisheries Port Management Division Internal Data (2012) 'Improvement Plan for the TOC System' and Article from the [Guidelines on TOC Selection and Management]
<table>
<thead>
<tr>
<th>Div.</th>
<th>Details</th>
</tr>
</thead>
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<td>Cargo service satisfaction level</td>
<td>Speedy and accurate cargo handling (cargo loading/unloading)</td>
</tr>
<tr>
<td></td>
<td>Safe cargo handling</td>
</tr>
<tr>
<td>Port facility satisfaction level</td>
<td>Terminal cleanliness</td>
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<tr>
<td></td>
<td>Subsidiary facility services (parking lot, cafeteria, etc.)</td>
</tr>
<tr>
<td>Customer service satisfaction level</td>
<td>Rapid task and request handling</td>
</tr>
<tr>
<td></td>
<td>Employee’s work attitude</td>
</tr>
<tr>
<td></td>
<td>Rapid information provision</td>
</tr>
<tr>
<td>Satisfaction about fairness</td>
<td>Fair berth allocation and coordination</td>
</tr>
<tr>
<td>Others</td>
<td>Overall satisfaction with port use</td>
</tr>
</tbody>
</table>

Source: (Ministry of Land, Transport and Maritime Affairs Notification No, 2011-101)

3 Reflection of Laws

- A clear legal foundation is required for the TOC system based on the above-mentioned [Guidelines for the Selection and Management of TOC] and [Work Guidelines for the TOC Performance Evaluation].

4 Countermeasures to Increasing Overseas Port Operators in Korean Market32

- With the increasing overseas port operators in Korean market, some worrisome elements should be identified in advance along with the countermeasures to the issues.

- Measures to promote fair competition: When overseas port operators expand its business in Korean port market, their market dominance will increases, which also increase the possibility that the market dominance is abused. This could break the order of fair competition, turning the port industry into a monopolistic market and decreasing productivity. Preventative measures should be installed in

32 Referred to and restructured KMI, “Policy Measures to Increasing Overseas Port Operators in Korean Market” (2002) p73-84
advance, but the market opening should not be limited in the course. Some restrictions on the overseas companies’ entry to the domestic market should be established and the restrictions can be gradually relaxed. In addition, a guideline on participation shares and market shares is necessary and the regulations that can be applied to the port industry should be developed based on the Monopoly Regulation and Fair Trade Act in order to prevent unfair transactions.

- Establish the terms of lease to maintain the order of the port market: If overseas port operators do not treat cargoes during the lease period or do not conduct the port functions, it could decrease port efficiency. To prevent this, the penalty clause should be added to the lease contract to encourage them to contribute to the port facilitation through cargo treatment activities beyond a mere investment. Moreover, the minimum port lease period should be stipulated on the contract and the clause that bans the sales of the rights to operate a port for the purpose of getting the sales profit should be added to the contract. And the exercise of the market dominance or unfair transactions should be prevented by adding the clause to the contract, in which the rights to operate a port can be recovered for the activities that can disturb the market order. Lastly, the clause that prepares for an emergency should be inserted in the contract (so that port facilities can be used as a nation’s critical facility in case of emergency).

- Maximize the overseas capital attraction effects: In order to take a strategy to attract more cargo volume, one of the ways to attract the maximum overseas capital, it is necessary to introduce the measures of differentially imposing rent according to the scale of the cargo volume attracted.

- Strengthen competitiveness of domestic port operators: Domestic operators could put in a disadvantageous position when they are short of financing capabilities, operation know-how and marketing abilities compared with overseas counterparts. Therefore, there should be ways to help domestic operators to strengthen competitiveness considering the existing competitiveness gap.

- Solve reverse discrimination against domestic companies: A policy should be established that maintains fairness in treating both domestic and overseas operators. When the importance of attracting overseas capital and swift attraction are overly emphasized and too much incentive is granted to overseas companies, this could give disadvantages to domestic operators.
1.2.8. Policy Suggestion

- The TOC system turns the existing government-owned and -operated port operation system into the government-owned, private-operated system. The new system took effect from January, 1997 and berth of each unit pier, apron, open-air storage yards, unloading facilities are entirely leased to a private company with the rights to operate.

- The system was introduced with the request from the International Bank for Reconstruction and Development and an increasing necessity to introduce capital and efficiency of the private sector to increase port efficiency and with the influence of the national port privatization policy.

- The TOC system was introduced in 1997 and has been still in implementation to enhance efficiency of port operation. Poor post management of port operators could cause some troubles in the process of selecting and managing the operators.

