

# Application of “Chemical Leasing” to shipbuilding industry for reducing a negative impact on marine environment

Mari KINOSHITA<sup>1</sup>, Sakiho NAKAMURA<sup>2</sup>, Mitsuo YAMAMOTO<sup>2,\*</sup> and Shingo KIMURA<sup>3</sup>

<sup>1</sup> Graduate School of Public Policy, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan

<sup>2</sup> Graduate School of Agricultural and Life Sciences, The University of Tokyo, 1-1-1 Yayoi, Bunkyo-ku, Tokyo 113-8657, Japan

<sup>3</sup> Graduate School of Frontier Sciences, Atmosphere and Ocean Research Institute, The University of Tokyo, 5-1-5 Kashiwanoha, Kashiwa, Chiba 277-8564, Japan

\* Corresponding author

**Submission Category:** (A) Technical research proposal to solve concrete problems

## SDGs Targets/Indicators:

Relevant SDGs of our proposal are SDG 14 “Life below water”, SDG 12 “Responsible consumption and production”, SDG 6 “Clean water and sanitation”, SDG 9 “Industry, innovation and infrastructure”, SDG 17 “Partnerships for the goals”, SDG 8 “Decent work and economic growth”, and SDG 3 “Good health and well-being”. Essential SDG targets are 14.1 and 12.4.

## Abstract:

The majority of international trade depends on maritime transport, and Asia is a centre for loading and producing ships. However, there are several issues that give negative impacts on the marine environment. We propose a new study plan for application of “Chemical Leasing” business model in the anti-fouling painting within a shipbuilding procedure to reduce the use of harmful chemical compounds. Despite the development of international regulations, the usage of potentially harmful materials in anti-fouling painting continues because of the costly implementation of such measures.

Chemical Leasing (ChL) is a business concept to evaluate a value of a chemical product by its function, not by its volume as conventional business does. The United Nations Industrial Development Organization (UNIDO) has led global implementation of ChL. Chemical coatings are popular examples of the implementation of the concept. Although paint suppliers used to sell chemicals as volume, they treat the chemicals as functional units under this concept. Since any case has not been available in the shipbuilding industry, the concentration of the industry in Asia shows potential for developing a leading case of the application in the industry for mainstreaming the concept.

Literature reviews and interviews for an expert in UNIDO were conducted as a preliminary study for introducing ChL to the shipbuilding industry. Our proposal contains the following

four steps: 1) recognize current interests of stakeholders in its implementation through a survey, 2) discuss the survey results to find participants of verification test in expert meetings, 3) conduct a verification test to collect data necessary to analyse, and 4) specify conditions for successful application of ChL. Overall, the policy-making process plays a central role in supporting this study as a project of multi-stakeholders including paint suppliers, shipbuilders, economists, scientific experts, national governments and international organizations.