Port Demand Forecast in Korea and the ESCAP region

Port Demand Analysis Center of Korea Maritime Institute
Korea Maritime Institute

**Shipping/Port Policies**
- Establish national action plan for shipping and port sectors
- Develop policies for the development of industries related to shipping and port
- International logistics and cooperation in shipping and port sector
- Run International Logistics Investment Analysis Center and Port Demand Analysis Center
- Analyze trend and policies related to shipping, port and logistics

**Marine Policy/Marine Environment**
- Establish national action plan on marine policy
- Policy related to the development and use of marine resources
- Policy and management of marine territory including Dokdo Island and Ieoh Island
- Policy related to preservation and management of marine space and marine ecosystem
- Integrated management of exclusive economic zone (EEZ)

**Fisheries Industry/Fishing Community**
- Establish national policy for fisheries and fishing community sectors
- Develop fisheries related policies and improve institution
- Use and develop coastal area efficiently
- Strategy to respond to fisheries negotiation under FTA and WTO/DDA
- Enter overseas fisheries market and handle international cooperation on fisheries
Port Demand Analysis Center (PDAC)

- Conduct monitoring on traffic volume and analyze change factors
- Prepare and publish report on the trend of port traffic volume
- Forecast port traffic volume related to Port Master Plan
- Develop and apply demand forecast model
Forecast on Item-Specific Traffic Volume

Forecast at Item Level:
- Container
- Oil
- Coal
- Steel
- Iron Ore
- Car
- Other Ores
- Sand
- Cement
- Chemical Products
- General Goods
- Grains
- Wood
- Scrap Metal

Total traffic volume forecast at each port (30 trade ports + Other ports)

Compare with berthing development plan

Confirm port traffic volume forecast

Reflect the forecast in port master plan

* Source: Port Demand Analysis Center (KMI)
Total Cargo in Korea

- Oil: 28%
- Steel/Iron Ore: 12%
- Coal: 9%
- Car: 5%
- Others: 46%

Total Cargo: 1,707,362 '000 ton

CAGR: 3.4%

* Source: Port Demand Analysis Center (KMI)
It is forecast that container traffic volume will be 31 million TEU in Korea and 23.5 million TEU in Busan port by 2020.
Forecast on Port Traffic Volume

**Forecast Process**

- Export/Import Full Container
- Export/Import Empty Container
- Analyze the share of each port
- Transshipment container for each port
- Coastal container for each port
- Economic Indicators (GDP, amount of seaborne)
- Difference between full container import and export, actual empty container
- By area X by sea route X by port
- GDP of major trading partners
- Weighted moving average
- Port specific forecast on export/import container traffic volume
- Port specific forecast on transshipment container
- Port-specific forecast on coastal container
- Port-specific forecast on total container traffic volume

* Source: Port Demand Analysis Center (KMI)
It is forecast that coal traffic volume in Korea will reach 18.4 million tons by 2020.

* Source: Port Demand Analysis Center (KMI)
Coal

- Dangjin Thermal Power
- Seocheon Thermal Power
- Taean Thermal Power
- Boryeong Thermal Power
- Yeongheung Thermal Power
- Donghae Thermal Power
- Honam Yeosoo Thermal Power
- Samcheonpo Thermal Power

* Source: Port Demand Analysis Center (KMI)
Korea has the 5th largest steel production capacity as a major steel producer in the world. Steel export cargo is predicted by utilizing crude steel production capacity of steel making companies located near ports.
Steel cargo volume in Korea will be 94.6 million tons by 2020, growing 0.7% on annual average reflecting recent downturn in the steel industry.

* Source: Port Demand Analysis Center (KMI)
### Forecast on Port Traffic Volume

#### Automobiles

#### Location of PDI businesses in surrounding areas
- **Import**

#### Location of car production facilities in surrounding areas
- **Export**

#### Major ports for automobile transshipment
- **Export**
- **Import**

#### Ports for new car ferries
- **Coastal**

#### Others (Export/import, transhipment, coastal)

#### Forecast Process

- **Regression analysis**
- **Regression analysis (New cars)**
- **Log trend analysis (Used cars)**
- **Analysis on the ratio of transshipment export/import traffic volume in export/import traffic volume**
- **Recent statistics**
- **Unit load approach, weighted moving average, log trend, demand momentum**

#### Port-specific forecast on Automobiles volume
Global automobile production volume forecast (IHS Automotive) and domestic automobile production volume and forecast are used for prediction.
Automobiles cargo volume in Korea will be 73.4 million tons by 2020, growing 1.4% on annual average.

* Source: Port Demand Analysis Center (KMI)
Forecast on Port Traffic Volume

**Forecast Process**

- **Petroleum Gas**
- **LNG production facility per port/Import traffic volume**
- **Refined Petroleum**
- **Petro-chemical industry’s value-added**
- **Distribution per port**
- **Crude oil/petrol-eum**
- **Refinement capacity per port/Import traffic volume**
- **Ratio of crude oil import in oil export**
- **Sophistication ratio of petroleum refinement facilities**
- **Regression analysis (oil export traffic volume)**
- **Distribution per port (Sorted by Production/consumption places)**
- **Forecast on oil export traffic volume per port**
- **Forecast on oil coastal traffic volume per port**
Oil

Korea has the 6th largest refining capacity as a major petroleum products producer in the world.

- **Import:** Item-specific forecast including crude oil, petroleum products, and petroleum gas
- **Export:** Forecast on all oil related products
- **Coastal:** Forecast on all oil related products

1. **Oil**
   - Apply bottom-up method targeting ports located near oil refining facilities

2. **Petroleum Products**
   - Forecast based on added value of petrochemical industry using naphtha, a major ingredient of petroleum products, as a variable

3. **Petroleum Gas**
   - Forecast by dividing ports into ones which are located near LNG production facilities and ones which are located near power generation plant.

Incheon Port
Daesan Port
Ulsan Port
Gwangyang Port
Oil cargo volume in Korea will be 532 million tons by 2020, growing 5.4% on annual average reflecting oil hub, which is underway.

* Source: Port Demand Analysis Center (KMI)
Traffic volume increase rate is different from country to country. And except for China, container throughput in Indonesia, India, and Vietnam is significantly higher.
The non-container traffic increase rate was high in the China, India and Viet Nam.
We tried to utilize the same method used in Korea, but due to lack of relevant data, GDP and time series methods were used.
The annual growth rate is expected to be 2 to 3% on average. However, it is predicted that Vietnam maintain growth rate higher than annual average by 2020.
The annual growth rate is expected to be 0.2 to 2.4% on average. Some countries such as the Philippines (4.3%) and China maintain growth rate higher than annual average by 2020.
Thank you!

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