- When the system was introduced in 1997, several stevedoring companies created a consortium to establish a TOC, which guarantees their own rights and interests to the maximum level and therefore minimized resistance to this institutional improvement.

- Unlike the original purpose, the operation of organization, manpower and equipment had not been integrated, but been separated by berth for a long period of time even after the establishment of the TOC system. The TOC has failed to reach an internal integration; rather its operation has been segmented. Therefore, the issue of waste was caused such as overlapping of manpower and equipment along with the issue of inefficiency, let alone the un-realization of an economy of scale.

- Recognizing the issues, the government authorities and the industry did their best to integrate the operation. As a result, the system has been transformed into a single corporation system since May, 1999. However, it was a mere physical integration, short of achieving a substantial integration among participating companies.

- The TOC has the form of a single corporation looking from outside. However, when it is created with more than two companies, each participant operates its share of the terminal, independently. Therefore, the private investment for efficient operation and expansion of facility capacity was limited unlike the original expectations.
- Severe segmentation of the TOC operation increases operation inefficiency, which harms the original purpose of the system, increasing operational efficiency.

- In case of excess supply, multiple TOCs within the ports will compete each other, which will lower the service fee. In turn, TOCs who mainly rely on cargo handling tariff come to have a poor profit structure, which will have them to give up the lease contract. Decreased service quality will, in the end, make the entire port industry lose competitiveness.

- Compared with other ports, Busan Port has relatively many TOCs. Container terminals are in a fierce competition as they have the same cargo dealing methods and deals with the same type of cargoes. Therefore, price is their top priority.

- In this fierce competition, they set a lower price and such an excess competition puts TOCs in a difficult position.

- The lease period should be decided based on an analysis on the facilities and equipment the relevant container terminal operators will invest in and the durable years of the equipment should be guaranteed. That is, less than 3 years of a short-term lease is inappropriate to make an investment in the facilities or equipment of the relevant terminal considering the durable years and you can't expect any improvement in port efficiency in this case. For port terminal lessee to invest in superstructures including cargo dealing equipment, warehouse and storage facilities, it is appropriate to set the lease period of at least 10 years. And the majority of major ports worldwide set the lease period of the minimum 15 years.

- The guidelines on TOC application and management should be established and the performance evaluation on port operators should be conducted when introducing the TOC system. And the system should reflect the domestic laws and the countermeasures for the increasing overseas port operators in Korean market should be developed, as well.
1.3. Busan Port Hinterland Complex Case

1.3.1. Development Background

◦ The modern concept of the port hinterland complex started from the idea that includes both port free economic zone and delivery center in the US and Europe in the mid-1970s. As ports perform more various functions and start to provide added value services, ports were expanded in space to create the hinterland complexes which have both direct and indirect relations with ports.33

◦ With the increasing demands from the users who hope to get more various services from port, the functions of the port hinterland started to expand from simple cargo handling to a part of production process, becoming a critical factor that decides port competitiveness.34

- Not only a simple cargo handling ability but also the varieties of added value services provided by ports are to be considered when choosing ports.

- As multiple companies move their logistics origin/destinations to hinterland complex, logistics base, R&D base and manufacturing base tend to be created around the port areas.

◦ From the perspective of a company, the supply chain that connects from supply of raw materials to the sales of the products should be established in order to build up a low-cost production network or production base. Ports have never become more important in this matter.

- Therefore, the platform is being created in and around the ports for all the international transaction activities such as procurement, production, sales and consumption.

◦ The international logistics system established based on the trade and logistics globalization not only saves logistics cost and time, but also grows fast to create the maximum logistics added values.


- This moves the focus of the logistics hub from the warehouse near the manufacturers to the port hinterland complex.

- Port hinterland complexes create added values and moreover provide global logistics service to each and every nation around the world.

- Port hinterland complex which has both direct and indirect relations with ports was established to provide a space for industrial or economic activities to port users.

- As the logistics functions cluster, Northeast Asian countries spare no efforts to create industrial complex or new towns in the port hinterlands to attract global companies and to increase cargo volume.

1.3.2. Current Development Status of Port Hinterland Complex

- The establishment of port hinterland complex aims to take the initiative in global logistics and to strengthen national competitiveness (to create port demands and added values)

Source: (Ministry of Land, Infrastructure and Transport, 2011)
The principles are that the government creates the site of the Busan Port Hinterland and the private developers develop its superstructures.

The following figure shows how an area of demand for the port hinterland development is calculated.

