National Maritime Safety Policies and its implication in Korea

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1. Marine Accident Analysis
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3. Maritime Safety Issues (Korean Case)
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"Study on the improvement of maritime transport safety in the ESCAP region"

- **Purpose**: To establish the plan for the improvement of marine safety system within the ESCAP region
- **Work Plan**: ESCAP & KMI joint study
  - **Period**: April 2016 to March 2017
- **Study Scope**
  - Focusing on Vessel (Passenger Vessels (domestic & international transport) safety
  - Prevention of ship accidents and rescue and investigation system
  - Target countries: Selected countries (related questionnaire)
- **Main contents**
  - Trends of Maritime Safety and Relevant Issues in the Region
  - ESCAP regional maritime traffic status
  - Passenger ship safety management administration at the selected countries
  - Investigation of maritime accidents and rescue
  - Improvement of passenger ship's safety in ESCAP region
  - Conclusion and recommendations
- **Collect data & cooperation**
  - Survey (Questionnaire): (final) submission by 20 January 2017
  - Two workshops: 2 Sep. & 19-20 Dec
- **Expected outcome**
  - Improving capacity of member states to formulate and implement policies linked to maritime transport safety
1. Marine Accident (Total Loss) Analysis by CAUSE(World)

- **Foundered (sunk or submerged)**: This is the main cause of loss accounting for almost half (47%) of all losses over the past decade. Wrecked(stranded) (aground) is the second major cause of total losses (20%). However, such incidents have declined year-on-year since 2011.

Source: Allianz
1. Marine Accident (Total Loss) Analysis by VESSEL TYPE (World)

Source: 15 Years of Shipping Accidents: A review for WWF, Southampton Solent University, 2012
1. Marine Accident Analysis (Korea)

- Decreasing No. of registered ship: mainly fishing boat
- Increasing marine accident from ‘2014 due to changing statistic system (based on Search & Rescue)
1. Marine Accident Analysis (Korea)

- Ratio of accident of Fishing boat is very high: 77% (2008), 69% (2015)
- Ratio of accident of merchant ship: Etc > Cargo > Tug > Oil > Passenger
2. Changes in Maritime Environment

- **Shipping Market**: Long-term recession
  - Expansion of M & A
  - New protectionism
  - Supply > Demand

- **Strengthen global regulation**
  - Climate change convention
    - ECA (Emission control area)
  - Ballast Water Management
  - Polar code

- **Panama canal expansion**

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### World Container fleet

<table>
<thead>
<tr>
<th>Size Range</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>AAGR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;3,000TEU</td>
<td>4,190</td>
<td>4,086</td>
<td>4,014</td>
<td>3,994</td>
<td>4,035</td>
<td>-0.9</td>
</tr>
<tr>
<td>3,000-7,999TEU</td>
<td>7,358</td>
<td>7,439</td>
<td>7,437</td>
<td>7,472</td>
<td>7,381</td>
<td>0.1</td>
</tr>
<tr>
<td>8,000-11,999TEU</td>
<td>3,119</td>
<td>3,551</td>
<td>4,092</td>
<td>4,729</td>
<td>5,263</td>
<td>14.0</td>
</tr>
<tr>
<td>12,000+ TEU</td>
<td>1,576</td>
<td>2,067</td>
<td>2,694</td>
<td>3,429</td>
<td>3,955</td>
<td>25.9</td>
</tr>
<tr>
<td>Total(thou)</td>
<td>16,243(5.9%)</td>
<td>17,133(5.5%)</td>
<td>18,237(6.4%)</td>
<td>19,623(7.6%)</td>
<td>20,685(5.2%)</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Source: Alphaliner. 2016.12
2. Changes in Maritime Environment

### Increasing ship size

50 years of Container Ship Growth

<table>
<thead>
<tr>
<th>Year</th>
<th>Ship Name</th>
<th>TEU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968</td>
<td>Encounter Bay</td>
<td>1,530</td>
</tr>
<tr>
<td>1972</td>
<td>Hamburg Express</td>
<td>2,950</td>
</tr>
<tr>
<td>1980</td>
<td>Neptune Garnet</td>
<td>4,100</td>
</tr>
<tr>
<td>1984</td>
<td>American New York</td>
<td>4,500</td>
</tr>
<tr>
<td>1996</td>
<td>Regina Maersk</td>
<td>6,400</td>
</tr>
<tr>
<td>1997</td>
<td>Susan Maersk</td>
<td>8,000+</td>
</tr>
<tr>
<td>2002</td>
<td>Charlotte Maersk</td>
<td>8,830</td>
</tr>
<tr>
<td>2003</td>
<td>Anna Maersk</td>
<td>9,000+</td>
</tr>
<tr>
<td>2005</td>
<td>Gjertud Maersk</td>
<td>10,000+</td>
</tr>
<tr>
<td>2006</td>
<td>Emma Maersk</td>
<td>11,000+</td>
</tr>
<tr>
<td>2012</td>
<td>Marco Polo (CMA CGM)</td>
<td>16,000+</td>
</tr>
<tr>
<td>2013</td>
<td>Maersk Mc Kinney Moller</td>
<td>12,270</td>
</tr>
<tr>
<td>2014/15</td>
<td>CSCL Globe/MSC Oscar</td>
<td>19,000+</td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Althea Global Corporate & Specialty
Approximate ship capacity data: Container-transportation.com

