



Indonesia–South Korea Science Diplomacy through Marine and Coastal Cooperation



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Introduction

In 2014, the new Indonesia government under President Joko Widodo proclaimed one of his visions is to make Indonesia as world's epicentre of maritime. In order to implement this vision, he created a Coordinating Ministry of Maritime Affairs (CMMA) and encouraging the Ministry of Marine Affairs and Fisheries (MMAF) to take a role in developing Indonesia's coastal and marine (Kementerian Koordinator Bidang Kemaritiman, 2018). Expanding the network in international relations by cooperating with other countries is one of the steps that been taken, for example is with South Korea. Indonesia and South Korea have long history in cooperation, while the two countries sharing a common vision, values and the will to contribute to the international community as middle powers, both countries are members of G-20 and APEC.

Indonesia and South Korea officially established diplomatic relations on 17 September 1973. Trade between the two countries amounted to more than US\$17 billion in 2017, having increased nearly 20 per cent since 2016 and targeted to reach US\$30 billion by 2022 (Sheany, 2018). During their last summit in Jakarta, they agreed to upgrade their countries' bilateral relationship to a "special strategic partnership" aimed at accelerating industrialisation in Indonesia, increasing economic and trade ties and people-to-people exchange. That marked by signing several Memorandum of Understandings (MOU), including the cooperation on Immigration, Security, the Fourth Industrial

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Revolution and Maritime. There are three concepts of Science Diplomacy (SD) i.e Diplomacy for science, Science in Diplomacy and Science for Diplomacy (Turekian, Macindoe, Copeland, Davis, Patman, & Pozza, 2014). In particular the SD between Indonesia and South Korea can be categorized as Science for Diplomacy since it implementing a particular international science cooperation activity (e.g., capacity-building, joint research projects, science student fellowships, scientific conferences, faculty exchanges with developing country universities). This article aim is to share the experience of practical SD between Indonesia and South Korea through the Marine and Coastal cooperation. In maritime cooperation, the formal cooperation was initially started by the signing of MOU between Coordinating Ministry of Maritime Affairs as representative the Government of the Republic of Indonesia and the Government of the Republic of Korea on Maritime Cooperation', which is signed in Seoul on the 16th of May, 2016 (Surbakti, 2018).

However, in the term of technical and research cooperation, especially on marine and coastal area, the collaboration has been started back in 2014 where representative of Korean Maritime and Ocean University Consortium (KMOUC) came to Indonesia and met Director of Marine Research Centre (MRC), a research centre under MMAF. In this meeting, both parties talked about possibility of cooperation and came to agreement on cooperation in the field of offshore, marine and fisheries scientific and technical cooperation in the form of research and development project (Ministry of Marine and Fisheries of Indonesia and Korea Maritime and Ocean University Consortium, 2015). Following the first meeting both parties then signing the Letter of Intent declaring that both parties agree to work together in the field of offshore, marine and fisheries scientific and technical cooperation in the form of research and development project. After signing the Letter of Intent, both parties then proceed to discuss about the joint cooperation research by developing Korea - Indonesia Offshore Cooperation Center (KIOCC) (Ministry of Marine and Fisheries of Indonesia and Korea Maritime and Ocean University Consortium, 2015).

Stakeholder Engagement and Institutional Collaborations

In the case of SD relation between South Korea and Indonesia, KMOUC and MRC were appointed as the representative both countries, where both centre has capability and qualification to carry on the project. S&T capacity in this relation must be broadened, deepened, and must be created when it does not existed. However, in doing this project, the MRC needs to coordinate and cooperate with other institutions in Indonesia that work in the field of offshores activities, like Ministry of Energy and Minerals, Ministry of Environment and Forestry, Ministry of Finance and Ministry of Transportation, also some Province and Local Governments. In the relation between Indonesia and South Korea need the injection of more and better expert scientific advice directly on the policy development and decision making with the goal is to create a safe system of bureaucratic process (Copeland, 2016).

Since this project will be related with oil and gas activities, which the duties and functions wherein MRC did not have authority upon the oil platform. Therefore, MRC also need to coordinate with Special Task Force for Upstream Oil and Gas Business Activities (SKK Migas) as the one with authority to manage the oil and gas business activities in Indonesia. This institution aim is purposely to exploit the state's oil and gas natural resources that will be able to generate maximum benefits and revenue to the state for the greatest welfare of the people.

Beside SKK Migas, MRC also engaging the other stakeholders like, companies and universities. In order to leverage the S&T cooperation, institutional linkages and public-private partnership between government, corporations, R&D institutions, and universities need to be encouraged. With enhancement on planning and closer coordination, research institution, science academies and intergovernmental science networks could play a larger role to in pursuing the objectives (Copeland, 2016). Named few of them are PT. Pertamina, a state owned company that work on oil and gas, also Institut Teknologi Bandung and Institut Teknologi

Sepuluh November. On the other hand, the South Korea side also involving few companies and government institution, among others:

- Ministry of Ocean and Fisheries
- Korea Maritime and Ocean University
- Korea Research Institute Of ships and Ocean Engineering
- Hyundai Heavy Industry
- KHAN
- Samsung Heavy Industry
- Daewoo Shipbuilding and Marine Engineering
- Haemirae Offshore Farm Co. Ltd.
- Noah Offshore Farm Co. Ltd.