**Fig. 7** Area of Demand Calculation System for the Port Hinterland Development

Source: (Ministry of Land, Infrastructure and Transport, 2011)
Busan Port created the 3,503,000 m² of port hinterland complex as of 2013 and set the target of creating 4,707,000 m² by 2020.

Table 14 Plan on Creation and Supply of Port Hinterland Complex

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>~ 2013</th>
<th>2014</th>
<th>2015</th>
<th>2016~2020</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Creation</td>
<td>Supply</td>
<td>Creation</td>
<td>Supply</td>
<td>Creation</td>
</tr>
<tr>
<td>Busan Port</td>
<td>8,743</td>
<td>5,555</td>
<td>3,530</td>
<td>2,098</td>
<td>506</td>
</tr>
<tr>
<td>.Bukbu(North)</td>
<td>2,226</td>
<td>1,154</td>
<td>1,704</td>
<td>1,044</td>
<td>5 2</td>
</tr>
<tr>
<td>.Ungdong</td>
<td>2,983</td>
<td>1,806</td>
<td>1,826</td>
<td>1,054</td>
<td>506</td>
</tr>
<tr>
<td>.Nambu(South)</td>
<td>1,366</td>
<td>951</td>
<td></td>
<td></td>
<td>1,366</td>
</tr>
<tr>
<td>.Seobu(West)</td>
<td>2,168</td>
<td>1,644</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Source: Ministry of Oceans and Fisheries, 2014

1.3.3. Effects of Creating a Port Hinterland Complex

- Effect of Creating a Port Hinterland Complex
  - Jebel Ali Free Zone (Dubai) houses 6,400 businesses from 120 countries and creates the employment effects of 160,000.\(^{35}\)
  - Rotterdam Port Hinterland houses 2,950 businesses, creating added value\(^{36}\).
  - Development of the Busan Port Hinterland Complex has many ripple effects throughout the local economy including sparking 5.298 trillion worth of production and 2.1886 trillion worth of added value and creating about 39,437 jobs.\(^{37}\)

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\(^{35}\) Referred to Korea Maritime Institute, “Research on Port Hinterland Development Measures to Maximize Added Value Creation” (2011) p83

\(^{36}\) Referred to Korea Maritime Institute, “Research on Port Hinterland Development Measures to Maximize Added Value Creation” (2011) p80

◦ Busan Port achieved the freight target as planned in 2013 for the hinterland complex.

- The transit cargo volume increased by 37.3% from the previous year and has tripled from 2010.

<table>
<thead>
<tr>
<th>Table 15</th>
<th>Increase in Transit Cargo Volume</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
</tr>
<tr>
<td></td>
<td>Volume</td>
</tr>
<tr>
<td>2010</td>
<td>320,246</td>
</tr>
</tbody>
</table>

Source: Ministry of Oceans and Fisheries, 2014

1.3.4. Implications and Policy Suggestion

◦ Port hinterland complex must be created along with the port development as it creates cargo volume and port added values and strengthens port competitiveness.

◦ As internalization and diversification of the integrated shipping system expands the Global Product Network or (GPN), global companies create logistics, R&D and production bases in and around the port hinterland complexes.

◦ Port hinterland complexes created in Korea achieve its goals in terms of lease proportion, employment creation and attraction of foreign investment and the transit cargo volume is on the rapid rise.

◦ The operation of the port hinterland complex should review the possibilities of the business models presented by the candidate tenants (or the companies attracted) from many different angles. And the ways to attract competitive companies should be considered when selecting the terms of the candidate tenants (or the companies attracted).

◦ As the ports perform various functions and started to provide various added value services, the necessity of port hinterland complex increases, which has direct and indirect relations with the ports as it expands the space of ports.
° The port users consider not only port’s cargo handling capacities but also the diversity and possibility of added values provided by the ports as an important element in choosing a port.

° The development of the Busan Port Hinterland Complex generated several ripple effects throughout the local economy including production inducement, creation of added values and jobs and it not only increases cargo volume, but also attracts foreign capital.

° Therefore, the port hinterland complex is required to be created along with the port as it generates added values for ports and strengthens competitiveness of the ports.

1.4. Port Master Plan Establishment Case

1.4.1. Background and History

° As a background, the central government establishes a mid- and longer-term port development and promotion plans and a ten-year plan with which a timely port development is made possible and reviews its validity to revise the plans every 5 years.

- Ports are in fierce competitions. If it is not developed timely but delayed, it causes a huge social and economic loss.