### Piracy

<table>
<thead>
<tr>
<th>Region</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>439</td>
<td>297</td>
<td>264</td>
<td>245</td>
<td>246</td>
</tr>
<tr>
<td>(No. Kidnap)</td>
<td>(45)</td>
<td>(28)</td>
<td>(12)</td>
<td>(21)</td>
<td>(15)</td>
</tr>
<tr>
<td>Somalia</td>
<td>237</td>
<td>75</td>
<td>15</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>W. Africa</td>
<td>52</td>
<td>62</td>
<td>51</td>
<td>41</td>
<td>31</td>
</tr>
<tr>
<td>SE Asia</td>
<td>119</td>
<td>130</td>
<td>167</td>
<td>187</td>
<td>200</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>13</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>
2. Changes in Maritime Environment

- Increasing Cruise & Passenger market

- How many people on board above ships?
  River boat (30) - Cruise (+ 6,000) > Depends on demand, ship size, role & etc

- Ship Safety Act (in Korea): Passenger is carry 13(+) passengers ship(definition)
## 2. Changes in Maritime Environment

### Paradigm shift of Maritime Safety

<table>
<thead>
<tr>
<th>Policy Direction</th>
<th>&lt; Past/Current&gt;</th>
<th>&lt; Future&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reactive</strong></td>
<td>Reactive, Recovery, and Compensation</td>
<td><strong>Proactive</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main Agent</th>
<th>International Organization (IMO), Advanced Countries</th>
<th>Developing Countries (BRICs, ASEAN)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Scope</th>
<th>Marine Officer, Vessel, Marine Traffic Facility</th>
<th>Extended to Maritime Environment and Security</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>Me-too Strategy (International Standard, Adopting advanced technology)</th>
<th>Follow-me Strategy (Leading international standard and developing advanced technology)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Maritime Safety Technology</th>
<th>Vessel Safety, IT, Communication (One-way/ Limited two-way)</th>
<th>Integrated IT, Green Tec Full two way communication (GBS, e-NAV, BWM, and so on)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Regulation and Cost Factor</th>
<th>Standard and Competitive Factor</th>
</tr>
</thead>
</table>

*Global Paradigm Shift: ‘Reactive’ Policies ⇒ ‘Proactive’ Policies’*
3. Maritime Safety Issues: Korean case

- Public concerns and anxiety over serial maritime accidents
  - Uisan (2014. 1) : Tanker
  - Sewol Ferry (2014. 4) : Car ferry

![Sewol Ferry (2014. 4)](image)

- Source: Korea Maritime Safety Tribunal (+ Korea Coast Guard)
- Victims: Dead & Missing (exl. Injury)
- Refer: P.5 & P.12
3. Maritime Safety Issues: Korean case

- Ratio of death is around 20%, except 2014 due to Sewol Ferry
3. Maritime Safety Issues: Korean case

- Accident by fishing boat is much higher than other vessels
  - Fishing vessel: 68.2%
  - (But) Accident rate compared to registered vessel
    - Fishing vessel (1.6%) VS other vessel (5.8%)
- Accident by small ship (under 100 ton): 81.1%
- Aged ships and elderly seafarers have been increasing
  - 42 passenger ships are older than 21 years: 173 ships in 2015)
    - Average age: 15Y
    - Maximum (allowed) ship age: Car Ferry (20 + 5), Passenger (20 + 10)
    (Basic year + extensible year)
  - Elderly Seafarers: Seafarers aged 60 and older shared 47% (in 2015)
    - 50-60 years: 32%, 20-40 years: 21%
3. Maritime Safety Issues: Korean case

• Coast Guard under newly launching Ministry of Public Safety and Security (MPSS)
  – VTS operated by MOF transferred to MPSS(Coast guard)
  – MPSS(Coast guard) established Maritime Special Rescue Division

• Need Collaboration between relevant organizations

• After Sewol Ferry accident (2014.4), Korea Government reorganized safety related organizations including Korea Coast Guard into one Ministry (MPSS)
3. Maritime Safety Issues: Korean case

• Difference in safety standard
  – Vessel type: different governance system
  – International (SOLAS) vs. Korean (Non SOLAS)