Related to the institutional development of KIOCC, Indonesia and South Korea vision is to create a joint center with the purpose of promoting development and cooperation on offshore science and technology, advancing offshore and marine scientific research and contributing to the protection of marine environment as well as the sustainable use of marine resources. While the objectives of this joint centre are:

To conduct joint research on the decommissioning abandoned oil and gas platform and its re-utilization options for marine and fisheries sectors that can encourage participation of research institutions/industries/universities in both countries;

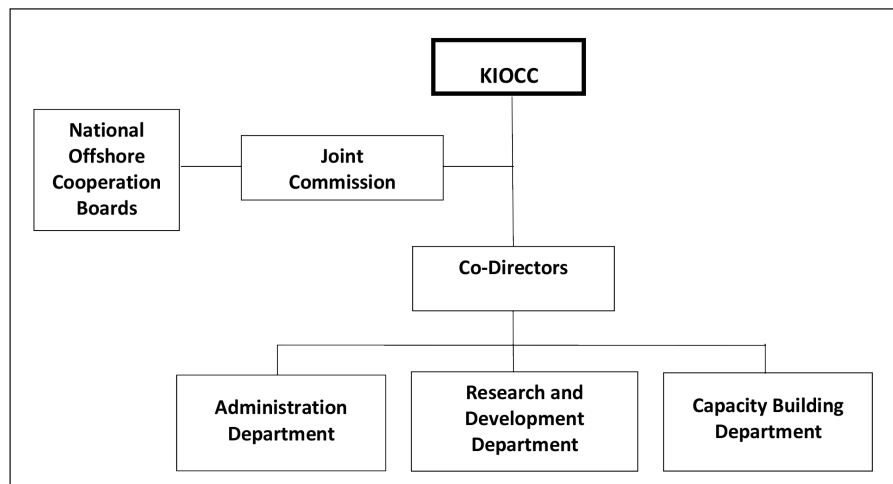
- Collaborative support for offshore plant sector (support participation in demonstration projects, establishment of joint venture, technology cooperation, etc.);
- Build a network between Korean and Indonesian companies (support to hold a forum, workshop about the technology in offshore plant sector, related company introduction etc.).
- To facilitate the research working by the two parties, the the KIOCC organization will be designated into like diagram below.

Marine and Coastal Science Cooperation

Challenges and Opportunities

One of the problems that are faced by Indonesia right now on offshore context is the oil and gas installation. There are about 630 offshore platforms in Indonesia which show active oil & gas development compared with their surrounding counties. Over 70% of the offshore oil and gas platform in Indonesia have finally reach their maximum capacity and no longer operated (Ministry of Marine and Fisheries of Indonesia and Korea Maritime and Ocean University Consortium, 2017). These oil and gas platforms

Figure 1. KIOCC Organizational Structure



are already closed and abandoned, and soon to be decommissioned. This situation shows that Indonesia's oil rig decommissioning market is very huge and unavoidable issue at some point in the future. This condition is very suitable for KIOCC to proposed the research on re-utilisation of abandoned platform as their pilot project

There are several challenges that KIOCC face in starting this project, among other are the institutional authority, as mentioned before that MRC did not have authority upon the oil platform. This means the KIOCC need to be established as soon as possible. The other challenges is that the cost of dismantling offshore oil and gas platforms are very expensive up to million dollars per rig and will be a burden of the state budget (APBN) (Ministry of Marine and Fisheries of Indonesia and Korea Maritime and Ocean University Consortium, 2017). However this situation also create opportunities for KIOCC to implement its project, since there have been no platforms dismantled and removed before in Indonesia since the installation of the first platforms for almost half of century. Therefore, the Dismantlement, Repair and Engineering (DRE) process in Indonesia is an important issue and it will be a benchmark on next DRE project in the future.

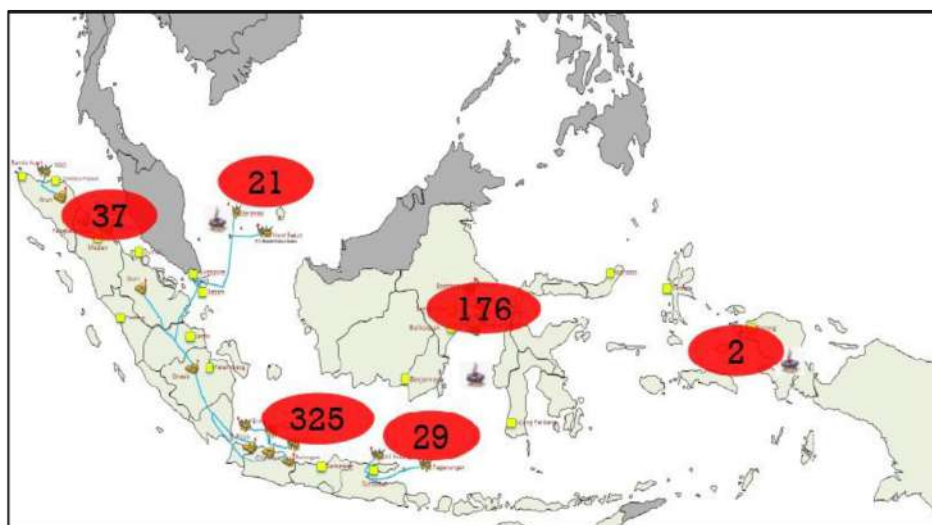
Moreover, the dismantling process can be seen an opportunity to obtain greater a profit from the

