



LNG: Legal and regulatory framework

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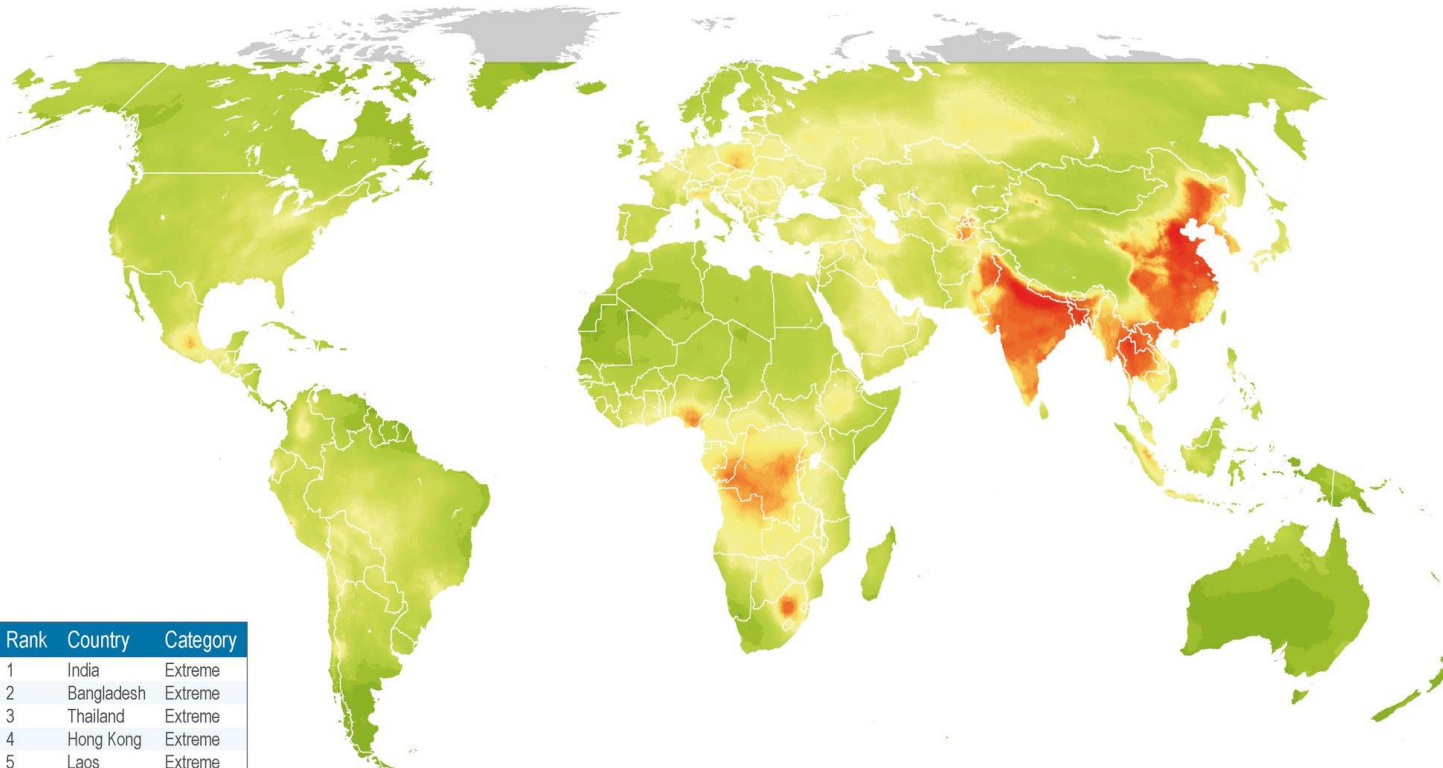
World Maritime University



EUROPEAN UNION
European Regional
Development Fund



AIR QUALITY INDEX 2017



Rank	Country	Category
1	India	Extreme
2	Bangladesh	Extreme
3	Thailand	Extreme
4	Hong Kong	Extreme
5	Laos	Extreme
6	Myanmar	Extreme
7	Nepal	Extreme
8	South Korea	Extreme
9	Rwanda	Extreme
10	DR Congo	Extreme



Source: Verisk Maplecroft

Policies and legal instruments for clean energy to support LNG

- GLOBAL
- REGIONAL
- NATIONAL

Policies and legal instruments for clean energy to support LNG

➤ GLOBAL

Increasing recognition of environmental benefits

- G20 endorses the role of natural gas in energy transition
- IEA credits levelling of global CO2 emissions to coal displacement