- Therefore, the establishment of port master plan supports vibrant import and export and help to be prepared for the insufficient port facilities and increasing port demands. And the ports can be promoted as a national core strategic industry for the national economic development.

- Profitability of port development is low for its huge amount of private investment and the investment involves high risks (initial investment period is 5-10 years, payback period 50 years).

- It is significant to attract private capital for the port development for diversity. However, the government-led port development is necessary as it is difficult to achieve the timely development and the higher security of port facilities only with private capitals.
The local government-led port development is appropriate for the local society as it considers the local conditions in developing the port. However, its poor financial conditions present a hardship to the development which requires a large-scale investment. Therefore, the central-government-led investment is necessary for efficient budget operation.

The central-government-led master plan prevents overlapping investment that originates from excessive and irrational desire for development and too much competition among domestic ports. The government-led balanced port development helps to improve competitiveness of the national port and logistics industries.

- History of Port Master Plan

<table>
<thead>
<tr>
<th>Div</th>
<th>Period (Investment Planned)</th>
<th>Details</th>
</tr>
</thead>
</table>
| 1st Port Master Plan (Apr., 1995) | 1992-2001 (10 tril. won)    | · Expansion of port facilities which have sufficient and integrated cargo distribution functions with the specialization by area.  
                               |                             | · Turn the government-operated system to private-operated one, increased efficiency thanks to open competition. |
| 2nd Port Master Plan (Dec. 2001) | 2002-2011 (34 tril. won)     | · Nurture hub port that generates demands, develop hub port by area      |
| 2nd Revision (Dec. 2006)      | 2006-2011 (21.9 tril. won)   | · Continue to liberalize, privatize and commercialize port operations and introduce the eco-friendly concept, Water Front |
| 3rd Port Master Plan (Jul. 2011) | 2011-2020 (40 tril. won)    | · High value added port with logistics, leisure and cultural elements   
                               |                             | · Re-create the port space as a national core infrastructure based on various functions such as logistics, production, commercial, waterfront and disaster prevention |

Source: Ministry of Land, Infrastructure and Transport, 2011
1.4.2. Port Master Plan Development Process

**Harbor Act Article 5 (Establishment of Port Master Plan)**

*To promote port development and increase its operational efficiency, the Minister of Land, Transport and Maritime Affairs should establish and implement the port master plan for the designated port and the Mayors and Governors should establish and implement the master plan for the local port every ten years.*

### Establishment of Port Master Plan (Article 5)

- Trade port, coastal port $\Rightarrow$ every ten years
- Consultation among central administrative organization heads, mayors and governors

### Contents of Port Master Plan (Article 6)

- Matters about port designation and change
- Matters about port facility supply
- Matters about size, development period and future demands of port facilities
- Port management, operation plan
- Designation of port area and designated development area

### Consultation among central administrative organization heads, mayors and governors (Article 5)

### Port Policy Commission (Article 4)

- Central Port Policy Council (Minister of Land, Transport and Maritime Affairs)
- Local Port Policy Council (Regional Oceans & Fisheries Administration Director)

### Notification of Port Master Plan (Article 8)

*Source: (Ministry of Land, Transport and Maritime Affairs, 2011)*
The Process of Developing Port Master Plan

<table>
<thead>
<tr>
<th>Master Plan conception phase</th>
<th>The necessity of developing ports raised and draw up a plan</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>• Increasing port demands</td>
</tr>
<tr>
<td></td>
<td>• Change in shipping patterns (containerization)</td>
</tr>
<tr>
<td></td>
<td>• Development request from locals and related organizations</td>
</tr>
<tr>
<td></td>
<td>• Draw up a development necessity and basic draft</td>
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</table>

<table>
<thead>
<tr>
<th>Development phase</th>
<th>Master plan and validity review</th>
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<tbody>
<tr>
<td></td>
<td>Basic data investigation</td>
</tr>
<tr>
<td></td>
<td>• Technical data (maritime, water level, geological and soil investigation)</td>
</tr>
<tr>
<td></td>
<td>• Port status data investigation (facility and operation)</td>
</tr>
<tr>
<td></td>
<td>• Related plan investigation(land, local, city and industrial conditions)</td>
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</tbody>
</table>