investments by converting the idle platforms to other uses that have economic value or scientific benefits. A new initiative of decommissioning has been proposed and implemented by several countries to not only reducing the dismantling costs but also gain added values from the disused structures. Numbers of alternative re-utilization for marine and fisheries sectors have been proposed for both partial and complete removal of decommissioned offshore oil and gas platforms, such as:

- Rigs-to-Reefs (R2R)
- Offshore aquaculture
- Research and ocean monitoring stations
- Rescue and military base
- Renewable energy hub derived from wind, waves or currents
- Diving or fishing Location or hotel resort

For this initial project, the KMOUC and MRC saw that the R2R alternative is the suitable option to implement. This is because R2R is a successful strategy to undertake the offshore activity in an environmentally effective, efficient and equitable safe manner not only for the operator and regulatory but for the physical and biological surroundings. In addition, the R2R creates new habitat as well as restore the damage habitat of coral.

Figure 2. Offshore Platforms Mapping in Indonesia



Rig to Reef Programme

In order to start the R2R project, the KMOUC and MRC do a feasibility study on seven targeted abandoned platforms located in the ATTAKA and Yakin field, East Kalimantan that ready to be converted into decommissioning (Ministry of Marine and Fisheries of Indonesia and Korea Maritime and Ocean University Consortium, 2017). These seven platforms are belonging to Chevron Indonesia Company (CICo) that at the end of 2016 has submitted a plan to dismantle both of the platforms (Ministry of Marine and Fisheries of Indonesia and Korea Maritime and Ocean University Consortium, 2017). The objective of this feasibility study is to outline options of decommissioning to effectively dismantle or re-use abandoned platforms in Indonesia. There are some options to reutilize the platforms in Indonesia considering the needs of marine and fisheries. Options to be selected will take into consideration likely environmental impact, the safety of personnel and other users of the sea, economics and financial implications. Other thing to be considered is the regional fisheries and economic development (Ministry of Marine and Fisheries of Indonesia and Korea Maritime and Ocean University Consortium, 2017). Moreover, the feasibility study require consideration of a number of factors including regulatory requirements, technical feasibility, health, safety, socio-economic, environmental impacts, economics and strategies implemented by oil and gas Operators (Ministry of Marine and Fisheries of Indonesia and Korea Maritime and Ocean University Consortium, 2017). The feasibility study will use as a guideline on decommissioning and re-utilization over 600 platforms installed in Indonesia by reducing the cost of dismantling (Ministry of Marine and Fisheries of Indonesia and Korea Maritime and Ocean University Consortium, 2017).

Capacity Building

Beside the R2R project, the KIOCC project component that will be implement is the capacity building. The fastest way to build capacity is through program of training and professional

training and exchanges. This is because Indonesia is facing problem of decommissioning in the near future. None of the oil and gas operators in Indonesia has experiences in Decommissioning process, more over in R2R. This means that there is currently limited structural sharing (technical, budget, technology), which hinders learning from decommissioning experiences. The building of Indonesian expertise in the field decommissioning and R2R process is a main goal of Offshore Research Partnership.

The development of this partnership provides a unique opportunity to educate and train a critical mass of oceanographers, engineers and system operators that will further develop, operate and maintain R2R project in Indonesia on the long term. Experience sharing among the stakeholders, both local and international best practice in decommissioning and R2R to shape the Indonesian master plan The building of a national capacity through student exchanges (conducting to the PhD and master diplomas), allowing the Indonesian experts to continue developing, planning and operating the decommissioning and R2R process after the end of the partnership.

Conclusion and Perspectives

The bilateral cooperation between Indonesia and South Korea in the Marine and Coastal is one of application of successful SD that can be used as lesson learned to other development country. SD is a win-win solution as the first step in this SD the two countries respective is focusing on the technology to support Dismantle, Re-utilization and Engineering of an Abandoned Oil and Gas Platform in Indonesia. This SD involved public-private partnership between government, corporations, R&D institutions and universities. To improve the science and diplomacy and international S&T would require benchmarking, monitoring and evaluation. After having process of benchmarking, monitoring and evaluation this SD cooperation could be broadened in other areas related to the Marine and Coastal development.

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