Policies and legal instruments for clean energy to support LNG

➤ REGIONAL

EU policies supporting coal phase out

- More than 10 countries announce coal phase-out ambitions -25% of coal power capacity in EU
- EU confirms reforms to strengthen EU Emissions Trading Scheme

Policies and legal instruments for clean energy to support LNG

➤ NATIONAL

Germany

- Ship safety law (Schiffsicherheitsgesetz) (SchSG): Interim guidelines on safety for natural gas fuelled engine installations in ships (MSC.285(86))

Norway

- Greenhouse Gas Emission Trading Act issued by the Norwegian Environment Agency

Policy and legal instruments- Global

IMO Regulations

- MARPOL 73/78 is an environmental convention to prevent marine water quality pollution and marine air pollution that may occur because of ships. The convention has been continuously revised since its adoption in 1978. Annex VI of the IMO MARPOL Convention represents the regulatory framework tackling exhaust gas emissions from ships
- Energy Efficiency Design Index (EEDI), a technical measure of GHG emissions reduction
- Energy Efficiency Operational Indicator (EEOI) and the Ship Energy Efficiency
- Management Plan (SEEMP), which together are GHG mitigation measures from an operational perspective

Marpol Annex VI

Covered by Annex VI

- Oxides of Nitrogen (NO_x) – create Ozone
- Sulphur Oxides (SO_x) – create acidification
- Hydrocarbons (HC) – gas, soot and some particulates
- Volatile Organic Compounds (VOC)
- Refrigerant Gases

Not covered by Annex VI

- Carbon Dioxide (CO₂)
- Carbon Monoxide (CO)

Policy and legal instruments - Regional

ENERGY STRATEGY 2020

By 2020, the EU aims to reduce its greenhouse gas emissions by at least 20%, increase the share of renewable energy to at least 20% of consumption, and achieve energy savings of 20% or more

EU WHITE PAPER FOR TRANSPORT

The European Commission's EU White Paper for Transport (2011) has set a greenhouse gas reduction goal of at least 40% by 2050 (compared to 2005) in absolute terms for the shipping sector.

EU DIRECTIVE ON ALTERNATIVE FUELS

Policy and legal instruments

[Emission Control Areas \(ECA\)](#) established to limit the emission of SO_x and particulate matter and those applicable outside such areas and are primarily achieved by limiting the maximum sulphur content of the fuel oils as loaded, bunkered, and subsequently used onboard.

The ECAs established are:

- Baltic Sea area – as defined in Annex I of MARPOL (SO_x only);
- North Sea area – as defined in Annex V of MARPOL (SO_x only);
- North American area (entered into effect 1 August 2012) – as defined in Appendix VII of Annex VI of MARPOL (SO_x, NO_x and PM); and
- United States Caribbean Sea area (entered into effect 1 January 2014) – as defined in Appendix VII of Annex VI of MARPOL (SO_x, NO_x and PM).

