Green Growth in Korea

July 2011

Republic of Korea
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Green Growth in Korea
Korea announced ‘Low Carbon, GREEN GROWTH’ initiative as a new vision in August 2008 at the 60\textsuperscript{th} anniversary of national foundation day.

**Objectives**

- **Low Carbon Society & Energy Security**
  - Build Low Carbon Society
  - Greater Energy Security
  - Adaptation to Climate Change

- **New Engine for Growth**
  - R&D on Green Tech
  - Promotion of Green Industry
  - Greening industries
  - Laying the Foundation for Green Economy

- **Enhanced Quality of Life & Int’l Leadership**
  - Green Transportation & Land Management
  - Green Life-style
  - Int’l Leadership

**10 Key Agenda**
Green Transformation of Major Industries

Green Innovation: introducing green technologies into existing industry

With specific and differentiated green strategy, Korea’s major industries are encouraged to increase the green portion.

- **Green Innovation**
  - Innovation of process technology
  - Development of environment-friendly part material

- **Car·Shipbuilding·Machinery**
  - Energy Saving Logistics
  - Eco-Friendly & High Efficiency Materials

- **Semiconductor·Display·Home appliances**
  - Low-power products
  - GHG reducing process
International Cooperation on Green Growth

**East Asia Climate Partnership**
- Water Management Landmark project
  - Provide total solution for water problems in developing countries
- Second East Asia Climate Forum

**Strengthen Research in Green Growth**
- Global Green Growth Institute (GGGI)
  - Assist countries in formulating their own green growth plans
- Cooperation with OECD
  - Joint research on development of green growth strategies for OECD

**International Negotiation**
- Post-Copenhagen Climate Change Negotiation
  - Secure autonomy in climate change policy
- Bridge between developed/Developing Countries
  - Continue efforts to reflect Nationally Appropriate Mitigation Action (NAMA) registry on future climate change regime
Green Growth & Shipbuilding

Rising Demand for Green Ship: high oil prices & environmental regulations

- Shipowners’ endeavors to reduce energy consumptions
- GHG emission regulations discussed in IMO

Rising Demand for Green Shipyard: Korea green growth policy

- Greening shipyards
- Setting the GHG emission reduction goal of shipbuilding industry

International competitiveness will be decided by technologies of Green Ship and Green Shipyard
Green Ship
Green Growth by IMO

Active discussion on GHG reduction tools through IMO

- IMO Marine Environment Protection Committee (MEPC) started the discussion on GHG late in the 90s.
- MEPC56 made the good efforts to translate the general objectives into a set of practical measures, tools and guidance

IMO MEPC 58 proposed the guideline for an Energy Efficiency Design Index (EEDI), a figure to measure CO₂ and energy efficiency of ships.

Korean government supports discussions on environment through IMO

Korean shipbuilding industry supports the IMO guideline for GHG reduction, which requires the improvement of ships’ energy efficiency.
Efforts of Korea shipbuilding industry

Three major sectors of green ship technology development

**Marine Equipment**
- Environment-friendly
- Low pollution
  - Environment-friendly marine paint
  - High efficiency marine pollution response equipment
  - Emission gas control system

**Green Ship**
- Energy saving
- High efficiency
  - Reduction of frictional drag
  - Lightweight structure
  - Performance optimization using digital technologies (e.g. e-navigation)

**Green Power**
- New power source
  - Environment-friendly propulsion system (LNG, Clean-Diesel, Electric, High-efficient Hybrid)
  - Development of new power source for propulsion (Fuel cell, Wind power, Solar power)

Green ship technology of Korea has been developed based on healthy competition between major big 3- HHI, DSME, and SHI.
Green Ship Technology of Korea

**Thrust Fin**
- Installed on the rudder behind propeller resulting the drag reduction and thrust maximization
- For large container, saving the fuel cost of $60 million (life time)
- **4~6% fuel save** (at cost of equipment $0.5 million)

**Stator blades**
- 4 Stator blades before propeller to form uniform flow and reduce the pressure fluctuation
- About **5% fuel save**

**Saver Fin**
- Saver fins on hull
- About **3~5% fuel save** ($0.5 to 1 million saving of fuel cost for VLCC)
- Reduction of hull vibration over 50%
Green Shipyard
**Background**

**Greening Industry** according to national green growth strategy

- **30% GHG Reduction by 2020**
- **Goal for Each Sector** (Industry, Commerce, Waste, Household)
- **Goal for Each Industry** (Steel, Automobile, Shipbuilding, etc.)
- **GHG Target Management for large businesses**
- **Controlled Entities List**
- **8 Shipbuilding companies (in 2011)**

< CO2 emissions of shipbuilding industry >

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<th>Combustion (on Land)</th>
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Emission Reduction on Shipbuilding

Past
- Low energy consumptions & GHG emissions (Assembling Industry)
- Influence by various types of ships and shipowners’ demands
- No accurate inventory produced

Present
- GHG Inventory of 8 shipbuilding companies
- Investigation & analysis of reduction potential and technologies

Future
- Set BAU & Mid-term goal in shipbuilding industry by 2020
Methods for greening shipyards

GHG Reduction Goal by 2020 will be implemented.

**Energy Efficiency**
- Electricity reduction through improvement of construction process and productivity
  - Automatic control system
  - Power saver for motor
  - Max-power management system

**Digital Shipyard**
- Real-time energy consumption monitoring system
- Efficiency enhancement in logistics
  - Monitoring system for energy consumption of each facility and equipment

**Upgrade Facilities and Equipments**
- High energy efficient facilities
- Process improvement or new process introduction
  - Replacement of inefficient facilities and equipments
  - Fuel switch of heating furnace
IV Summary
Contribution to Global GHG Emission Reduction
Fostering Industries as New Growth Engines
Realization of Green Growth Society in Korea

GREEN SHIP

GREEN SHIPYARD

GREEN GROWTH
Thank you