• Weak foundation of Korean maritime safety industry

• Lack of marine safety awareness and safety culture

• Shortage of skilled sea men

• Cultural difference among multinational seamen

• Increased risk of accidents due to activation of marine leisure activities

• Ships age of coastal cargo ship: 25+: 41.9% (20+: 67.3%)
4. Maritime Safety Policies of Korea
(2nd 5 Years Master Plan(’17-21))

Implement maritime safety Policies

Accidents reduced by 10% per year
Death reduced 20%
Zero major accidents

Enhancement Human safety
Improving vessel safety
Spread of safety culture
Development of maritime traffic system
Strengthening of international collaboration
Enhancement of Maritime Safety Management System
4. Maritime Safety Policies in Korea

Enhancement Human Safety

• Strengthening the safety policies and education to prevent human errors
  - Training for shipping lines CEOs
• Improve welfare of crew and working conditions
  - Focus on coastal and fishing vessel
• Enhance safety education of fishermen
  - Not only national but also foreign
• Upbringing & Training of maritime safety experts
  – Open marine safety class
  – Establishing Marine safety experience center
4. Maritime Safety Policies in Korea

Improving Vessel Safety

- Vessel safety checks reinforced
  - Passenger ship, deep-sea fishing vessel
- Improve ship inspection quality
- Improving safety of dangerous goods transportation
- Strengthening government support for ship safety
  - Build new ship (replace old aged ship)
- Development of technology for improving ship safety
  - Develop technology and equipment for ship safety
4. Maritime Safety Policies in Korea

Spread of Safety Culture

- Spread safety awareness and safety culture
  - Strengthen public relations
    * 80% of marine accidents is caused by human factors
  - Safety Campaigning
  - Increase Knowledge sharing for safety

- Increasing marine safety education
  - Training for CEOs of shipping line
  - Operate marine safety class
  - Establish Marine safety experience centers
4. Maritime Safety Policies in Korea

Development of Maritime Traffic System

- Strengthen safety management in ports
- Improve traffic environment
  - Channel, designated area
  - Navigation obstacle, Shipwreck
- Developing ‘e-Navigation’ system
  - IMO next-generation marine safety management system
  - 110 M$ is allocated for next 5 years to establish e-Navigation system
- Expand advanced ICT-based Aids to Navigation (AtoN)
- Develop electronic navigation chart (ENC)
  - Provide customized ENC
- Expansion of infrastructure to secure safety of fishing boat
4. Maritime Safety Policies in Korea

Strengthening of international collaboration

- Increasing cooperation with international organizations such as IMO, IALA, IHO and other many related organizations
  - Strengthening of bilateral and multi-lateral maritime safety collaboration
  - Bilateral meetings with active countries for maritime safety
  - Active response to strengthening PCS: Collaboration to maintain the Ship Safety 1st Class (White List)
- Strengthening the ability to respond to international conventions (based IMO) in maritime safety
  - Prepare 2020 IMSAS (IMO Member State Audit Scheme)
- Strengthening Piracy Response Capabilities
  - CGPCS (Contact Group on Piracy off the Coast of Somalia)
  - ReCAPP (Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia)
- Strengthening of international collaboration through ODA project
- Strengthen cooperation among MAIIF
  - Marine Accident Investigator's International Forum
4. Maritime Safety Policies in Korea

Enhancement of Maritime Safety Management System

- Improved safety management capability of shipping line
- Strengthening the government's safety management system
  - Expand safety supervisor scheme
- Strengthen PSC (Port State Control)
- Develop action plan for coastal passenger ship
  - Enhance safety management all kind of passenger ship (ex, leisure boat, cruise, ferry, leisure fishing boat)
- Increasing safety management for Non-SOLAS ship
- Strengthening collaboration safety relevant organization
  - MOF, MPSS (Coast guard), Local Government and related agencies
5. Conclusion (Recommendation)
Prevention marine accident and just-in-time response

- **Revision of law and system**
  - Harmonize international regulations and rules (IMO)
  - Set up national maritime safety plan
  - Reflect regional/national Characteristic of safety environments

- **Strengthening collaboration among maritime safety stakeholders**
  - Co-work with all relevant parties including government, industry, scholar

- **Expand training and education for maritime safety**
  - Expand capacity building program

- **Management and support for small and medium sized vessels and vulnerable vessels for safety management**
  - Enhance safety management for Non-SOLAS ship (small, fishing vessel)
5. Conclusion (Recommendation)
Prevention marine accident and just-in-time response

- Exchange Maritime Safety policy among ESCAP members
  - Regional workshop and seminar
  - Joint study for Maritime Safety in the region
- Dedicated organization for maritime safety
  - Policy making department & powerful enforcement unit
  - Rapid Response for Search & Rescue
- Strengthen Safety awareness and culture
  - Not only seamen but also CEO
  - Improve public relationship
- Enhancing international cooperation through IMO, IALA, ASEAN and related Intl’ Org. and programs
  - Strengthen regional and global cooperation
  - Cooperate Search & Rescue, Prevention oil pollution, against piracy
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