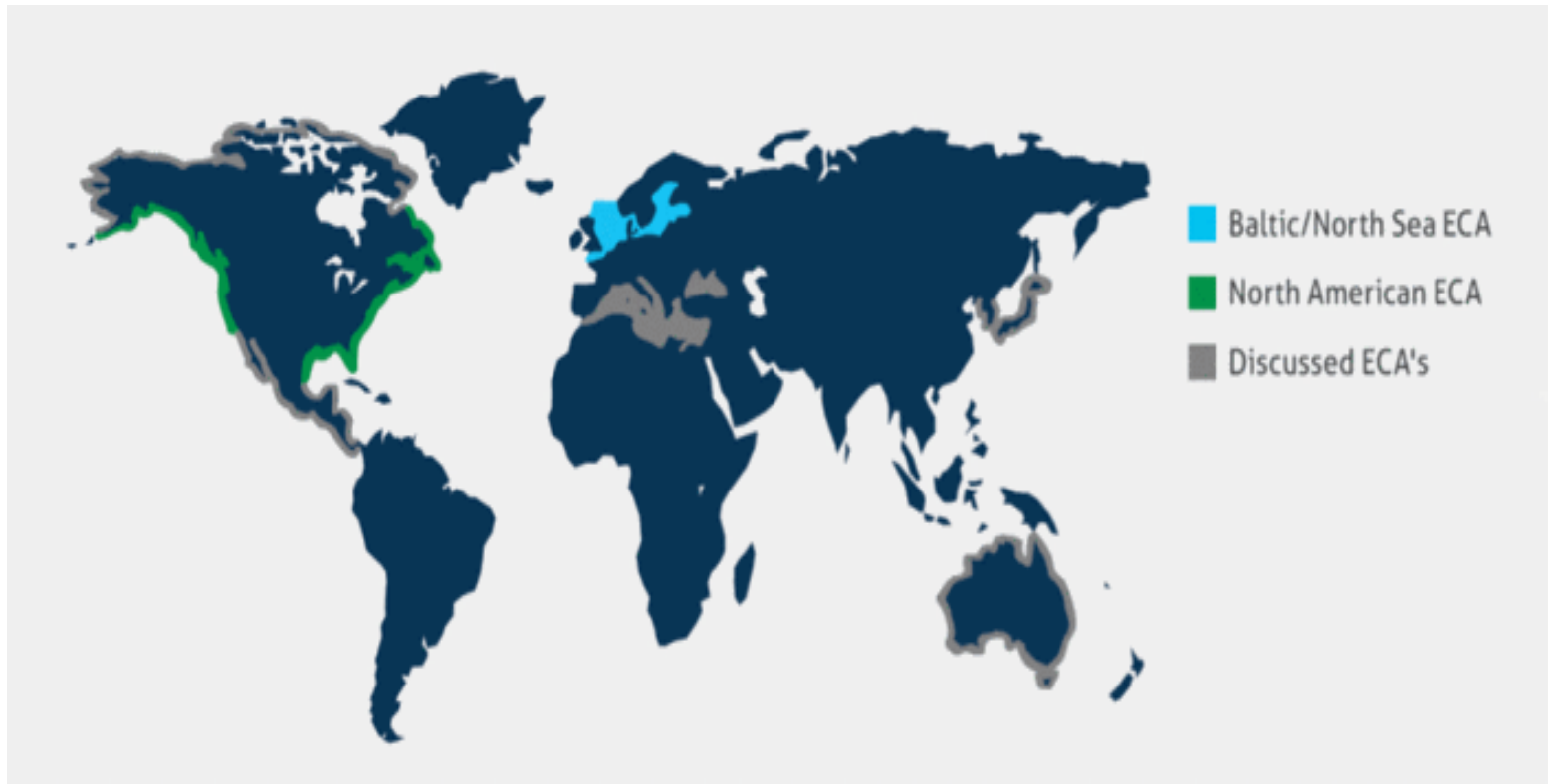
Outside an ECA established to limit SO _x and particulate matter emissions	Inside an ECA established to limit SO _x and particulate matter emissions
4.50% m/m prior to 1 January 2012	1.50% m/m prior to 1 July 2010
3.50% m/m on and after 1 January 2012	1.00% m/m on and after 1 July 2010
0.50% m/m on and after 1 January 2020*	0.10% m/m on and after 1 January 2015

Policy and legal instruments

Emission Control Areas (ECA)

New IMO designated Emission Control Areas expected to be declared in the Mediterranean, Australia and Asia.

EMISSIONS CONTROL AREAS (ECA's)



IMO REGULATIONS LNG

The most relevant IMO regulations applicable to the use of LNG as a fuel for shipping, based on a feasibility study carried out by the IMO on 2016, are listed as below:

- **SOLAS convention** including requirements for maritime fuels
- **STCW convention** including training requirements for crews
- **International Code for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk** (IGC Code, referenced within SOLAS Chapter VII, Part C) including requirements for the construction and operation of LNG tanker
- **Interim Guidelines on Safety for Natural Gas-Fuelled Engine Installations in Ships** MSC.285(86)
- **International Code of Safety for Ships using Gases or other low Flashpoint Fuels** (IGF Code, including requirements for the construction and operation of gas-fuelled ships)

IMO REGULATIONS LNG

LNG is classified as dangerous goods according to the SOLAS Convention on Maritime Dangerous Goods Code (class 2 and class 3).

Safety issues must be regulated by States Authorities on the basis mentioned in the Convention.

Code for ships using gases or other low-flashpoint fuels (IGF Code)

- IGF Code aims to minimize the risk to ships, their crews and the environment, given the nature of the fuels involved, IMO said in its statement.
- IGF Code will take effect on 1 January, 2017, providing a clear legislative framework for ships to install LNG fuel systems
- Amendments to the International Convention for the Safety of Life at Sea (SOLAS) require new ships using gases or other low-flashpoint fuels to comply with the requirements of the IGF code

Code for ships using gases or other low-flashpoint fuels (IGF Code)

- Before 2017 ships had LNG or other low flashpoint fuel systems need to obtain permits from each port authority or the maritime administration in the countries where they call, but from 2017, vessels built and approved in accordance with the IGF Code are able to trade freely around the world.