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<thead>
<tr>
<th>Cargo volume estimation and function establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Analysis on existing performance data (cargo, passenger, etc.)</td>
</tr>
<tr>
<td>• Economic index review such as GNP and population growth</td>
</tr>
<tr>
<td>• Review plans of related organizations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Select location and draw up a floor plan (draft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Select location and floor plan draft</td>
</tr>
<tr>
<td>• Facility arrangement plan</td>
</tr>
<tr>
<td>• Behind-the-scene transport network plan</td>
</tr>
<tr>
<td>• The best location and arrangement plan</td>
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</tbody>
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<thead>
<tr>
<th>Physical and numerical experiment impact assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Harbor tranquility, burying, internal erosion investigation</td>
</tr>
<tr>
<td>• Seawater circulation, water rising and current change</td>
</tr>
<tr>
<td>• Environmental, transport, fishing damage impact assessment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Establishment of development plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Various types of structural forms and facades</td>
</tr>
<tr>
<td>• Process planning</td>
</tr>
<tr>
<td>• Estimation of business expenses</td>
</tr>
<tr>
<td>• Draw up a project plan by stage</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical feasibility review</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Review various construction methods, designs and construction ability</td>
</tr>
<tr>
<td>• Review various construction methods application</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Economic feasibility review</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Benefit analysis on investment cost by plan</td>
</tr>
<tr>
<td>• Review each plan’s economic performance</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Intermediate and final review report</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Meetings among related organizations, port-related organizations</td>
</tr>
<tr>
<td>• Final review of various technical matters</td>
</tr>
<tr>
<td>• Confirm and review on matters to be improved</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Confirmation phase</th>
<th>Establish port master plan (draft) and discussion among related organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Review and reflect the discussed opinions and confirm the master plan (draft)</td>
</tr>
<tr>
<td></td>
<td>Deliberation at the Central Policy Council</td>
</tr>
<tr>
<td></td>
<td>Confirm and Notify the Port Master Plan</td>
</tr>
</tbody>
</table>

Source: Ministry of Land, Infrastructure and Transport, 2011
1.4.3. Effects of Port Master Plan Establishment

- Increased competitiveness with the timely expansion of port infrastructure (from 33rd in 2006 to 23rd in 2010).

- Become the 9th largest trade giant (7th biggest exporter) in the world due to its smooth handling of import and export cargo (ports handle 99.8% of the total import/export cargo volumes).

- Secure external price competitiveness of import and export goods (reduce port congestion and cost).

<table>
<thead>
<tr>
<th>Div.</th>
<th>2006</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship demurrage rate (over 12 hours)</td>
<td>5.38%</td>
<td>2.92%</td>
</tr>
<tr>
<td>Port demurrage, congestion cost</td>
<td>714.1 bil. won</td>
<td>399.3 bil. won</td>
</tr>
</tbody>
</table>

Source: Ministry of Land, Transport and Maritime Affairs, 2011

1.4.4. Implications and Policy Suggestion

- The central government establishes a mid- and longer-term port development and promotion plan and a ten-year plan with which a timely port development is made possible and reviews its validity to revise the plan every 5 years.

- The establishment of the port master plan will support vibrant import and export with increased trade volume and will have the ports to be prepared for the chronic lack of port facilities and increasing port demands.

- It is significant to attract private capital for the port development for diversity. However, the government-led port development is necessary as it is difficult to achieve the timely development and the higher security of port facilities only with private capitals.

- The local government-led port development is appropriate for the local society as it considers the local conditions in developing the port. However, its poor financial conditions present a hardship to the development which requires a large-scale investment.
Therefore, the central-government-led investment is necessary for efficient budget operation.

- The central government’s unilateral port development and promotion plans for all the ports in Korea can prevent overlapped investment and support a timely expansion of port infrastructure. However, with incorrect estimation about infrastructure demands, the port operators should suffer worsening profitability due to lack of cargo volume or over supply along with the issue of idle facilities.

- The central-government-led master plan prevents overlapping investment that originates from excessive and irrational desire for development and too much competition among domestic ports. The government-led balanced port development helps to improve competitiveness of the national port and logistics industries.

- The central government’s unilateral port development and promotion plans for all the ports in Korea can prevent overlapped investment and support a timely expansion of port infrastructure. However, with incorrect estimation about infrastructure demands, the port operators should suffer worsening profitability due to lack of cargo volume or over supply along with the issue of idle facilities.

- It is hard for the central government to reflect each port’s special conditions or potentials on the port master plan. Therefore it is necessary to gather local community opinions when establishing local port plans.

- The mismatch between the port functions managed by the central government and the urban functions managed under the local government could continue to create a friction between port functions and residential and commercial functions of nearby cities. Therefore an institution should be established to reflect the opinions of the local government to address the mismatch issue.
IV. Conclusion

- For Indonesia, which is created with approximately 18,000 islands, marine transportation and efficient operation of ports are important. It takes too long to treat container cargo due to lack of container cargo handling equipment and hinterland and increasing freight volume. Therefore, it is necessary to increase port efficiency and reduce logistics cost.

- Lack of competition is a major cause behind the high port prices in Indonesia. Multiple stevedoring companies are in operation without any price competition.

- Indonesia’s Commission for the Supervision of Business Competition (KPPU) showed a huge interest in the Busan Port case and especially about the background and the effects of the introduction of the TOC system to promote competition within the port. Based on this, the study aims to introduce related cases and to its implications to Indonesia.

- The TOC system turns the existing government-owned and –operated port system into the government-owned, private-operated one. The new system took effect from January, 1997 and berth of each unit pier, apron, open-air storage yards, unloading facilities are entirely leased to a private company with the rights to operate.

- The TOC System which took effect in January, 1997 was divided for two different terminals; general terminal and container terminal. The majority of those who are sleeved for the TOC are general stevedoring companies and large-scale shipping companies with a fixed cargo handling facility could participate. A certain standards such as cargo handling history were reviewed to select the TOC through a way of free discussion among the companies.

  - Collusion, dumping, singing multiple contracts and evasion of a certain ship or evasion of cargo handling of a certain shipping companies are banned to prevent TOC’s monopoly and to secure fairness.

  - The ports are operated by a private company but the publicity required for ports are secured as the order of the rent facility use can be adjusted according to the needs of the public and the ship entry/departure order can be also adjusted and controlled for efficient operation.
The system was introduced with the request from the International Bank for Reconstruction and Development and an increasing necessity to introduce capital and efficiency of the private sector to increase port efficiency and with the influence of the national port privatization policy.

The TOC system was introduced to increase port service productivity, to strengthen management capability, to increase economic benefits through the introduction of competitive port operation system, to establish an integrated logistics system and to secure resources for port development and maintenance.

When the system was introduced in 1997, several stevedoring companies created a consortium to establish a TOC, which guarantees their own rights and interests to the maximum level and therefore minimized resistance to the institutional improvement.

It is important to achieve an economy of scale in operating the ports. However, operation segmentation by participant not only creates overlapping of manpower and equipment and operational inefficiency but also decrease efficiency of berth and shed use. Therefore, severe segmentation of the operation unit increases operational inefficiency and makes it harder to achieve the purpose of introducing the system, which is to improve operational efficiency.

As a supplementary policy to the TOC system, the guidelines on TOC application and management should be established, the performance evaluation of the port operators should be conducted and the solid legal foundation for the system should be clarified. And the countermeasures for increasing port operators in Korean market should be prepared.

As the ports perform various functions and started to provide various added value services, the necessity of port hinterland complex increases, which has direct and indirect relations with the ports as it expands the space of ports. The port users consider not only port’s cargo handling capacities but also the diversity and possibility of added values provided by the ports as an important element when choosing a port.

The development of the Busan Port Hinterland Complex generated several ripple effects throughout the local economy including production inducement, creation of added values and jobs and it not only increases cargo volume, but also attracts foreign capital. Therefore, the port hinterland complex is required to be created along with the port as it generates added values for ports and strengthens competitiveness of the ports.
◦ Port hinterlands created in Korea have many positive effects such as increasing transit cargo volume, job creation and attraction of foreign investment.

◦ As a background, the central government established a mid- and longer-term port development and promotion plans and a ten-year plan with which a timely port development is made possible and reviews its validity to revise the plan every 5 years.

◦ Ports are in fierce competitions. If it is not developed timely but delayed, it causes a huge social and economic loss. Therefore, the establishment of port master plan supports vibrant import and export and helps to be prepared for the insufficient port facilities and increasing port demands. And the ports can be promoted as a national core strategic industry for the development of the national economy.

◦ It is significant to attract private capital for the port development as it secures diversity. However, the government-led port development is necessary as it is difficult to achieve the timely development and the higher security of port facilities only with private capitals.

◦ The local government-led port development is appropriate to consider the local conditions in developing the port. However, its poor financial conditions present a hardship to the development which requires a large-scale investment. Therefore, the central government-led investment is necessary for efficient budget operation.

◦ The central government-led master plan prevents overlapping investment that originates from excessive and irrational desire for development and too much competition among domestic ports. The government-led balanced port development helps to improve competitiveness of the national port and logistics industries.
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